**SIGACCESS Annual Report**

**July 2018 - June 2019
Submitted by: Shari Trewin, Chair**

***SIGACCESS supports the international community of researchers and professionals applying computing and information technologies to empower individuals with disabilities and older adults. The SIG also promotes the professional interests of students and computing personnel with disabilities and strives to educate the public to support careers for people with disabilities.***

## Research and Innovation in Accessibility

Accessibility research seeks to understand and overcome access barriers, and many accessibility researchers are exploring the potential of recent advances in artificial intelligence (AI). Speech recognition for populations with atypical speech was a prominent theme, while data and privacy also grew in prominence, with several papers including two best paper nominees on this topic.

This year’s ASSETS Best Paper was **Modeling the Speed and Timing of American Sign Language to Generate Realistic Animations,** bySedeeq Al-khazraji, Larwan Berke, Sushant Kafle, Peter Yeung and Matt Huenerfauth of Rochester Institute of Technology, which advances the state of the art in generating naturalistic sign language animations by using a machine learning approach.

Several papers presented new approaches to design of assistive technology, including the winner of the Best Student Paper award: ‘**Interdependence as a Frame for Assistive Technology Research and Design’**, by Cynthia Bennett (US), Erin Brady (IUPUI) and Stacy Branham (UC Irvine). This paper exemplifies a growing awareness and incorporation of the field of disability studies in research questions of technology and disability. In this paper, the authors provide a counterpoint to the traditional focus of assistive technology on enabling independence, presenting an interdependence frame that acknowledges our human connections and offers new technology design opportunities.

Other prominent research themes included novel assistive technologies delivered on mobile devices, supporting communication, and enhancing navigation.

In 2018 the SIGACCESS Outstanding Contributions Award recognized Judy Brewer, Director of the Web Accessibility Initiative (WAI) at the World Wide Web Consortium (W3C). Judy opened the ASSETS 2018 conference with her keynote presentation on ‘Exploring Paths to a More Accessible Digital Future’. At the W3C, Judy works with an expert team of accessibility specialists, and a broad and vibrant web accessibility community. Since 1997, WAI has developed key accessibility standards, including the Web Content Accessibility Guidelines (WCAG), Authoring Tool Accessibility Guidelines (ATAG), User Agent Accessibility Guidelines (UAAG), and Accessible Rich Internet Applications (WAI-ARIA). Judy has helped drive accessibility standardization for W3C internationally, promoting awareness and implementation of Web accessibility, and promoting effective dialog among industry, the disability community, accessibility researchers, and governments on the development of consensus-based accessibility solutions. Judy Brewer’s leadership, coordination and advocacy in the development of accessible computing has been vital.

## SIGACCESS Programs

Our flagship conference, ASSETS 2018 was held in Galway, Ireland, chaired by Faustina Hwang of the University of Reading, UK, with Joanna McGrenere, University of British Columbia, Canada, and David Flatla, University of Guelph, Canada as Program Chairs.

This year, we helped to grow and diversify the field of accessibility through the ACM Student Research Competition, the ASSETS Doctoral Consortium (sponsored by NSF), a mentoring program for new authors, and 4 travel scholarship awards. ASSETS 2018 also featured user experience reports and a user experience panel on accessibility for living, bringing the lived experience of individuals experiencing disabilities to the research community.

SIGACCESS travel award recipients, two of whom are people with disabilities, were:

* Dr. Krishnaveni Achary, Tamana.org presented a poster on the Indian perspective on technology for children with autism.
* Vinod Namboodiri, Wichita State University, USA presented his work on CityGuide: Beacon-Based Community-Driven Inclusive Wayfinding.
* David Williams-King, Columbia University, USA presented a poster on ‘Silvius: Training a Custom Speech System for Coding by Voice’
* Joseph Stanislow, NTID presented a poster on ‘Redesigning and Deploying the Universal Sound Detector: Notifying Deaf and hard-of-hearing users of audio signals’

SIGACCESS also provided $5000 in sponsorship for a workshop held at CHI 2019 on ‘Hacking Blind Navigation’, co-organized by João Guerreiro of Carnegie Mellon University. The funds supported travel expenses for panelists, and lunch.

SIGACCESS serves both the accessibility research community and the broader ACM community by maintaining a set of resources to support improved accessibility in academic publications and events. This year, we presented our resources for conference accessibility to two SGB meetings, to encourage and support other SIGs in making their events welcoming for a broader range of people.

## Key Issues

There is growing concern in the disability community about the implications of mainstream artificial intelligence solutions on their inclusion and anonymity. While machine learning techniques are enabling breakthroughs in assistive technology capabilities, they also have the potential to perpetuate, reify and even amplify existing biases against marginalized individuals. To encourage research attention to these problems, ASSETS 2019 will host a workshop on AI Fairness for People with Disabilities, sponsored by IBM Research, and SIGACCESS is sponsoring a performance of Project Amelia prior to the conference. This immersive theater performance spotlights the ethical questions of sharing personal data.

Within ACM, we see increasing interest from SIGS in supporting diversity and inclusion, including accessibility of SIG events, publications and digital resources. We are in the process of updating several of our resources and adding new ones to support this movement.

**SIGACT Annual Report**

**July 2018 - June 2019
Submitted by: Samir Khuller, Chair**

**SIGACT Mission Statement:**

The primary mission of ACM SIGACT (Association for Computing Machinery Special Interest Group on Algorithms and Computation Theory) is to foster and promote the discovery and dissemination of high quality research in the domain of theoretical computer science. The field of theoretical computer science is interpreted broadly so as to include algorithms, data structures, complexity theory, distributed computation, parallel computation, VLSI, machine learning, computational biology, computational geometry, information theory, cryptography, quantum computation, computational number theory and algebra, program semantics and verification, automata theory, and the study of randomness. Work in this field is often distinguished by its emphasis on mathematical technique and rigor.

**1. Awards**

* 2019 Gödel Prize: This was awarded to **Irit Dinur** for her paper “The PCP theorem by gap amplification”, Journal of the ACM, Vol 54 (3), Article 12, 2007 (preliminary version in the proceedings of the 38th Symposium on Theory of Computing, STOC 2006). The PCP theorem is one of the most influential and impressive results of the theory of computation, having fundamental implications both to the study of the inherent difficulty of approximation problems and to the study of probabilistic proof systems. This paper provides an alternative proof of the PCP theorem, which is fundamentally different from the original proof. The new proof is significantly simpler than the original, making its presentation in complexity courses a feasible task. In addition, it significantly improves on important parameters of the resulting PCP, yields the same improvements for locally testable codes, and has inspired much research including practical applications. Providing an alternative proof for a result of such importance is an achievement to celebrate, especially for a proof addressing issues that have been puzzling many researchers and resolving a central open problem in the area. Dinur's proof diverges from the original proof which relied on the arithmetization of NP. In this sense, the new proof is more direct and reveals new insights into the PCP Theorem and into NP. The proof is pivoted at the ``amplification'' of PCP systems, via a gradual process (of logarithmically many steps), while maintaining a direct connection with what is happening in terms of natural NP-complete problems. In fact, the amplification process is often described in terms of a natural Constraint Satisfaction Problem.
* 2019 Knuth Prize: The 2019 Donald E. Knuth Prize was awarded to **Avi Wigderson** of the Institute for Advanced Study for fundamental and lasting contributions to the foundations of computer science in areas including randomized computation, cryptography, circuit complexity, proof complexity, parallel computation, and our understanding of fundamental graph properties. Wigderson has also trained many generations of theoretical computer scientists through his visitor and postdoc program at the Institute for Advanced Study. Wigderson’s work revolutionized our understanding of randomness in computation. In a series of results, he showed under widely-believed computational assumptions that every probabilistic polynomial time algorithm can be fully derandomized. In other words, randomness is not necessary for polynomial-time computation. This was achieved by a sequence of papers of his: “Hardness vs. Randomness” with Nisan, “BPP Has Subexponential Time Simulations Unless EXPTIME has Publishable Proofs” with Babai, Fortnow, and Nisan, and “P=BPP if E Requires Exponential Circuits: De-randomizing the XOR Lemma” with Impagliazzo. This last result showed that P=BPP is implied by the assumption that there exist functions that can be computed by exponential-time Turing machines that cannot be computed by subexponential-size circuits in the worst case. To this day, the Impagliazzo-Wigderson paper is one of the strongest pieces of evidence we have that P = BPP. In cryptography, in two landmark papers, one with Goldreich and Micali and one with Ben-Or and Goldwasser, Wigderson showed how one could compute any function securely in the presence of dishonest parties. Wigderson also with Goldreich and Micali showed that all problems with short proofs (i.e., all problems in NP) in fact have zero-knowledge proofs: that is, proofs that yield nothing but their validity, a central cryptographic construct. Additionally, originating from cryptography but with applications to many areas in theoretical computer science, Wigderson with Ben-Or, Goldwasser, and Kilian defined the model of multi-prover interactive proofs. This model for the first time showed how it would be possible for a polynomial-time machine to verify an exponentially-long proof. This idea had substantial impact, and among other things it led to the celebrated PCP theorem and the flow of follow-up works on hardness of approximation. In the area of parallel computation, Wigderson provided a series of foundational results about parallel computing models. This includes the first RNC algorithm for constructing a perfect matching in a graph with Karp and Upfal, the first NC algorithm for finding a maximal independent set in a graph with Karp, and a number of fundamental lower bound results. With Reingold, Vadhan and Capalbo, Wigderson gave the first efficient combinatorial constructions of expander graphs, an important class of highly connected sparse graphs. Before this work, only algebraic constructions had been known. Wigderson’s development of combinatorial expander constructions enabled a series of important subsequent results including Reingold’s deterministic logspace algorithm for st-connectivity.
* 2018 Paris Kanellakis Theory and Practice Award:  **Pavel Pevzner** has been named the 2018 ACM Paris Kanellakis Theory and Practice Award recipient for pioneering contributions to the theory, design, and implementation of algorithms for string reconstruction and to their applications in the assembly of genomes. He made fundamental contributions to the theoretical study of string algorithms and to their application to scalable reconstruction of genomes and other biological sequences such as antibodies and antibiotics.
* 2019 Edsger W. Dijkstra Prize in Distributed Computing: "Randomized Distributed Edge Coloring via an Extension of the Chernoff–Hoeffding Bounds” by **Alessandro Panconesi** and **Aravind Srinivasan** (originally published in PODC 1992).
* 2019 SIGACT Distinguished Service Award: The award this year was given to **Rebecca Wright** for her 11-year leadership of DIMACS, particularly in continuing and expanding the research and educational missions of DIMACS, for promoting diversity in computer science, and for using her expertise in privacy and security to help shape public policy on a national level.

A successful researcher in privacy and security, Wright joined DIMACS as Deputy Director in 2007 and served as Director from 2011 to 2018. DIMACS started as an NSF Science and Technology Center during the period 1989-2000. Since then DIMACS has had to rely on a series of individual grants and gifts to sponsor its programs, including its special foci, curriculum development projects and postdoctoral research program. Wright has worked closely with NSF program directors and other sponsors to ensure continued support of these programs.

Wright established two new education programs that engage women in computer science. The Douglass-SAS-DIMACS Computer Science Living-Learning Community for Women brings first-year undergraduate women at Rutgers who have strong interest in computer science into an immersive education environment, including a shared living space and academic experiences. The Douglass-DIMACS Computing Corps, now largely led by its membership of Rutgers undergraduate women, carries out computing activities with local middle schools and Girl Scout troops. Wright has expanded DIMACS programs that work with K-12 educators in the region.

Wright has helped harness theoretical computer science for the public good. She has worked extensively on privacy and security issues in voter registration databases, through the National Research Council's Committee on State Voter Registration Databases, the ACM's US Public Policy Council, and the Privacy and Technology Advisory Board of the Electronic Registration Information Center.

Wright serves on the CRA-W and the Simons Foundation Mathematical and Physical Sciences Advisory Board. She briefed the US Senate’s Diversity in Tech Caucus in 2016 as a representative of CRA-W and leads the CRA-W’s efforts in cosponsoring the SWSIS Scholarships for Women Studying Information Security program.

* SIGACT made 40 student travel awards to allow students to attend the 2019 STOC conference. In addition, we provided financial assistance to several other conferences for student travel support as well.

In addition, SIGACT has standardized the deadlines for nominations of awards.

**2. Significant papers on new areas published in proceedings**

Below we highlight some of the “Best Paper” award winners from two SIGACT sponsored conferences.

**STOC 2019**

The ACM Symposium on Theory of Computing covers much of computer science theory.

Wojciech Czerwinski, Slawomir Lasota, Ranko Lazic, Jerome Leroux and Filip Mazowiecki, in their paper “The Reachability Problem for Petri Nets is Not Elementary,” which won a Best Paper Award.

Nima Anari, Kuikui Liu,  Shayan Oveis Gharan, and Cynthia Vinzant, in their paper “Log-concave polynomials II: High dimensional walks and an FPRAS for counting bases” which won a Best Paper Award.

Ran Raz and Avishay Tal, in their paper “Oracle separation of BPQ and PH” which won a Best Paper Award.

The Danny Lewin Best Student Paper award at STOC 2019 was given to Lijie Chen and Roei Tell for their paper entitled “Bootstrapping Results for Threshold Circuits Just Beyond Known Lower Bounds”. This paper shows that seemingly-slight improvements in currently-known lower bounds on the size of depth-*d* threshold circuits would suffice, in order to answer some longstanding questions in circuit complexity.

**SODA 2019**

ACM-SIAM Symposium on Discrete Algorithms is a major conference that focuses on algorithms and combinatorics.

Sepehr Assadi, Yu Chen, and Sanjeev Khanna, in their paper “Sublinear Algorithms for (Δ+1) Vertex Coloring,” which won a Best Paper Award, designed algorithms for graph coloring in several canonical classes of sublinear algorithms including graph streaming, sublinear time, and massively parallel computation algorithms.

**3. Significant programs that provided a springboard for further technical efforts**

SIGACT sponsored or co-sponsored a number of important conferences including the Symposium on Theory of Computation (STOC), Symposium on Principles of Distributed Computing (PODC), Symposium on Parallel Algorithms and Architectures (SPAA), and Symposium on Discrete Algorithms (SODA).

SIGACT also supports several conferences in-cooperation including Symposium on Principles of Database Systems (PODS), Symposium on Foundations of Computer Science (FOCS), and Symposium on Principles of Programming Languages (POPL).

SIGACT helped support the creation of Algorithmic Principles of Computer Systems (APOCS) a conference co-located with the ACM-SIAM SODA Conference in Jan 2020 and also supported “Symposium on 50 Years of Complexity Theory: A Celebration of the Work of Stephen Cook” in Toronto in May 2019.

**4. Innovative programs which provide service to our technical community**

The Committee for the Advancement of Theoretical Computer Science (CATCS), sponsored by SIGACT, continues to be very active. The committee meets by conference call every month and has developed and executed action plans to increase the visibility of theoretical computer science and to increase the funding base for theory of computation at the NSF. The Committee has helped advise the NSF CCF Director and other NSF officers on several matters including recruiting for positions within. The committee has also been working to obtain a more detailed and complete picture of the state of academic employment in theoretical computer science within the broad range of US research universities. Having Shuchi Chawla be the chair of CATCS, and be on the SIGACT EC has resulted in a close co-operation between the two groups.

SIGACT continues to support student attendance at SODA and STOC by funding Student Best Paper Awards, travel, lunches, and reduced registration fees. SIGACT has also provided additional student support for all of its other sponsored and co-sponsored conferences this year. This helps ensure that the maximum number of students can attend these conferences.

SIGACT has co-sponsored the SIGACT CRA-W Grad Cohort Workshop and the Women in Theory Workshop.

**5. Significant new initiatives**

The major conference run through SIGACT is the Symposium on Theory of Computation (STOC). For the second year, we attempted a major expansion of STOC, under the label “TheoryFest”. The change lengthened the program to 5 days. While it remained 3 days of paper presentations, we increased to three parallel sessions to allow a modest increase in accepted papers. There was a day of tutorials and workshops; a panel session on directions in theory; poster sessions in some evenings; and a large number of invited speakers across a number of areas. Again the event seemed successful, in that there was strong feedback that the event was well enjoyed by the participants. We did see an increase in the number of attendees, but it was less than we had desired. We are planning to keep this format in future years, and will have to evaluate as we continue how the new format is working. In particular, we may have to raise conference rates in order to balance the budget for the conference under the new framework. As the current conference fees are very low, this should not be problematic.

Challenges to this approach are that it requires a great deal more volunteer effort and organization, and is significantly more expensive. We have aimed to keep registration fees low, but in future years this may require increases in registrations costs for the conference to maintain financial stability.

**6. Summary of key issues that the membership of the SIGACT will have to deal with in the next 2-3 years**

Funding and articulating the importance of theoretical computer science are perennial

issues that are being addressed by the Committee for the Advancement of Theoretical

Computer Science (CATCS) in conjunction with SIGACT. We have effectively fundraised to increase the Knuth prize from $5,000 to $10,000 thanks to a private donor (for the next three years). We might have to fund raise additional funds for future years. The SIGACT Service Award was increased from $1,000 to $3,000.

Membership in SIGACT has been flat. Since generally there are minimal specific benefits for SIGACT membership after joining the ACM, this is perhaps not surprising. We also need to think about ways to simply offer a lifetime membership.

Another key issue relates to open access. By and large, the community is deeply supportive of open access and is encouraged by recent efforts by the ACM to make conference papers more readily and freely accessible. A natural consequence of this may be decreased funding for SIGACT through the ACM Digital Library program, which provides the bulk of our discretionary budget.

**6. Volunteer Development Process**

SIGACT now has a number of sub committees working to improve diversity in TCS, by running the STOC Theory Women Workshop (Barna Saha, Sofya Raskhodnikova and Virginia Vassilevska Williams) and as well as a sub-committee to identify top new papers for coverage in CACM (Research Highlights) consisting of Aleksander Madry (chair), Boaz Barak, Mary Wooters and Omer Reingold. We hope to recruit more volunteers for other activities. Amit Sahai has kindly taken on the role of co-ordinating awards. We do need a sub-committee to solicit for conference locations for STOC. Right now this is handled by the SIGACT EC.

**SIGAda Annual Report**

**July 2018 - June 2019
Submitted by: Drew Hamilton, Chair**

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**AWARDS**

Started in 1994, the ACM SIGAda Awards recognize individuals and organizations that have made outstanding contributions to the Ada community and to SIGAda. This year one of the awards was renamed in honor of Robert Dewar, a key contributor to the Ada community and a co-founder of Ada Core Technologies, who died in 2015. The “Robert Dewar Award for Outstanding Ada Community Contributions” is given for broad, lasting contributions to Ada technology and usage. The SIGAda Distinguished Service Award is given for exceptional contributions to SIGAda activities and products.

This year the **Robert Dewar Award for Outstanding Ada Community Contributions** was awarded to Brad Moore, the author of concrete open-source artifacts in Ada, most significantly "Paraffin," a suite of Ada 2012 generics that facilitate iterative and recursive parallelism for multicore systems, and provides safer recursion for single and multicore systems. He has also been a vocal proponent of creating new support for parallelism in Ada, which will be integrated in the next version of the language. Moore has also been a contributor to the Ada standardization and language maintenance process, and has been an author and tutorial presenter in various conferences and workshops including Ada-Europe, SIGAda and the International Real- Time Ada Workshop (IRTAW)--where he also served as the 2018 Program Chair.

The **ACM SIGAda Distinguished Service Award** was awarded to John A Hamilton, Jr., a member of SIGAda since 1988, has been an active and influential organizer of SIGAda initiatives for decades. A former Lieutenant Colonel in the United States Army, Hamilton served as the Chair of the Ada Software Engineering Education Team (ASEET). ASEET provided education and training in Ada at all US service academies and military training centers. His service with ASEET also included chairing several conferences. As the last Director of the Ada Joint Program Office, Hamilton facilitated the transfer of Ada technology from the government to the private sector. Hamilton is also recognized for authoring several influential publications and developing lecture notes, exams and projects that have been used widely in Ada education. He is currently serving as Chair of SIGAda through 2021.

**CONFERENCES/WORKSHOPS**

* **HILT (High Integrity Language Technology) 2018**

The SIGAda Executive Committee has decided to continue a two-year cycle for High-Integrity Language Technology (HILT) events.

The HILT series of conferences and workshops focuses on the use of High Integrity Language Technology to address challenging issues in the engineering of software-intensive critical systems. The fifth event was held 5-6 Nov 2018 in Boston, MA. We anticipate the next HILT will be conducted in Fall 2020 with a continued emphasis on programming language security with the objective of expanding our audience and increasing cross-over attendance from the other co-located conferences. The National Security Agency has expressed interest in expanding secure programming techniques and we will look at including a track in HILT 2020 to support the NSA academic community.

The High Integrity Language Technology [(HILT) 2018 Workshop](http://sigada.org/conf/hilt2018) focused on the cyber-resilience needs of critical software systems, where such a system must be trusted to maintain a continual delivery of services, as well as ensuring safety in its operations. Such needs have common goals and shared strategies, tools, and techniques, recognizing the multiple interactions between security and safety.

HILT encouraged papers and extended abstracts relating to:

* Language features that can be used to build security and/or safety into software-intensive systems; Approaches to apply effectively the emerging technologies of AI and Machine Learning in critical software systems;
* Mechanisms that can be used to understand, certify, and manage systems that are “data driven,” relying on “soft code,” where control flow and algorithms are expressed using data rather than “hard code” expressed directly in programming languages;
* Extending contract-based programming to specifying security resistance and resilience properties as well as safety and/or correctness properties;
* Strategies to minimize risk when applying complex software requirements to cyber-physical systems;
* Modeling and/or programming language features and analysis techniques that aid in code analysis and verification and that increase the level of abstraction and expressiveness;
* Language features that support continuous requirements maturation to support evolving needs, particularly in cyber-physical systems, while ensuring that security and safety properties are preserved.

This workshop was designed as a forum for communities of researchers and practitioners from academic, industrial, and governmental settings, to come together, share experiences, and forge partnerships focused on integrating and deploying tool and language combinations to address the challenges of building cyber-resilient software-intensive systems. The workshop was a combination of presentations and panel discussions, with several invited speakers.

Workshop Co-Chairs

* Bill Bail, MITRE
* Tucker Taft, AdaCore, Inc

Organizing Committee

* Dirk Craeynest, ACM SIGAda International Representative, KU Leuven
* Drew Hamilton, Chair, ACM SIGAda, Mississippi State University, CCI
* Clyde Roby, Secretary-Treasurer, ACM SIGAda, Institute for Defense Analyses
* Alok Srivastava, Editor, ACM Ada Letters, Engility Corp.
* Ricky E. Sward, Past Chair, ACM SIGAda, MITRE

URLs:

* SPLASH 2018: [http://www.splashcon.org](http://www.splashcon.org/)
* HILT 2018 Information: <http://sigada.org/conf/hilt2018>
* HILT 2018 Submissions: <https://hilt18.hotcrp.com/>
* ACM SIGAda: [http://sigada.org](http://sigada.org/)

**Ada Letters**

Under the leadership of Alok Srivastava, we continue to publish Ada Letters. The current issue is at ACM for publication. SIGAda and Ada-Europe in particular have been discussing additional ways to coordinate our activities and share content across our user publications, to ensure efficient and effective connections to the industrial and academic computer science and information technology communities. We completed our first iteration of including selected Ada-Europe content into *Ada Letters.*

We will continue to publish two to three issues of the Ada Letters newsletter each year, seek participation in the form of contributing articles and papers, and publish special issues providing archived proceedings for both the HILT and IRTAW workshops.

**PROGRAMS**

* **Significant Programs that provided a springboard for further technical efforts**

A formal liaison exists between SIGAda and ISO WG9. ISO/IEC JTC1/SC22 WG9 is that body of international representatives responsible for the maintenance and evolution of the Ada International Standard. The National Bodies represented on WG9 have included Belgium, Canada, France, Germany, Italy, Japan, Switzerland, the United Kingdom, and the United States.

In March 2007 the ISO (the International Organization for Standardization) in Geneva, Switzerland announced the formal completion of the process to revise the Ada 95 language, with the publication of the Ada 2005 standard — officially named ISO/IEC 8652:1995/Amd 1:2007. This announcement culminates a collaborative international effort under ISO's Ada Working Group (WG9) to enhance the 1995 version of the Ada language.

In November 2012, ISO (the International Organization for Standardization) in Geneva, Switzerland, announced the successful 14-0 ballot on the final draft of the Ada 2012 Standard, the document arising from the collaborative international process under ISO's Ada Working Group (WG9) to revise the Ada 2005 standard.  The official publication of Ada 2012 occurred in December 2012 -- officially named ISO/IEC 8652:2012.

The ISO WG9 working group has semi-annual meetings of WG 9 scheduled to coincide with the major conferences organized by ACM SIGAda and Ada-Europe. Officials of both organizations are active participants in the work of WG 9. Both groups have the status of Category C liaison with WG 9.

In January 2019, Technical Report 24772-2 (Guidance to avoiding vulnerabilities in programming languages – Vulnerability descriptions for the programming language Ada) was successfully balloted and forwarded to WG23 for publication.

At least one SIGAda Officer participates and represents the membership at the WG9 meetings held twice each year. This year the meetings were in Boston, MA (at the SIGAda HILT 2018 workshop) and at the 2019 Ada Europe conference in Warsaw, Poland. Tucker Taft (Vice Chair) represented SIGAda for these meetings and in the balloting.

* **Innovative Programs which provide service to some part of our technical community**

Since 1994 SIGAda has conducted an “Ada Awareness Initiative.” It includes our SIGAda professional booth display unit in exhibition halls at important software engineering conferences, as well as encouraging other Ada awareness activities, such as the “Make with Ada” contest sponsored by AdaCore, and an Ada “room” at the annual FOSDEM open source conference in Belgium. These activities let folks know that Ada is very much alive and a sound part of any software engineering effort having real-time, high integrity, high-assurance, and highly distributed requirements.

At the SIGAda booth, SIGAda provides various Ada-advocacy materials and makes available Ada experts (our booth staff volunteers) who can intelligently answer questions, provide pointers and help, and debunk the misinformation about Ada that many attendees at these events have. These programs continue to be successful and are viewed as an important thrust by the SIGAda membership.

A primary motivation for the fiscal health of SIGAda is to be able to continue these outreach efforts.

**FUTURE ISSUES**

* **Summary of key issues to deal with in the next 2-3 years**

As security issues become more and more urgent in the software industry, there has been increased attention on formal methods as a way to reduce security vulnerabilities within system software. The contract-based programming features of Ada 2012 have emerged as a very successful addition to the safety- and security-oriented features of Ada, allowing Ada to remain on the vanguard of technologies to address the growing security challenge. Over the next 2 years, SIGAda will continue to work with Ada tool vendors and other Ada-oriented organizations such as the Ada Resource Association, Ada-Europe, and the International Ada Real-Time Workshop (IRTAW) to increase the awareness of Ada and its value to the industrial community, which is facing growing security threats.

To summarize, SIGAda is focused on providing the greatest return on investment to our members by continuing our efforts to expand and improve our value to our membership.

* **SIGAda conference and workshop activity**

As mentioned above, the SIGAda executive committee has decided to continue a bi-annual workshop schedule, with the next SIGAda/HILT workshop planned for fall of 2020, focused on secure software development. In conjunction with annual Ada-Europe conferences and bi-annual IRTAW workshops, we believe this schedule best fits the scale of the Ada community, and the monetary and organizational resources of ACM SIGAda.

**SIGAI Annual Report**

**July 2018 - June 2019
Submitted by: Sven Koenig, Chair**

Sven Koenig (elected; ACM SIGAI Chair)

Sanmay Das (elected; ACM SIGAI Vice-Chair)

Rosemary Paradis (elected; ACM SIGAI Secretary/Treasurer)

John Dickerson (elected; ACM SIGAI Labor Market Officer)

Yolanda Gil (appointed; ACM SIGAI Past Chair)

Katherine Guo (appointed; ACM SIGAI Membership and Outreach Officer)

Benjamin Kuipers (appointed; ACM SIGAI Ethics Officer)

Iolanda Leite (appointed; ACM SIGAI Newsletter Editor-in-Chief)

Hang Ma (appointed; ACM SIGAI Information Officer)

Nicholas Mattei (appointed; ACM SIGAI AI and Society Officer)

Amy McGovern (appointed; ACM SIGAI Newsletter Editor-in-Chief)

Larry Medsker (appointed; ACM SIGAI Public Policy Officer)

Todd Neller (appointed; ACM SIGAI Education Activities Officer)

Marion Neumann (appointed; ACM SIGAI Diversity Officer)

Plamen Petrov (appointed; ACM SIGAI Industry Liaison Officer)

Michael Rovatsos (appointed; ACM SIGAI Conference Coordination Officer)

David Stork (appointed; ACM SIGAI Award Officer}

**Abstract**

We are happy to present the annual activity report of the ACM Special Interest Group on AI (ACM SIGAI), covering the period from July 2018 to June 2019.

The scope of ACM SIGAI consists of the study of intelligence and its realization in computer systems (see also its web-site at \texttt{sigai.acm.org}). This includes areas such as

*autonomous agents, cognitive modeling, computer vision, constraint programming, human language technologies, intelligent user interfaces, knowledge discovery, knowledge representation and reasoning, machine learning, planning and search, problem solving and robotics.*

Members come from academia, industry and government agencies worldwide. ACM SIGAI recently added two new ACM SIGAI chapters, namely one professional chapter in Laguna Nigel (USA) and one student chapter at the SRM Institute of Science & Technology in Chennai.

ACM SIGAI also added two new officers this year to be able to serve its membership better, namely Iolanda Leite from the Royal Institute of Technology (Sweden) as second newsletter editor-in-chief and Marion Neumann from Washington University in St. Louis (USA) as diversity officer, thus increasing diversity in the ACM SIGAI leadership committee by increasing both the number of international officers and the number of female officers and also furthering the internationalization of the ACM SIGAI newsletter. Marion will be covering diversity also as part of the ACM SIGAI newsletter. ACM SIGAI started officers meetings at major AI conferences already in 2018 and continued the new practice in 2019 (so far at the AAAI Conference), in addition to all-officers teleconferences and a monthly ACM SIGAI leadership teleconference.

**Meetings**

ACM SIGAI decided to participate on a trial basis in ACM's voluntary carbon-offset program for conferences. Introduction of this scheme will give conference participants the option of making voluntary contributions to offset the carbon footprint of their trips to conferences when they register online. ACM SIGAI plans to test this scheme at upcoming editions of the AAAI/ACM AI, Ethics and Society (AIES) and ACM Intelligent User Interfaces (IUI) conferences in cooperation with AAAI and SIGCHI, respectively, and hopes that it will enable the ACM SIGAI and wider ACM membership to contribute to the environmental sustainability of our communities.

ACM SIGAI continues to support AIES, which it co-founded in 2017 to fill a scientific void. As AI is becoming more pervasive in our lives, its impact on society is more significant, raising ethical concerns and challenges regarding issues such as value alignment, safety and security, data handling and bias, regulations, accountability, transparency, privacy and workforce displacement. Only a multi-disciplinary and multi-stakeholder effort can find the best ways to address these concerns, by including experts from various disciplines, such as ethics, philosophy, economics, sociology, psychology, law, history and politics. AIES was co-located with AAAI 2019 in Honolulu and will again be co-located with AAAI 2020 in New York City.

ACM SIGAI sponsored the following conferences in addition to AIES 2019:

* WI 2018
* ASE 2018
* IVA 2018
* HRI 2019
* IUI 2019

and it will sponsor the following conferences coming up in 2019 and 2020:

* IVA 2019
* K-CAP 2019
* ASE 2019
* WI 2019
* ASE 2020
* HRI 2020
* IUI 2020

ACM SIGAI approved the following in-cooperation and sponsorship requests from events covering a wide thematic and geographical range across the international AI community:

* iWOAR 2018
* ICPRAM 2018
* IEA/AIE 2019
* FW 2018
* BIOSTEC 2019
* RecSys 2019
* FW 2019
* ICAART 2019
* AAMAS 2019
* iWOAR 2019
* KMIKS 2019
* ICPRAM 2019
* FDG 2019
* ICAIL 2019
* IC3K 2019
* IJCCI 2019
* IEA/AIE '20
* AAMAS 2020

ACM SIGAI also organizes -- jointly with the Association for the Advancement of AI (AAAI) -- the annual joint job fair at the AAAI conference, where attendees can find out about job and internship opportunities from representatives from industry, universities and other organizations. The AAAI/ACM SIGAI job fair was held at AAAI 2019 in Honolulu, co-organized by the ACM SIGAI labor market officer.

Twenty-six employers formally attended, while a handful of exhibitors who did not formally sign up also took part. Hundreds of CVs and resumes were collected before, during and after the job fair from students, post-doctoral researchers and other job seekers via the job fair web-site; these were shared with interested employers. This year, the organizers also purchased a dedicated domain (\texttt{aaaijobfair.com}) to allow present and future firms and participants to view previous iterations of the job fair. The ACM SIGAI labor market officer believes that we can use insights from AI to create an even better functioning job market and works actively toward designing the job market of the future. Toward that end, he has begun to gather requirements with a large number of chairs of top computer science departments in the USA as well as in Israel and Europe and is working to formulate a model that will be translated into a larger job fair (in terms of participating employers as well as applicants) in the near future.

ACM SIGAI also co-sponsors -- jointly with AAAI -- the annual joint doctoral consortium at the AAAI conference, which provides an opportunity for Ph.D. students to discuss their research interests and career objectives with the other participants and a group of established AI researchers who act as their mentors. The AAAI/ACM SIGAI doctoral consortium was held at AAAI 2019 in Honolulu.

**Awards**

ACM SIGAI sponsors the ACM SIGAI Autonomous Agents Research Award, an annual award for excellence in research in the area of autonomous agents. The recipient is invited to give a talk at the International Conference on Autonomous Agents and Multiagent Systems (AAMAS). The 2019 ACM SIGAI Autonomous Agents Research Award was presented at AAMAS 2019 in Montreal to Carles Sierra, the vice-director of the AI Research Institute of the Spanish National Research Council, for seminal contributions to research on negotiation and argumentation, computational trust and reputation and artificial social systems.

ACM SIGAI also sponsors the ACM SIGAI Industry Award for Excellence in AI, a new annual award which is given annually to an individual or team in industry who created a fielded AI application in recent years that demonstrates the power of AI techniques via a combination of the following features: novelty of application area, novelty and technical excellence of the approach, importance of AI techniques for the approach and actual and predicted societal impact of the application. The inaugural ACM SIGAI Industry Award for Excellence in AI will be presented at the International Joint Conference on AI (IJCAI) 2019 in Macau to the Real World Reinforcement Learning Team from Microsoft for the identification and development of cutting-edge research on contextual-bandit learning, the manifest cooperation between research and development efforts, the applicability of the decision support throughout the broad range of Microsoft products and the quality of the final systems.

ACM SIGAI also recently created -- jointly with AAAI -- the joint AAAI/ACM SIGAI Doctoral Dissertation Award to recognize and encourage superior research and writing by doctoral candidates in AI. This new annual award will be presented at the AAAI Conference on AI in the form of a certificate and is accompanied by the option to present the dissertation at the AAAI conference as well as to submit a six-page summary to both the AAAI proceedings and the ACM SIGAI newsletter. The nomination deadline for the inaugural AAAI/ACM SIGAI Doctoral Dissertation Award will be announced later this year and is expected to be in late Fall 2019.

**Public Policy Activities**

ACM SIGAI promotes the discussion of policies related to AI through posts in the AI Matters blog, helps to identify external groups with common interests in AI public policy, encourages ACM SIGAI members to partner in policy initiatives with these organizations, disseminates public policy ideas to the ACM SIGAI membership through articles in the ACM SIGAI newsletter and ensures that every technologist is educated, trained and empowered to prioritize ethical considerations in the design and development of autonomous and intelligent systems. ACM SIGAI participates in the ACM US Technology Policy Committee (ACM USTPC), formerly USACM, via the ACM SIGAI public policy officer and in a variety of other policy efforts, including those of other societies (such as the IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems). ACM USTPC addresses US public policy issues related to computing and information technology and regularly educates and informs US Congress, the US Administration and the US courts about significant developments in the computing field and how those developments affect public policy. For example, the ACM SIGAI public policy officer joined the comments of ACM USTPC on the draft of the "20-Year Roadmap for AI Research in the US" of the Computing Community Consortium. He also studies how organizations collect and analyze data and whether these practices are consistent with recommendations by the USTPC working group on algorithmic accountability, transparency and bias. He represented ACM SIGAI via his talks "Future of Work, AI Education, and Public Policy" at EAAI 2019 and "Transparency, Accessibility, and Ethics in AI" at Dalhousie University in 2019. He was also the moderator of the panel "Are We Ready for AI" at the Annual Consumer Assembly of the Consumer Federation of America in 2019.

**Educational Activities**

ACM SIGAI held a second ACM SIGAI Student Essay Contest focused on AI ethics (organized by the ACM SIGAI AI and society officer), after the success of the first such competition in 2017. Students could win cash prizes of US\$500 or Skype conversations with senior AI researchers from academia or industry (including the director of Microsoft Research Labs and the director of research at Google) if their essays provided good answers to one or both of the following topic areas (or any other question in this space that they considered important):

* What requirements, if any, should be imposed on AI systems and technology when interacting with humans who may or may not know that they are interacting with a machine? For example, should they be required to disclose their identities? If so, how?
* What requirements, if any, should be imposed on AI systems and technology when making decisions that directly affect humans? For example, should they be required to make transparent decisions? If so, how?

This year, ACM SIGAI received 18 submissions, of which eight were selected for publication and prizes. The winning essays are listed below in alphabetical order by author. ACM SIGAI intents to hold a third ACM SIGAI student Essay Contest later this year.

* Janelle Berscheid and Francois Roewer-Despres -- \emph{Beyond Transparency: A Proposed Framework for Accountability in Decision-Making AI Systems}
* Gage Garcia -- \emph{AI Education: A Requirement for a Strong Democracy}
* Alexander Hilton -- \emph{AI: The Societal Responsibility to Inform, Educate, and Regulate}
* Michelle Seng Ah Lee -- \emph{Context-Conscious Fairness in Using Machine Learning to Make Decisions}
* Yat Long Lo, Chung Yu Woo and Ka Lok Ng -- \emph{The Necessary Roadblock to Artificial General Intelligence: Corrigibility}
* Grace McFassel -- \emph{Embedding Ethics: Design of Fair AI Systems}
* Matthew Sun and Marissa Gerchick -- \emph{The Scales of (Algorithmic) Justice: Tradeoffs and Remedies}
* Annie Zhou -- \emph{The Intersection of Ethics and AI}

ACM SIGAI supported the "Birds of the Feather" undergraduate research challenge organized by the ACM SIGAI education officer at the Symposium on Educational Advances in AI (EAAI) 2019. Six research and liberal arts institutions participated with seven papers and one poster presentation that passed peer review. ACM SIGAI contributed US\$500 of award funding for the best papers. The ACM SIGAI education officer intends to announce a Gin Rummy undergraduate research challenge at EAAI 2020.

ACM SIGAI also started discussions with the ACM Special Interest Group on Computer Science Education (ACM SIGCSE) on a collaboration for disseminating pointers to resources for AI educators and creating incentives for the production and dissemination of assignments on AI ethics.

**Member Communication**

ACM SIGAI communicates with its members via email announcements, the ACM SIGAI newsletter "AI Matters," the AI Matters blog and webinars:

ACM SIGAI maintains a more than 4,000 email address long mailing list for AI-related announcements to its members and friends.

ACM SIGAI publishes four issues of its newsletter AI Matters per year. The ACM SIGAI newsletter is distributed via the ACM SIGAI mailing list but also openly available on the ACM SIGAI web-site (at \texttt{sigai.acm.org/aimatters/}). AI Matters features articles of general interest to the AI community and added not only an additional editor-in-chief but also additional column editors in the past year. Recent columns, led by these and other column editors, have included AI Interviews (organized by the ACM SIGAI diversity officer), AI Amusements, AI Education (written or organized by the ACM SIGAI education officer), AI Policy Issues (written by the ACM SIGAI public policy officer) and AI Events (written by the ACM SIGAI conference coordination officer). The editors-in-chief have recently added an AI crossword puzzle (thanks to Adi Botea from IBM's Ireland Research Laboratory) and are about to add a column on current research trends in AI, written by recent grantees of research funds (such as NSF CAREER or European Research Council awards). AI Matters has also started to publish the winning student essays of the second ACM SIGAI Student Essay Contest.

ACM SIGAI also maintains an AI Matters blog (at \texttt{sigai.acm.org/aimatters/blog/}) as a forum for important announcements and news. For example, the ACM SIGAI public policy officer posts new information every two weeks in the blog to survey and report on current AI policy issues and raise awareness about the activities of other organizations that share interests with ACM SIGAI.

After a hiatus due to the illness of one of the organizers, ACM SIGAI recently re-started the ACM SIGAI webinars with a webinar on "Advances in Socio-Behavioral Computing" and several more in preparation. The webinars are streamed live but the videos can still be watched on demand at \texttt{learning.acm.org/webinar/}.

 ACM SIGAI is also a founding member of AI Hub (at \texttt{aihub.org}), a new non-profit sibling to Robohub (at \texttt{robohub.org}) dedicated to connecting the AI communities of the world by bringing together experts in AI research, start-ups, business and education from across the globe. Content-area specialists will curate all incoming AI news articles to make sure that reporting is truthful, fair and balanced, and in-house editors will ensure that all content meets the highest editorial standards for language and clarity. AI Hub is expected to come online in Summer or Fall 2019. ACM SIGAI will provide content to AI Hub and, conversely, AI Hub will provide AI news to the ACM SIGAI members.

 **Financial Member Support**

 ACM SIGAI so far had concentrated its financial support on travel scholarships to ACM SIGAI student members to allow them to attend conferences if they are otherwise missing the financial resources to do so. The amounts of the scholarships vary but are generally in the range of US\$1,000 to US\$10,000 per conference, depending on the conference size. The ACM SIGAI conference coordination officer recently started to test a new open student award travel scheme. Beyond providing a ringfenced allocation to specific conferences, he created a process by which any ACM SIGAI student member who intends to attend an ACM (and, in exceptional cases, even a non-ACM) event can apply for travel support through the ACM SIGAI web-site. In the first few months since the inception of the scheme, students have already been offered financial support of about US\$8,000 in total.

ACM SIGAI also recently created the AI Activities Fund, a new initiative to empower ACM SIGAI members and friends to organize activities with a strong outreach component to either students, researchers or practitioners not working on AI technologies or to the public in general. The purpose of the inaugural call for funding proposals was to help ACM SIGAI members and friends to promote a better understanding of current AI technologies, including their strengths and limitations as well as their promise for the future. Examples of fundable activities included (but were not limited to) AI technology exhibits or exhibitions, holding meetings with panels on AI technology (including on AI ethics) with expert speakers, creating podcasts or short films on AI technologies that are accessible to the public and holding AI programming competitions. ACM SIGAI was looking for evidence that the information presented by the activities would be of high quality, accurate, unbiased (for example, not influenced by company interests) and at the right level for the intended audience. The inaugural call for proposals supported the following initiatives: a workshop on "AI for All using the R Programming Language" organized by the Indian Institute of Technology in Goa, the "Bee Network of AI" organized by the Universidad Mayor in Chile and "Co-Opting AI: Public Conversations about Design, Inequality and Technology" organized by New York University.

**Additional Member Services**

ACM SIGAI also supports its members in additional ways. For example, it nominates them for awards or supports their nominations. ACM SIGAI is proud of the fact that many AI researchers in the past year received ACM honors, such as becoming ACM senior members, distinguished members and fellows as well as receiving other awards. Three AI researchers received the A.M. Turing Award in 2018.

ACM SIGAI also actively supports the Research Highlight Track of the Communications of the ACM (CACM) by nominating publications of recent, significant and exciting AI research results that are of interest to the computer science research community in general to the Research Highlight Track. This way, ACM SIGAI helps to make important AI research results visible to many computer scientists.

Additional ACM SIGAI membership benefits include reduced registration fees at many of the co-sponsored and in-cooperation conferences and access to the proceedings of many of these conferences in the ACM Digital Library.

**Planning for the Future**

ACM SIGAI held elections for a new chair, vice chair and secretary/treasurer in Spring 2019. Sanmay Das (the current ACM SIGAI vice chair) was elected ACM SIGAI chair, Nicholas Mattei (the current ACM SIGAI AI and society officer) was elected ACM SIGAI vice-chair, and John Dickerson (the current ACM SIGAI labor market officer) was elected ACM SIGAI secretary/treasurer. Sven Koenig (the current ACM SIGAI chair) will transition to his new role as ACM SIGAI past chair. We are looking forward to the new leadership committee shaping the future of ACM SIGAI. In general, ACM SIGAI intends to reach out to more AI groups worldwide that could benefit from ACM support, such as providing financial support, making the proceedings widely accessible in the ACM Digital Library and providing speakers via the ACM Distinguished Speakers program. ACM SIGAI also intends to reach out more to other disciplines that share an interest in AI, for example, in terms of research methodologies or applications.

**SIGAPP Annual Report**

**July 2018 - June 2019
Submitted by: Jimon Hong, Chair**

**SIGAPP Mission**

The SIGAPP mission is to further the interests of the computing professionals engaged in the development of new computing applications and applications areas and the transfer of computing technology to new problem domains.

**SIGAPP Officers**

 Chair - Jiman Hong, Soongsil University, Seoul, Korea

 Vice Chair – Tei-Wei Kuo, National Taiwan University, Taiwan

 Secretary – Alessio Bechini, University of Pisa, Pisa, Italy

 Treasurer – JungYeop (John) Kim, Utica College, USA

 Immediate Past Chair – Sung Y. Shin, South Dakota State University

 Web Master - Hisham Haddad, Kennesaw State University, USA

 ACM Program Coordinator, Irene Frawley, ACM HQ

**Status of SIGAPP**

The main event that took place within SIGAPP for this year was the Symposium on Applied Computing (SAC) in Limassol, Cyprus after taking place in Pau, French. This year's SAC was very successful. More details about SAC will follow in the next section.

We have a 50% co-sponsored conference, 2019 Proactive and Experience in Advanced Research Computing Conference (PEARC 2019) which was held in Chicago, IL, USA in July 2019. We also had a 20% co- sponsored conference, 2018 Reliable and Convergent Systems (RACS 2018) which was held in Honolulu, USA in October 2018. The PEARC 2019 and RACS 2018 was also successful, and have been beneficial for SIGAPP. We will continue supporting PEARC and RACS in the coming years. In addition, RACS will be full sponsored Conference from 2019 and SIGAPP will have two full sponsored conferences, SAC and RACS.

ACR is now stabilized, and we have begun publishing quarterly electronically since spring of 2012. Ultimately, we would like to have ACR appear in the SCI (Science Citation Index). ACR contains invited papers from world-renowned researchers and selected papers presented by prominent researchers and professionals who attended the SAC 2019 in Limassol, Cyprus. The selected papers have been expanded, revised, and peer-reviewed again for publishing in ACR. The next issue will be published in fall of 2019. We hope that ACR will serve as a platform for many new and promising ideas in the many fields of applied computing. It is strongly related to nearly every area of computer science, and we feel an obligation to serve the community as best we can. The papers in ACR represent the current applied computing research trends. These authors truly contribute to the state of the art in applied computing.

We have a number of In-cooperation conferences, and the list of In-cooperation conferences are below:

* ICCA ’20, International Conference on Computing Advancements, Dhaka, Bangladesh, Jan 10 – Jan. 12, 2020
* MEDES '19, 11th International Conference on Management of Emergent Digital EcoSystems, Limassol, Cyprus, 11/12/19 - 11/14/19
* ECBS '19, 8th European Conference on the Engineering of Computer Based Systems, Bucharest, Romania, 09/02/19 - 09/03/19
* SBSI ’19 , 15th Brazilian Symposium on Information Systems, Aracaju, Brazil, 05/20/19 - 05/24/19
* ENASE '19, 14th International Conference on Evaluation of Novel Approaches to Software Engineering, Heraklion, Crete, Greece 05/04/19 - 05/05/19
* SENSORNETS '19 8th International Conference on Sensor Networks, Prague , Czech Republic
* ICCT '18 International Conference on Culture Technology, Shaoxing , China 11/15/18 - 11/18/18
* ICSDE '18 International Conference on Smart Digital Environment, Rabat , Morocco 10/18/18 - 10/20/18
* MEDES '18 The 10th International Conference on Management of Digital EcoSystems, Tokyo , Japan 09/25/18 - 09/28/18
* FedCSIS '18 Federated Conference on Computer Science and Information Systems, Poznan , Poland 09/09/18 - 09/12/18

**Status of SAC**

Through the expansion of benefits for our members, SIGAPP will continue to seek stable membership and strive to increase the number of members. SIGAPP’s strength and uniqueness among ACM SIGs provides great opportunity for scientific diversity, and offers a crosscutting of multiple disciplines within the ACM community.

The total number of SIGAPP members in 2019 is 485. Membership has increased over the past several years, but it has decreased temporarily in the last year. The officers look forward to continue working with the ACM SGB to further develop the SIG by increasing membership and converting the ACR to a new journal on applied computing. In addition, SIGAPP will develop mobile apps and utilize SNSs in the future to further expand and corroborate our interpersonal network, and promote the relationship between members of SIGAPP.

Member benefits provided by SIGAPP are as follows.

* Subscription to Applied Computing Review (Published quarterly);
* Reduced registration fee for SIGAPP conferences (SAC, RACS);
* CD-ROM proceedings of SAC;
* Access to all SIGAPP material in the ACM Digital Library:
* SAC conference proceedings and Applied Computing Review (ACR).

Community benefits provided by SIGAPP are as follows.

* Sponsorship of SAC and RACS conferences;
* Partial sponsorship of PEARC conferences;
* Best Paper/Poster awards at the SAC, RACS, and PEARC conferences;
* Distinguished Service Award for outstanding service to SAC and RACS;
* Student travel support to SAC and RACS;
* SIGAPP Web site, including old electronic version of Applied Computing Review.

**Fund Balances**

Fund balance has increased due in large part to the success of sponsored conferences including SAC and RACS in getting generous local supports, and the ACM DL revenue has continuously increased. The fund balance is a good evidence of the quality improvement of the SIGAPP.

|  |  |  |
| --- | --- | --- |
| **Fiscal Year** | **Fund Balances** | **Digital Lib. Revenue** |
| **Amount** | **Amount** |
| June 2018 | $760,807 | $60,046 |
| June 2017 | $721,005 | $50,545 |
| June 2016 | $671,653 | $48,983 |
| June 2015 | $692,366 | $51,688 |

**Status of SAC**

The 34th Annual edition of SAC has marked another successful event for the Symposium on Applied Computing. This international gathering attracted over 400 attendees from over 50 different countries. It was hosted by University of Cyprus, Cyprus and held at St. Raphael Resort, Limassol, Cyprus, April 2019. There was an open Call for Track Proposals and after prescreening the proposals, 46 Tracks were finally accepted for SAC 2019. The prescreening and selections were made based on the success of those Tracks in the previous SACs as well as targeting new and emerging areas. The Call for Papers for these Tracks attracted 1067 final paper submissions from 50 different countries. The submitted papers underwent the blind review process and 258 papers were finally accepted as regular papers for inclusion in the Conference Proceedings and presentation during the Symposium. The final acceptance rate for SAC 2019 is 24.2% for the overall track. The following 5 papers were awarded the Best Papers Award.

* Assessing the Functional Feasibility of Variability-Intensive Data Flow-Oriented Systems, Sami Lazreg, Philippe Collet, and Sébastien Mosser from Université Côte d'Azur, France
* On Scaling the Enumeration of the Preferred Extensions of Abstract Argumentation Frameworks, Gianvincenzo Alfano, Sergio Greco, and Francesco Parisi from University of Calabria, Italy
* Event Detection for Exploring Emotional Upheavals of Depressive People, PinHua Wu, JiaLing Koh, and Arbee L.P. Chen from National Tsing Hua University/ National Taiwan Normal University/ Asia University, Taiwan
* Logic against Ghosts: Comparison of Two Proof Approaches for a List Module
Allan Blanchard, Inria Lille, Nikolai Kosmatov, and Frédéric Loulergue from Nord Europe/Nord Europe/CEA LIST/Northern Arizona University, France/France/France/USA
* Detection of Algorithmically Generated Domain Names used by Botnets: A Dual Arms Race, Jan Spooren, Davy Preuveneers, Lieven Desmet, Peter Janssen, and Wouter Joosen from KU Leuven, Belgium
* The Effect of Gamification on Software Architecture Knowledge Management: A Student Experiment and Focus Group Study, Benjamin Mayer, and Rainer Weinreich from Johannes Kepler University, Austria

In addition to the accepted full papers, 78 papers that received high enough review scores were accepted as short papers for the Poster Program. The Student Research Competition (SRC) program, sponsored by Microsoft Research, was added from SAC 2013. The SRC program is designed to provide graduate students the opportunity to meet and exchange ideas with researchers and practitioners in their areas of interest. 57 submissions were received and finally 16 SRC contributions were actually presented in the final program. We always feel that SAC and SIGAPP provide excellent platforms for inter-discipline researchers and the following paper was re awarded the 1st Prize SRC award. We always feel that SAC and SIGAPP provide excellent platforms for inter-discipline researchers.

* Taking Stigmergy Out of the Lab and Into the Field, Slobhan Duncan, Edinburgh Center for Robotics, UK

SAC 2020 will be held in and will be hosted by Masaryk University and Red Hat Czech, Brno, Czech Republic from March 30 to April 3, 2020. The web site <http://www.sigapp.org/sac/sac2020/> has further details such as symposium committee, technical tracks, and track chairs. SAC 2021 is being considered for Iasi, Romania. A decision by the SAC steering will be made soon. To date, 2021 SAC local host proposals have been submitted from Iasi, Romania, Sydney Australia, and Dublin Ireland.

**SIGAPP Awards**

The SIGAPP Distinguished Award is given to Dr. John Kim, Utica College, Utica, NY, USA. This award is to a SIGAPP member who provided outstanding service to the Annual Symposium on Applied Computing (SAC). Dr. John Kim has held different positions in the SAC Organizing Committee and has worked hard for the success of the SIGAPP and SAC over the past 13 years.

**Significant Top 3 Programs (Events)**

1. Student Grants: We have implemented the Student Travel Award (STAP) for students who would otherwise have difficulty attending the sponsored conferences. The STAP continues to be successful in assisting SIGAPP student members in attending conferences sponsored by SIGAPP. Every year, 40~45 students have been granted awards, and $40,000~$50,000 has been spent for the students. We also hope to implement a Developing Countries Travel Award for faculty-level researchers from developing countries who would otherwise have difficulty attending the SAC conference to broaden participation either geographically. We may implement this award for the SAC 2021.

2. Chapters: Especially, far East Asian countries such as Korea, China, Taiwan, and Hong Kong are supporting the applied and convergent computing at the government level. Therefore, we have made new SIGAPP chapters in these countries and increase the number of SIGAPP members through the SIGAPP chapters. In the near future, SIGAPP Japan will be established to conduct various academic events with the existing 6 SIGAPP Chapters.

We will also support the joint seminar or small workshop between SIGAPP chapters of neighboring countries (eg. SIGAPP Korea, SIGAPP China, SIGAPP Taiwan, and SIGAPP Hong Kong) to have the opportunity to share their research works.

3. Feedback from the Participants: SAC and RACS has received feedback from the participants every year. Steering Committee of SAC, RACS and SIGAPP officers try to improve SIGAPP and sponsored conferences including SAC and RACS by analyzing the result of the feedback.

**Membership Development Process**

Membership has decreased in some years and increased in some years. The officers look forward to continue working with the ACM SGB to further develop the SIG by increasing membership and converting SIGAPP ACR, Applied Computing Review to a new journal on applied computing.

Through the expansion of benefits for our members, SIGAPP has continued to seek stable membership and strive to increase the number of members. SIGAPP’s strength and uniqueness among ACM SIGs provides great opportunity for scientific diversity, and offers a crosscutting of multiple disciplines within the ACM community.

In addition, SIGAPP will develop mobile apps and utilize SNSs in the future to further expand and corroborate our interpersonal network, and promote the relationship between members of SIGAPP.

**Volunteer Development Process**

SIGAPP’s volunteer process has been successful but we will continue to improve and establish our volunteer development process which is an essential issue for SIGAPP.

The SIGAPP Executive Committee keep looking for the new volunteer to serve the future SIGAPP officers.  We have encouraged the SIGAPP members to serve as a volunteer for SAC conference which is the flagship conference of SIGAPP.   The development process is as follows,

* Encourage to submit the track proposal of the SAC, and server as the track chair
* Encourage to serve the SAC organizing committee member based on the successful track chair records.
* Encourage to be a candidate for SIGAPP officer election.

In addition, we have tried to think about a career path for young researchers in their career development, including Career Award, and Young Researcher Award and a queue of service positions from TPC members, Track Chairs, to Conference Chairs. It will also attract people to join and work together in SIGAPP.

**SIGARCH Annual Report**

**July 2018 – June 2019**

**Submitted by: Sarita Adve, Chair**

The last year concluded the term of the current executive committee. We published a retrospective on our activities here: https://www.sigarch.org/farewell-torch/. The following describes our key activities over the last year under the three components of our mission statement. Most notable of these are: the work of the CARES committee, which has now been emulated by SIGGRAPH CARES and SIGCOMM CARES with plans for SIGPLAN CARES in the works; the continued success of the Computer Architecture Today blog which also served as the inspiration for the recently released SIGPLAN blog; the growing “Meet a Senior Architect” mentoring program; and the growing portfolio of activities of the Women in Computer Architecture (WICARCH) committee.

**TECHNICAL EXCHANGE**

(1) Meetings: SIGARCH (co-)sponsors a strong portfolio of conferences, many of which co-host a variety of highly attended specialized workshops and tutorials on leading edge topics. We highlight below two conferences: ISCA, the premier conference for computer architecture (co-sponsored with IEEE-CS TCCA) and ASPLOS, the premier multidisciplinary systems conference that brings together architecture, programming languages, and operating systems (co-sponsored with SIGPLAN and SIGOPS).

The 46th ISCA was held in Phoenix in June 2019 as part of the Federated Computing Research Conferences (FCRC). Being part of FCRC fostered inter-disciplinary interactions by providing attendees with the opportunity to interact with 12 other conferences and attend a broad set of FCRC-wide keynotes (including the Turing lecture). Of special note are collaborative efforts of the ISCA organizing committee with PLDI on the undergraduate workshop (see below) and reception attendance.

ISCA featured 28 workshops and tutorials in addition to the regular paper sessions and a panel. There were 821 total attendees with 561 attendees for workshops and tutorials and 660 attendees for the main conference. , The regular sessions had 365 submitted papers (with 1100 authors) and 62 accepted papers, all reviewed by 224 reviewers writing 1654 reviews. The conference committee raised $224,200 for the conference through various sponsorships. Each paper at the conference was provided three means of presentation:  a 20-minute talk, a poster, and a brief Youtube video in lieu of lightning talks.

The organizing committee put a strong emphasis on diversity from under-represented groups. ISCA’19 hosted the first ever undergraduate workshop with full funding for 37 students representing 26 colleges and universities with 24 of the attendees from underrepresented groups.  126 (or ~19%) of main conference attendees identified as female.

ASPLOS'19 was held in Providence, RI in March 2019. The conference featured a strong technical program with 74 papers, keynotes by Barbara Liskov (MIT) on multicore programming and Krysta Svore (Microsoft) on quantum computing, a Wild and Crazy Ideas session, along with 7 workshops and 11 tutorials, with 390 attendees and a record 351 paper submissions.

The conference awarded four best paper awards to the following:

(i) Boosted Race Trees for Low Energy Classification. Georgios Tzimpragos, Advait Madhavan, Dilip Vasudevan, Dmitri Strukov, Timothy Sherwood.

(ii) CheriABI: Enforcing Valid Pointer Provenance and Minimizing Pointer Privilege in the POSIX C Run-time Environment. Brooks Davis, Robert N. M. Watson, Alexander Richardson, Peter Neumann, Simon Moore, John Baldwin, David Chisnall, James Clarke, Khilan Gudka, Alexandre Joannou, Ben Laurie, A. Theodore Markettos, Ed Maste, Edward Tomasz Napierala, Robert Norton, Michael Roe, Peter Sewell, Stacey Son, Jonathan Woodruff, Nathaniel Wesley Filardo.

(iii) A Case for Lease-Based, Utilitarian Resource Management on Mobile Devices. Yigong Hu, Suyi Liu, Peng Huang.

(iv) Wasabi: A Framework for Dynamically Analyzing Web Assembly. Daniel Lehmann, Michael Pradel

(2) Annual SIGARCH visioning workshops: The visioning workshop program, driven by Luis Ceze, Joel Emer, and Karin Strauss, seeks to catalyze and enable innovative research within computer architecture, and between computer architecture and other areas. This year we held the second workshop in the series: “Agile and Open Hardware Design for Next-Generation Computing” with a distinguished roster of speakers covering the compute stack, from academia, industry, and funding agencies. The next workshop will be on “Hybrid Biological Computer Systems” and offers the opportunity of exchange of ideas in an even more interdisciplinary and emerging research area. The deadline for proposals for the coming year is in September.

**TALENT DEVELOPMENT AND RECOGNITION**

(1) ACM/IEEE Eckert-Mauchly award: This is the most prestigious award in computer architecture given for contributions to computer and digital systems architecture. The 2019 recipient was Mark Hill for “contributions to memory consistency models and memory system design.”

(2) SIGARCH Maurice Wilkes award: This is the most prestigious award given to a researcher in the first 20 years of their career and went to Onur Mutlu for “innovative contributions to efficient and secure DRAM systems.”

(3) SIGARCH/TCCA influential ISCA paper award: This award recognizes a paper from the ISCA 15 years earlier. The 2019 recipient was “Transactional Memory Coherence and Consistency” by Lance Hammond, Vicky Wong, Mike Chen, Brian D. Carlstrom, John D. Davis, Ben Hertzberg, Manohar K. Prabhu, Honggo Wijaya, Christos Kozyrakis, and Kunle Olukotun.

(4) ASPLOS influential paper award: This award recognizes an ASPLOS paper from 10 or more years ago. The 2019 recipient was the ASPLOS 2000 paper “Hoard: A Scalable Memory Allocator for Multithreaded Applications” by Emery D. Berger, Kathryn S. McKinley, Robert D. Blumofe, and Paul Wilson. This was the first time that a paper with a female primary co-author won the award.

 (5) SIGARCH Alan D. Berenbaum Distinguished Service Award: This award is presented annually to an individual who has contributed important service to the computer architecture community. The 2019 recipient was Margaret Martonosi for “outstanding leadership in recruiting, retaining, and advancing women and underrepresented minorities and raising awareness of the importance of diversity to the computer architecture community.” Eileen Lach, Alan Berenbaum’s partner, presented the award.

(6) SIGARCH/TCCA outstanding dissertation award: This award is presented annually to recognize excellent thesis research by doctoral candidates in the field of computer architecture. The 2019 winner was Yu-Hsin Chen from MIT (advised by Vivienne Sze and Joel Emer) for his dissertation titled “Architecture Design for Highly Flexible and Energy-Efficient Deep Neural Network Accelerators.” The award citation was: “for contributions to efficient and flexible dataflows and architectures for deep learning acceleration.” An honorable mention award went to Alexandros Daglis from EPFL (advised by Babak Falsafi and Edouard Bugnion) for his dissertation titled “Network-Compute Co-Design for Distributed In-Memory Computing.” The award citation was: “for contributions to network-centric server architecture for in-memory datacenter services.”

(7) Honoring recently retired and deceased members: Jointly with TCCA, we launched a program in 2017 to honor at ISCA the contributions of members of our community who have recently retired or passed away. In 2019, we honored the retirement of David Wood, Sheldon B. Lubar Chair at the University of Wisconsin-Madison and SIGARCH chair from 2011-15. We mourned the passing of Huixiang Chen, PhD student at the University of Florida, and of Sudhakar Yalamanchili, Regents Professor and Joseph M. Pettit Professor at Georgia Tech.

(8) Travel and child care grants: Like past years, student travel grants for conferences continued to be one of our flagship benefits for student members. SIGARCH supported many conferences last year with student travel grants (all conferences where SIGARCH co-sponsors at a level greater than 33% were eligible for student travel grant). We also continued to support grants for childcare and disability support. These were programs that SIGARCH pioneered, and are continuing to gain momentum and are being adopted by others such as IEEE TCCA.

(9) Lightning mentoring sessions: At ISCA’19, we continued our “Meet a Senior Architect” mentoring program under the leadership of Joel Emer. The program matches students with mentors (through questions asked in the conference registration form), providing students the opportunity to meet 1-on-1 with a senior architect for about half an hour at the conference. Starting with 17 mentors and 33 students in 2016, this year the program attracted ~100 mentors and 182 students. The responses to past surveys indicate the program is a highlight for many students; e.g., “most valuable experience I had at a conference.” We have used the conference registration form to find interested mentors and mentees and are now automating the process of mentor-mentee matching to enable easy replication of this program in other conferences and communities.

(10) Women In Computer Architecture (WICARCH): WICARCH was formed to build a community to support women computer architects. We made it an official subcommittee of SIGARCH in 2017 with the goal of centralizing all of our diversity and inclusion efforts, including making recommendations to the EC on diversity initiatives and related budgetary matters. EC member, Natalie Enright Jerger, chairs WICARCH. The WICARCH web site contains a directory of women in computer architecture which has now grown to about 100 women. The web site also hosts an ongoing series of featured profiles of women in architecture. The WICARCH Slack community reached 200 participants who support each other in ways ranging from providing mentoring and advice to sharing successes to advertising opportunities and more. A new initiative last year was the WICARCH YouTube channel which hosts a monthly webinar series featuring women architect speakers. Also new was the preparation of a brochure detailing profiles of women architects on the job market last year which was appreciated by many universities. Other communities are seeking to emulate WICARCH’s activities.

(11) Creating a diverse and inclusive community and CARES: We continued to emphasize diversity and inclusion. Specifically the CARES committee, co-chaired by Margaret Martonosi and Kathryn McKinley, has done exemplary work and is being emulated by other communities (e.g., SIGCOMM, SIGGRAPH). The committee has put in place bylaws for its operation -https://www.sigarch.org/benefit/cares/cares-bylaws/. Since 2018, CARES has covered the ASPLOS, ISCA, and MICRO conferences along with their PC meetings. The CARES annual report submitted to SIGARCH and SIGMICRO clearly shows the need for such a committee and its perception as a valued resource. At the same time, the report is sobering and highlights the need to expand the mandate of CARES. The current CARES mandate has been to provide support for issues related to ACM’s policy on harassment, mostly focused on gender and racial/ethnic discrimination and sexual harassment. However, the report notes that on the basis of its experience over the last year, other forms of harassment and ethics violations covered by other ACM policies appear to be important and germane for CARES to cover. We have had discussions with ACM leadership to broaden the CARES mandate to cover such ethics policy violations and are encouraged that the new ACM diversity and inclusion council will be considering this. There are other aspects of reporting policy violations to ACM that have been perceived as impeding reporting and we hope to work with ACM on these aspects in the future.

(12) CACM Research Highlights: SIGARCH has a standing committee of four persons to select papers to nominate as CACM Research Highlights. We solicit candidate papers from the Program Chairs of the most prestigious conferences sponsored by SIGARCH. Guidelines are provided including a survey of conference attendees. The committee evaluates the candidate papers, original reviews provided by the Program Chair, and the audience survey results to make their final determination. These candidates are then forwarded to the CACM Editorial Board to make the final decision. Two papers were nominated for the 2018 conferences. All nominations are recognized on the awards page of the SIGARCH web site.

**OUTREACH**

(1) Computer Architecture Today Blog: The SIGARCH blog has become a valued resource and continues to attract posts on diverse topics related to computer architecture and its community. In the last year, the blog featured 48 posts and more than 80,000 page views. SIGPLAN recently announced its blog, inspired by the SIGARCH blog. Alvin Lebeck, the founding editor of the blog, recently stepped down. We thank him for his exemplary service to the architecture community and welcome Rajeev Balasubramonian, the new editor of the blog, with Vijay Reddi continuing to serve as our much valued associate editor.

(2) Other communications and outreach: Our web site and newsletter (Boris Grot), social media presence (Adrian Sampson), and YouTube! channel (Reetu Das) continued to thrive, thanks to our dedicated communications team.

**VOLUNTEER DEVELOPMENT PROCESS**

We do not have a formal volunteer development process except to have the executive committee lead by example through its hard work. The community remains enthusiastic and we have been fortunate to be able to attract volunteers as needed, ranging from graduate students to senior researchers.

SUMMARY

SIGARCH remains a financially healthy and vibrant organization with a broad and enthusiastic membership and committed leadership. In the previous years, we restructured the EC as a working committee with each EC member leading at least one project and all members meeting at a monthly teleconference. This restructuring and the enthusiastic support of the broader community has enabled us to launch and implement several new programs successfully over the last four years. We also gratefully acknowledge the ACM staff, notably Ashley Cozzi, for their support and for graciously handling the increased workload. We look forward to the work of the new EC under the leadership of Babak Falsafi.

**SIGBED Annual Report**

**July 2018 - June 2019
Submitted by: Insup Lee,Chair**

**Awards**

SIGBED offers several awards to recognize outstanding work by members of the community. Details about the awards, selection processes, and nomination deadlines can be found on SIGBED's awards page, <http://sigbed.blogspot.com/p/awards.html>

The Paul Caspi Memorial Dissertation Award is a SIGBED award established in 2013. The award recognizes outstanding doctoral dissertations that significantly advance the state of the art in the science of embedded systems, in the spirit and legacy of Dr. Paul Caspi's work. In 2018, the award was not given out due to the lack of nominations. We are considering moving the nomination deadline for the award earlier in the year to avoid conflicts with the holiday season.

A new award, SIGBED Early Career Award, has been established in 2017. The award recognizes outstanding contributions by early career investigators in the area of embedded, real-time, and cyber-physical systems. The inaugural award was given in 2018. In 2019, recipients of the award have been Alessandro Biondi, Scuola Superiore Sant'Anna, and Miroslav Pajic, Duke University.

SIGBED also sponsors the SIGBED-EMSOFT Best Paper Award. The annual award is presented to the individual(s) judged by an award committee to have written the best paper appearing in the EMSOFT (Embedded Software) conference proceedings. The selection criteria are the scientific quality of the paper and the exposition of the ideas. The 2018 SIGBED-EMSOFT Best Paper is titled “Bounding DRAM Interference in COTS Heterogeneous MPSoCs for Mixed Criticality Systems,” by Mohamed Hassan and Rodolfo Pellizzoni.

**Student Travel Grants**

To promote excellence in embedded systems education and research, SIGBED offers travel grants for students to attend ESWEEK and CPS-IoT Week, the premier forums in the areas of embedded and cyber-physical system design areas. The travel grants can be used to partially cover conference registration and/or hotel accommodation. The SIGBED leadership views travel grants as one of the best investments into the SIG future and the budget allocation for travel grants has been increased every year. For ESWEEK 2018 in Torino, Italy, 15 grants were awarded. The total amount of travel awards was $15,000. CPS-IoT Week 2019, in Montreal, Canada has made has received 15 applications for support, out of which 11 were selected according to the published criteria. Furthermore, only 7 grants were funded, because 4 applicants were not able to get visas to attend the event. A total of $5,200 was awarded. In addition to SIGBED grants, other sources of support were available to attendees as well.

Besides regular travel grants, SIGBED has provided $1000 towards support for an N2Women Young Researcher Fellowship award. The award supported attending a networking event that has been organized at CPS-IoT Week by Networking Networking Women (N2Women) to foster connections among women in communications and networking research.

**Events highlighting new areas of interest at conferences**

The main conferences supported by SIGBED are invariably concerned with identifying new directions and challenges for the research community and related industries. A key mechanism for this is through keynote presentations offered to conference attendees by luminaries in key related areas.

ESWEEK 2018 featured the following keynotes on emerging horizons in embedded systems:

* “The First-Order Logic of Signals” by Thomas Henzinger, Institute of Science and Technology Austria
* “Hitchhiker’s Guide to the IoT Galaxy Full of Security & Privacy Challenges” by Ahmad-Reza Sadeghi, Technical University of Darmstadt
* “Outside-In Autonomous Systems” by Jie Liu, Microsoft Research

Similarly, CPSWEEK 2018 featured keynotes discussing new CPS applications and significant challenges:

* “The Brain fueling the Fourth Industrial Revolution” by Victor Bahl, Microsoft
* “The Siren Song of Temporal Synthesis” by Moshe Y. Vardi, Rice University
* “(Low) Powering Real-Time Intelligence at the IoT Edge” by Tulika Mitra, National University of Singapore

**Innovative programs which provide service to some part of our technical community**

SIGBED continues to sponsor two major federated conferences, CPS-IoT WEEK (comprised in 2019 of HSCC, ICCPS, IoTDI, IPSN, and RTAS) in the spring and ESWEEK (comprised of CASES, CODES+ISSS, and EMSOFT) in the fall, as well as several other leading conferences in the embedded systems community, including SenSys 2019. “In cooperation” status was approved for ASPLOS 2019, DAC 2019, EWSN 2019, PECCS 2019, and SENSORNETS 2019.

SIGBED continues to operate a blog for announcements and other information at sigbed.org and the @sigbed Twitter account. The SIGBED-MEMBERS mailing list is used for announcement of events of interest to the community.

The SIGBED Review continues to provide a forum for technical contributions by members as well as lists of upcoming events. Since Spring 2017, the editor of SIGBED Review is Sergiy Bogomolov, Australian National University.

SIGBED continues to offer low membership rates at $15 for a regular membership and $5 for a student membership. (Reducing these rates to $0, if allowed, might increase our membership; they are not a significant source of revenue for SIGBED.)

**Recognitions**

SIGBED Member Frank Mueller has been named ACM Fellow in 2018.

**Issues**

No new issues to raise.

**SIGCAS Annual Report**

**July 2018 - June 2019
Submitted by: Sam Rebelsky, Vice Chair**

1. Awards that were given out

The SIGCAS Volunteer award was given to Dee A. B. Weikle in recognition of many years of valued service running the newsletter.

2. Significant papers on new areas that were published in proceedings

The proceedings of the second ACM COMPASS (Computing and Sustainable Societies) was published in July. We plan to republish the most significant papers in the SIGCAS newsletter late this year.

3. Significant programs that provided a springboard for further technical efforts

SIGCAS continues its close ties with the SIGCSE community. In 2018-19, our collaborations at the primary SIGCSE conference included a pre-conference workshop on Computing for Social Good in Computer Science education, a Birds-of-a-Feather session on Humanitarian Free, Libre, and Open-Source Software, and a panel on community outreach in computer science courses. We intend to continue this close collaboration with SIGCSE in the coming years.

4. Innovative programs which provide service to some part of your technical community

SIGCAS was closely involved with the ACM Committee on Professional Ethics and contributed to a variety of discussions of the new ACM Code of Ethics and Professional Ethics.

5. Events or programs that broadened participation either geographically, or among under-represented members of your community

The planning for the ACM COMPASS represented a significant effort to broaden participation geographically as the conference was held in Accra, Ghana. It was also live-streamed, making it more broadly available. Since the conference was held in July, 2019, the planning for the conference represented our primary outreach.

6. A very brief summary of the key issues that SIG membership will have to deal with in the next 2-3 years.

The SIG will need to explore its place within the wide variety of endeavors that expore the relationships between computing and society, including (just with the ACM): The ACM Committee on Professional Ethics, the ACM Fairness, Accountability, and Transparency (FAT\*) community, and the ethics subcommunities of both SIGAI and SIGCHI. We are particularly interested in building our connections with the computing and sustainable societies group.

The SIG plans to further develop a collection of historical resources about computing and society and, as importantly, provide them in a way that will support future critical discussion of computing and society.

The SIG will be involved in considerations of new ACM journal of computing and ethics.

**SIGCHI Annual Report**

**July 2018 - June 2019
Submitted by: Helena Mentis, Chair**

The scope of the Special Interest Group on Computer-Human Interaction (SIGCHI) is the study of human factors in the human-computer interaction process, including research, design, development and evaluation of interactive computing systems.

The 2019 fiscal year was a very successful one for SIGCHI. Key milestones and activities included:

\* Continued expansion and strong interest in our conference series. Our flagship CHI conference, held in Glasgow, Scotland in May, had 3753 registered attendees making it the largest CHI conference ever. Meanwhile, we continue to sponsor several other conferences with large (+500) attendance including CSCW, RecSys, and Ubicomp. In total we have 24 conferences in our “Family of Conferences”, and we regularly encourage conference steering committee chairs to identify opportunities to work together.

\* Significant and continued emphasis on international development. Our goals are to help develop HCI communities around the world, and to integrate regional HCI communities into the worldwide network of HCI researchers and innovators. Through our Development Fund, we have sponsored a number of events and specifically in eastern Asia. We have also announced the location of our CHI 2021 conference in Yokohama, Japan. In 2018-2019, 14 new SIGCHI local chapters were established, in 11 countries in the Global South, of which 15 chapters in Asia, 2 in Africa, and 6 in Latin America. Overall, there are 58 SIGCHI local chapters in 36 different countries. The geographical coverage of SIGCHI chapters is greater than ever.

\* Empowering our members. SIGCHI’s Development Fund has been a successful mechanism for our members to receive funding to carry on events and activities for the benefit of our membership. In FY 2019, we awarded over 15 Development Fund proposals that have/will support events in more than 10 countries. We also have a number of funding programs available for students to attend our conferences and other events including the SIGCHI Student Travel Grant (SSTG) and the Gary Marsden Student Travel Grant. You can read more about our funding programs here: <https://sigchi.org/get-involved/funding/>.

\* Inclusion activities. Through a public call for participation, we have stood up 7 Inclusion Teams with almost 60 volunteers from 13 countries under our new AC for Inclusion. The teams have met virtually through video conferencing and in person at CHI2019. The teams focus on supporting diversity, inclusion and equity for all races, abilities, sexualities and genders, in all geographic locations. There are teams that are focusing on inclusion research, SIGCHI events, data collection, and developing new programs for outreach and support. Each of these groups are community volunteers who are dedicated to collecting needs and challenges as well as identifying opportunities for SIGCHI to continue to support inclusion in our events and publications. In addition, CHI 2019 had a very well attended diversity and inclusion luncheon (approximately 500 people attended), and we have made support available for other such events under the SIGCHI Development Fund. We also have sponsored ACM-W scholars to attend our conferences, the CRA-W Grad Cohort, and womENcourage.

\* Publications infrastructure. In the past year, SIGCHI has made significant efforts in improving the publication infrastructure for associated conferences. SIGCHI has worked closely with ACM to test and implement new document templates that will be responsive on multiple platforms and support accessibility beyond the PDF format. Our flagship conference trialled the new templates in 2019, and although there were some challenges with the original approach, was the first ACM conference to produce responsive HTML proceedings. SIGCHI volunteers provided substantial input to design the new template workflow and have been active in promoting this within our community. With the support of the SIGCHI EC, our specialised conferences have been opting in to the new workflow to automatically produce accessible HTML proceedings, including TVX, ICMI and HRI. SIGCHI is also actively exploring the new PACM publishing model, with SIGCHI sponsoring two of the existing four PACM titles. We are exploring two publication models; a PACM title with a close relationship with a single community (PACM IMWUT) and a PACM title as a compilation of many communities (PACM HCI). Both PACM titles are exploring different implementations of a revise and resubmit review process, exploring issues such as yearly, quarterly, and continuous submission deadlines.

\* Software and systems infrastructure: In FY2019, SIGCHI has continued to iterate, refine, and roll out our free mobile application for conferences to use for their programs. This can be downloaded from the Google or Apple app stores: <https://sigchi.org/2018/04/sigchi-mobile-app/>. To have a fully functional mobile program, we have also begun the development of a tool for organizing conference sessions and program at scale, called QOALA. By August 1st, five of our conference series have used QOALA and the mobile app for their conference programs. More conferences are expected to use the system and apps throughout the year including CSCW 2019. During the summer, we also began the development of a Progressive Web Application for the program (which will allow for a web program to be auto-generated for every conference as well as simplify mobile and tablet development into a single responsive accessible modern web application.

\* Public communications and outreach. At CHI 2019, we again offered a course to our members on how to work with the press and communicate with the public. In addition, we continued a program of “Ted-like” public talks called CHI Lites (<https://sigchi.org/chi-lites/>) presented in conjunction with CHI and made available as high-quality videos through our YouTube channel - <https://www.youtube.com/user/acmsigchi>. We also focused our growing social media presence on Twitter and Facebook. Our official twitter account serves as a channel to share SIGCHI news, promote and provide information about our conferences and other SIGCHI sponsored events. We have 1130 new followers since Jan 2019 (current total followers are 4419 which means around 25% of our followers began in 2019), total impression of our tweets in 2019 is ~424k. Our Facebook group serves as a place for the community to share news, CfPs, interesting articles as well as discussing topics of interest. We currently have 3440 members on our Facebook group where 600 (around 20%) joined the group since Jan 2019. We are currently reviewing the use/impact of our mailing lists since the SIGCHI Comm team took over the control and moderation of 3 key mailing lists in 2019.

\* Awards. SIGCHI Awards are presented at each year’s CHI conference to recognize and honor leading members of the human-computer interaction community . This year’s award winners were (see <https://sigchi.org/awards/sigchi-award-recipients/> for details):

Lifetime Achievement in Research

Hiroshi Ishii

Lifetime Achievement in Practice

Daniel Rosenberg

Social Impact

Gillian R. Hayes

Lifetime Service

Bill Hefley

SIGCHI Academy

George Fitzmaurice

Batya Friedman

Takeo Igarashi

Jennifer Mankoff

Nuria Oliver

Loren G. Terveen

Jacob O. Wobbrock

John Zimmerman

Outstanding Dissertation Award

Chris Elsden

Anna Maria Feit

Robert Xiao

**SIGCOMM Annual Report**

**July 2018 - June 2019
Submitted by: Roch Guerin, Chair**

SIGCOMM is ACM's professional forum for the discussion of topics in the field of communications and computer networks, including technical design and engineering, regulation and operations, and the social implications of computer networking. SIG members are particularly interested in the systems engineering and architectural questions of communications.

SIGCOMM continues to be a vibrant organization serving a broad community of researchers from both academia and industry interested in all aspects of computer networking. We sponsor several successful, single-track, high-impact conferences, several of them in cooperation with other SIGs. There are a number of highlights to report from the past year.

### Conferences and associated support

The SIG sponsors an eponymous flagship conference and is the sole sponsor of the following conferences: CoNEXT, Information-Centric Networking (ICN), and the HotNets Workshop. The eEnergy conference previously sponsored by the SIG was successfully migrated to the recently formed Energy EIG in 2019, but the SIG agreed to allow the surplus of the 2018 edition of the conference to be used to support travel grants for the 2019 edition. The SIG also co-sponsors the following conferences: Internet Measurement Conference (IMC), SenSys, ACM/IEEE Symposium on Architectures for Networking and Communications Systems (ANCS), Symposium on SDN Research (SOSR), and ANRW, the joint ACM, ISOC, IRTF Applied Networking Research Workshop.

In addition to conferences we sponsor or co-sponsor, we are in-cooperation with a number of events, including the International Conference on Network and Service Management (CNSM), the International Teletraffic Congress (ITC), Multimedia Systems (MMSys), the USENIX Symposium on Networked Systems Design and Implementation (NSDI), the Workshop on Network and Systems Support for Games (NetGames), the International conference on Networked Systems (NetSys), the Network Traffic Measurement and Analyis (TMA) conference, the BuildSys conference that was started by the newly formed e-Energy EIG, besides the aforementioned COMSNETS, AINTEC, and APNET conferences.

Continuing our policy of rotation among regions on a 3-year cycle, our flagship conference was held in Bucharest, Hungary, in August 2018, with an attendance of 741 vs. 785 in LA in 2017. The 2019 edition of the SIGCOMM conference is scheduled to be held in August in Beijing, China. As of mid-July (just before the end of early registration), registrations are already above 800 and we expect a total attendance in excess of 1000 driven largely by strong local participation. This relative success notwithstanding (increasing involvement from Chinese colleagues was a major motivation behind the selection of Beijing), the organization of the conference has been a constant challenge. Some of it is attributable to communication difficulties and cultural differences, but there have also been unanticipated problems caused by local rules and regulations and lack of experience in dealing with them, both at the level of the SIG and that of ACM. Although a number of lessons were learned by going through the process of having SIGCOMM 2019 in Beijing, the experience made us more acutely aware of the many challenges involved in organizing a large conference in China. If we are to hold another of our sponsored conferences in China, it will be important to draw on this experience to try to avoid some of the mistakes made this time around, and make sure that organizers step into it with open eyes.

On the financial front, the 2018 edition of the SIGCOMM conference currently lists a deficit of ~$15k, but this is because the processing of the VAT refund filed with the Hungarian government is still pending. We expect that once it is processed, the conference will have a reasonable surplus. With the exception of the CoNEXT conference that had a small loss, all other SIG (co-)sponsored conferences registered surpluses, so that the SIG’s finances continue to be strong. This has allowed us to continue to offer and even expand a strong travel grant program with a special focus on increasing diversity. In particular, as discussed in the “Diversity and Outreach” section, the SIG has expanded its support for N2Women and entered in an agreement with them to, in addition to the dinner held each year at the SIGCOMM conference, now also have one N2Women workshop to be held at one of the SIG’s sponsored or co-sponsored conferences. In addition, after ending our support for the LANC conference, we rebooted our efforts to seek greater participation from South America by launching the LANCOMM student workshop that was held this year with the SBRC conference in Brazil.

More generally, we continue to foster the success of our sponsored conferences through generous general student travel support (totaling close to a $100k per annum) as well as invited speaker travel funds and special diversity grants to facilitate participation in PC meetings by members from under-represented areas.

In addition, the SIG continues to financially support, i.e., through a range of (travel) grants aimed at students and/or junior faculty, several regional conferences in computer networking. The current set of regional conferences we support financially includes COMSNETS, a major networking conference in India, the Asian Internet Engineering Conference (AINTEC), and a new conference focused on the Asia-Pacific region, APNET, whose first edition was held in Fall 2017 (only in-cooperation support was provided in 2019). COMSNETS has been quite successful and has become a strong regional event in its own right, while AINTEC has not fully realized its original goals of broadening participation in the Asia-Pacific region, in part because the conference has remained anchored at the same location in Thailand. We had previously given feedback to the organizers recommending that they explore alternative locations, but although they plan to hold next year’s conference outside of Thailand, they were not able to do so this year. As a result, the SIG shifted its support to that we afford to local conferences and asked that the support be in the form of student travel grants. Last but not least, as mentioned above, although the SIG ended its support for the Latin American Networking Conference (LANC), it launched a new student workshop, LANCOMM, for which it provided both student travel grants as well as support to invite keynote speakers with whom the students could interact.

The SIG also supports a handful of summer schools with grants of up to $25k, including the PhD School on Traffic Measurement and Analysis (TMA) co-located with the in-cooperation conference of the same name that was held in Paris, France, in June 2019, the New England Networking and Systems (NENS) Day held yearly in the North-East region of the US and that took place at MIT in April 2019, and for the first time in 2019 the PAM PhD School held in conjunction with the Passive and Active Measurements (PAM) conference that was held in March 2019 in Chile.

In addition, the SIG offers support for special initiatives upon request. One such example is travel grants in support of a “Shadow PC” for the 2018 IMC conference. The grants supported both travel by students to an in-person shadow PC meeting that was held in parallel to an online shadow PC meeting involving a different set of students. Travel to the IMC conference itself was also supported during which the participants shared their respective experience. A short report documenting the findings was generated by the organizers that identified that there did not seem to be meaningful differences in the quality of the outcome of the in-person and online shadow PC meetings, but that, not unexpectedly, the in-person shadow PC meeting was much more useful from a networking standpoint. A similar grant has been approved for another edition of this experiment in 2019.

**Miscellaneous.** We are continuing the practice of waiving the SIGCOMM contingency share for our fully sponsored conferences to give the organizers more flexibility and allow them to keep registration fees as low as possible.

On the logistics front, the SIG switched from using MeetGreen to AMS to provide administrative support to our volunteers, and we are currently reviewing the range of services we offer to our volunteers through AMS. In particular, we are contemplating migrating our website from ACM to a site professionally supported by AMS. This will be at an added cost, but has been motivated by a recurring set of problems in the area of security and reliability with the service currently offered by ACM. We are also exploring the possibility of having AMS coordinate the travel grant reimbursement process for events that we support but that are not associated with sponsored conferences that are the only ones that ACM is willing to handle.

### Newsletter

The SIG’s newsletter, Computer Communications Review (CCR), continues to publish four issues per year. Since 2016, CCR is published entirely on both the ACM Digital Library and at https://ccronline.sigcomm.org. We publish two types of articles: technical papers and editorial contributions. The editorial contributions range from meeting reports to reflections on the evolution of the field. Technical papers are peer-reviewed by members of the editorial board and external reviewers.

In order to encourage the authors to release their artifacts (software, datasets, measurements, ...) the papers that release their artifacts can be longer than the regular six-pages limit for technical papers. In 2018, we organized an Artifacts evaluation committee that reviewed the artifacts of papers accepted by any SIGCOMM conference or Computer Communication Review. This committee assigned ACM reproducibility badges to 28 papers. A similar committee evaluated the artifacts of the CoNEXT papers. It assigned badges to 12 different papers. Additional information about this evaluation has been summarized in an editorial published in the April 2019 issue of CCR.

### Awards

**SIGCOMM Lifetime Achievement Award**: This year, SIGCOMM recognized Prof. **Mark Handley** from University College London with the SIGCOMM Award for Lifetime Achievement; He will receive the award and present a keynote talk at the annual SIGCOMM conference in August 2018 in Beijing, China. He is recognized “for fundamental contributions to Internet multimedia, multicast, congestion control, and multi-path networks, and the standardization of Internet protocols in these domains.”

The award committee was comprised of Anja Feldman (MPI), Ellen Zegura (Georgia Tech), Hari Balakrishnann (MIT), Srinivasan Keshav (University of Waterloo), and Sujata Banerjee (VMWare, chair).

**SIGCOMM Doctoral Dissertation** **Award for Outstanding PhD Thesis in Computer Networking and Data Communication:** The award for the best doctoral dissertation submitted in 2018 went to **Ryan Beckett** for his thesis titled*“Network Control Plane Synthesis And Verification”.* His thesis was cited “for pioneering contributions in extending the field of network control plane verification and synthesis”. The committee also made an honorary mention to **Arpit Gupta** for his thesis “Flexible and Scalable Systems for Network Management”, recognizing “impactful work on Software Defined Internet Exchange Point design and implementation”.

The committee consisted of John W. Byers (Boston University), Dejan Kostic (KTH), Nikolaos Laoutaris (IMDEA, chair), Anees Shaikh (Google), and Steve Uhlig (Queen Mary University of London).

## SIGCOMM Rising Star Award: The recipient of the 2018 SIGCOMM Rising Star Award was Nate Foster from Cornell University. The award was in recognition of outstanding research contributions, early in his career, to programmable networks and network verification. His interdisciplinary work brings techniques from programming languages to bear on fundamental networking problems.

## The 2018 rising star award committee consisted of Vyas Sekar (CMU), Alex Snoeren (UCSD) Jia Wang (AT&T, chair), and Walter Willinger (Niksun).

**SIGCOMM Test of Time Paper Award**: One paper was selected for the 2019 award by a committee composed of Hitesh Ballani (MSR, chair), Mark Handley (UCL), Z. Morley Mao (UMich), and Mohammadreza Alizadeh Attar (MIT). The *paper* was:*“VL2: A Scalable and Flexible Data Center Network" by Albert Greenberg, James R. Hamilton, Navendu Jain, Srikanth Kandula, Changhoon Kim, Parantap Lahiri, Dave A. Maltz, Parveen Patel, and Sudipta Sengupta. SIGCOMM 2009*.

This paper articulated the core design principles that have become the foundation for modern datacenter networks: scalable Clos topologies, randomized load-balanced routing, and virtual networks constructed by decoupling endpoint addresses and locations. By convincingly arguing for these principles, and providing one of the first glimpses into real-world datacenter network traffic characteristics, this paper has had enduring impact on both the practice of datacenter network design and the large body of research on the topic that has followed over the last decade.

**SIGCOMM Networking Systems Award**: This award was awarded for the second time in 2019 by a committee comprised of: Ratul Mahajan (University of Washington), Kun Tan (Huawei), Xiaowei Yang (Duke University). The committee selected the following contribution:

**“Multipath TCP implementation in the Linux kernel”**

Multipath TCP [RFC6824] is a recent TCP extension that enables the utilisation of multiple paths to exchange data over a single TCP connection. The development of Multipath TCP started in 2008 when a group of researchers convinced the IETF to work on developing multipath extensions to TCP. At the beginning, the IETF was skeptical. The implementation was developed in parallel with the standardisation work. Early experiments with this implementation revealed that deployed middleboxes were hindering the extensibility of TCP. A detailed measurement study confirmed those problems [Honda11]. Despite the interferences from middleboxes and thanks to the feedback from the implementation, the mptcp working group managed to ensure the deployability of Multipath [NSDI12]. Since then, various research groups have used this implementation to perform measurements, design extensions to Multipath TCP such as new congestion control schemes. The many citations to RFC6824 or NSDI12 illustrate the impact of Multipath TCP on the research community.

This implementation has also played a key role in the adoption of Multipath TCP within industry [RFC8041,IETFJ16]. Since 2013, Apple uses Multipath TCP on iOS, initially for the Siri application and since last year for any application. The main benefit that they see with Multipath TCP is the ability to support fast handovers from WiFi to cellular when the user is moving. Although Apple developed their own stack, the availability of the Linux implementation reassured them for the stability of the protocol and the possibility of using it on Linux servers. Korea Telecom has convinced Samsung and LG to use this Multipath TCP implementation in all their high-end smartphones to bond WiFi and cellular for premium users. The main benefit that they see with Multipath TCP is the ability of increasing the bandwidth offered to endusers. Another growing use case are the hybrid access networks. To provide higher bandwidth services, a growing number of network operators are deploying solutions to combine their xDSL and 4G networks. This is possible thanks to the availability of a Multipath TCP implementation in the Linux kernel which is the default operating system for xDSL CPE routers. Broadcom and intel include the Linux Multipath TCP implementation in the Software Development Kit that they provide for CPE vendors. Tessares, Soft@home and OVH have deployed hybrid access network services that rely on this implementation. Those hybrid access networks are typically deployed in rural areas where xDSL performance is poor due to line distance.

This implementation is freely available from https://www.multipath-tcp.org The development of new features is discussed on the mptcp-dev mailing list, https://listes-2.sipr.ucl.ac.be/sympa/info/mptcp-dev

The main developers were: Christoph Paasch, Sebastien Barre, Gregory Detal. However, any recognition should also mention the other researchers who have contributed to the code. Based on the published change logs, these include (in alphabetical order):

Christoph Paasch (Apple), Sébastien Barré (Tessares), Gregory Detal (Tessares), Jaakko Korkeaniemi (Aalto University), Octavian Purdila (intel), Matthieu Baerts (Tessares), Kenjiro Nakayama (Redhat), Mihai P. Andrei (intel), Doru Gucea (intel), Cristina Ciocan (intel), Benjamin Hesmans (Tessares), Per Hurtig Karlstads University), François Finfe (Tessares), Fabrizio Demaria (intel), Fabien Duchêne (UCLouvain), Jaehyun Hwang (Bell Labs and Samsung Electronics), Andreas Seelinger (RWTH Aachen), Thibault Gérondal (Tessares), Stefan Sicleru (intel), Mat Martineau (intel), Peter Krystad (intel), Ossama Othman (intel), Florian Westphal (Redhat), Paolo Abeni (Redhat), Davide Caratti (Redhat), Lavkesh Lahngir, Kostas Peletidis, Irina Tirdea (intel), Viet-Hoang Tran (UCLouvain), Daniel Weber (University of Bonn), Catalin Nicutar (PUB Bucharest), Andrei Maruseac (intel), Andreas Ripke (NEC), Alexander Frömmgen (Google), Zhu Jian, Ycarus, Vlad Dogaru (intel), Valentin Ilie (intel), Tim Froidcoeur (Tessares),Takumi Shinkai (Okayama University), Sebastien Duponcheel (OVH), Savvas Zannettou (Cyprus University of Technology), Patrick Havelange (Tessares), Niels Möller, Niels Laukens (VRT), Kristian Evensen, Kacper Kolodziej, Jorge Boncompte, John Ronan (TSSG), Henrique Cabral, Frank Lenormand, Evelina Dumitrescu, Enhuan Dong,Duncan Eastoe, Christian Pinedo (University of the Basque Country), Cheng Cui (Netapp), Brandon Heller (Stanford University), Baptiste Jonglez (Univ. Grenoble Alpes), Anwar Walid (Nokia Bell Labs).

At the ACM level, several SIGCOMM members have been selected as ACM Fellows this year: Mario Gerla, Bruce Maggs, Vishal Misra, Guru Parulkar, Lili Qiu, and Alex Snoeren. Other members of the community recognized as ACM Distinguished Members included Suman Banerjee, Falko Dressler, Deepak Ganesan, Stefan Saroiu, Karthikeyan Sundaresan, and Renata Cruz Teixeira.

### Industry Liaison Board

The SIG’s industrial liaison board (ILB) was established three years ago with the goal of coming up with ideas and suggestions to increase industry participation at SIG-sponsored conferences. The ILB is currently chaired by Venkat Padmanabhan from Microsoft. A summary of its recent activities follows:

* **Industry demos**. The call for industrial demos at SIGCOMM 2019 initially received a lukewarm response because of a combination of distance from the “center of gravity” of the SIGCOMM community and geopolitical tensions. However, the ILB encouraged the demo chairs to view the location as an opportunity to reach out to local industry and also helped with some targeted outreach. The end result is a good-sized program comprising 10 industrial demos (selected out of 12 submissions), split evenly between local and non-local companies.
* **Student dinner**. The ILB also collated and passed on to the 2019 chairs the “best practices” from recent SIGCOMM conferences on the organization of the student dinner, with a view to maximizing the opportunity for students to interact with industry attendees.
* **Industry Day**. Given the lukewarm response to the Industry Day events in the past for various reasons, including the availability of other forums for research-industry interaction (e.g., the Applied Networking Research Workshop (ANRW) collocated with IETF meetings), the ILB has put this initiative on hold.
* **ILB structure**. The structure of the ILB has been formalized, with a size of 6 members, each serving a 3-year term. So 2 new members would join and 2 rotate out each year. The process of identifying and inviting new members is now underway.

### Diversity and Outreach

**N2Women partnership**. As mentioned earlier, in addition to the yearly dinner we host at the SIGCOMM conference, we formalized our partnership with N2Women to expand beyond the various travel grants we award to attend our major conferences. As part of our new agreement, we will co-organize a yearly workshop to be co-located with one of our main sponsored or co-sponsored conferences. The first edition will be held this year in New York in conjunction with SenSys, a conference that is co-sponsored with SIGMOBILE. In addition to a joint workshop, we are also supporting two new N2Women awards aimed at each year honoring two members of the community who have made significant contributions to leadership and mentoring of junior researchers from underrepresented communities.

**CRA-W support.** We continue to provide $15k in yearly support for the CRA-W Grad Cohort Workshop, which is used to allow SIGCOMM students to attend the Workshop. We also support attendance of the workshop by a couple of senior SIG members to represent the SIG at the workshop. The CRA-W Grad Cohort Workshop is designed for women graduate students in computing fields. The workshop includes a mix of formal presentations, informal discussions and social events. Participants can build mentoring relationships and develop peer networks that are intended to form the basis for ongoing activities during their graduate career and beyond. In 2018, 4 senior SIGCOMM community members attended as mentors, but the number of students present with stated interests in areas related to the SIG was small. To increase participation, we compiled a list of over 250 email addresses of female students who had attended one or more of SIG sponsored conferences (and declared to be US based). We then used the list to disseminate the open call for CRA-W participation in the hope of increasing attendance by students from areas aligned with the SIG. We also again arranged for the presence of three senior SIGCOMM researchers to attend the workshop and serve as mentors. They called from University of Chicago, the University of Illinois Urbana-Champaign, and Netflix. The results of those efforts were somewhat ambivalent when it comes to increasing attendance from students working in areas related to the SIG. We plan to explore additional outreach option in the next year, including reaching out to workshop participants to better understand what they viewed as the main benefits they derived from attending the workshop.

**LANCOMM 2019**. As mentioned earlier, we launched a new workshop in Latin America, called LANCOMM. The workshop was co-located with SBRC, a scientific conference on computer networks and distributed systems sponsored by the Brazilian Computer Society and attended by 600+ students, faculty and network operators. The workshop was intended to fill the gap left by LANC, providing a fresh start. Besides guidance regarding the workshop’s organization and structure, we contributed funding to support three invited speakers and a great number of travel grants. The latter allowed students and young faculty from all over Latin America to attend the event. The workshop program consisted of five sessions: an opening session; a panel with invited speakers to discuss challenges faced by PhD students and compare the realities of carrying out research in the US and Latin America; two poster sessions in which the invited speakers toured the posters and provided feedback; and a closing session in which the best posters were presented. Throughout the workshop, and especially in both the opening and closing sessions, we highlighted the work done by the SIG, describing sponsored conferences and other initiatives, and advertising the availability of geo-diversity grants to attend conferences. After the workshop, attendees were asked to fill-out a survey to gauge their satisfaction with the workshop and whether it achieved its stated goals. In particular, whether students were able to network with other researchers from the region, learned about travel grant opportunities and support from ACM SIGCOMM, and their overall level of satisfaction with the workshop? Based on the results of the survey, it was largely successful as over 73% of the respondents rated their satisfaction a 4 or a 5 on a scale of 1 to 5 with 5 the highest score.

**Geo-diversity Travel Grants**. Historically, SIG sponsored conferences have not received many requests for travel grants under the geo-diversity category. We believe this is mostly related to students lacking information about opportunities: they oftentimes believe they must have a paper accepted in the conference to be eligible for support, and they do not see themselves worthy of participation in selective conferences. We are thus actively publicizing our conferences to under-represented groups, with an initial focus on Latin America, highlighting the availability of travel grants and related initiatives supported by the SIG, *e.g.,* grants to allow young faculty to travel to Program Committee meetings.

As a result of these efforts, the number of travel grant requests qualifying for geo-diversity submitted to the SIGCOMM 2019 conference increased significantly. As a result, to accommodate this surge, the SIG increased the geo-diversity travel grant budget available to the conference by over $10k. The process of evaluating a greater number of geo-diversity application also highlighted the fact that they often exhibit significant differences with regular applications, applicants often come from regions from which travel is more expensive and conversely their ability to supplement the amount they are awarded is usually limited. As a result, we are currently working on establishing guidelines that will acknowledge those differences and ensure that awarded geo-diversity grants take them into account.

**Consistent Policies for SIG events**. Towards ensuring that all SIG events comply with properly displaying the ACM and SIG policies that attendees need to be made aware of, especially when it comes to issues related to discrimination, harassment, and privacy; something that was unevenly done before, the SIG drafted a document that summarizes those requirements and that is to be used by all future SIG events.

**CARES Committee** (Committee to Aid REporting on discrimination and haraSsment policy violations). Following a successful pilot at the SIGCOMM 2018 conference, the SIGCOMM CARES committee was formally introduced. It is intended to help prevent and address any form of unacceptable behavior at events associated with the SIG. Its creation was in part in recognition of the fact that reporting discrimination and harassment to a person of authority, *e.g.,* conference chairs, SIG officers, or ACM staff, can be intimidating, especially in the face of an already traumatic experience. CARES committee members can serve as an alternative and are also intended as a source of advice on how to approach such a situation and ensure it is investigated by ACM. Committee members are available to listen and help anyone who has either experienced or witnessed discrimination and harassment at any event promoted by the SIG, or needs counseling on how to handle it. Committee members will seek to be present in as many SIG events as possible, starting in 2019 with a presence at SIGCOMM, CoNEXT, IMC, and HotNets. When attending an event in their capacity as CARES members, individuals will wear a badge that clearly identifies them as such. They can also be contacted online to facilitate and schedule initial discussions. The committee members in 2019 are Sujata Banerjee - VMWare, Marinho Barcellos (co-chair) - Federal University of Rio Grande do Sul, Brazil, Craig Partridge - Colorado State University, Jennifer Rexford - Princeton University, Justine Sherry - Carnegie Mellon University, and Ellen Zegura (co-chair) - Georgia Tech.

### Issues facing the SIG

Last year’s report identified discrimination and harassment as an important issue that the SIG needs to tackle seriously. Towards addressing it, we introduced at the 2018 SIGCOMM conference in Bucharest a pilot CARES committee (Committee to Aid REporting on discrimination and haraSsment policy violations) modeled after the committee of the same name introduced by SIGARCH. Following the successful completion of this pilot, as detailed in the “Diversity and Outreach” section, the SIG formally introduced its own CARES committee that will provide sustained presence and resources, initially at our main conferences (initially at the SIGCOMM, CoNEXT, HotNets and IMC conferences). It is hoped that the creation of this committee will increase awareness about discrimination and harassment and offer easier access to resources and advice.

The continued decrease in membership (for the first time since 1990, the number of professional members is below 1,000) is becoming truly worrisome. Although it is not (yet) affecting the financial stability of the SIG as our conferences continue to generate a healthy surplus, it is clearly a sign that being a member is not seen as offering a strong enough value. This may be attributed to data communications having become a mature research area, and the decline is not unique to SIGCOMM, but it is nevertheless a major source of concern. Of particular significance is the fact that the decline is also extending to student members, which means that we are also failing in attracting new members. Our attempts to broaden the SIG’s diversity may succeed in providing a temporary reprieve (by tapping into new “markets”), but if we are truly not delivering meaningful value to members, that reprieve is likely to be short-lived. Understanding how we can initiate activities that will help us turn this around is most definitely one of the main challenges the SIG is facing going forward.

**SIGCSE Annual Report**

**July 2018 - July 2019**

**Submitted by: Amber Settle, SIGCSE Past Chair**

The scope of SIGCSE is to provide a global forum for educators to discuss research and practice related to the learning, and teaching of computing, the development, implementation, and evaluation of computing programs, curricula, and courses at all education levels, as well as broad participation, educational technology, instructional spaces, and other elements of teaching and pedagogy related to computing.

**Awards**

The 2019 SIGCSE Award for Outstanding Contribution to Computer Science Education was presented to Mark Guzdial at the University of Michigan in the United States. Mark has worked to transform wide-scale teaching practice through contextualized computing education, most notably with the Media Computation curriculum, advocated and supported policy changes supporting computing for all in many states in the U.S., published core research in computing education over decades, and helped to foster the next generation of computing educators through his mentorship. It is difficult to find someone in the SIGCSE community who has not read something written by Mark, including the thousands of regular readers of his long-standing blog on computing education. He has also contributed significantly as an organizer of two SIGCSE conferences and served on the SIGCSE Board.

The 2019 SIGCSE Award for Lifetime Service to the Computer Science Education Community was given to Gloria Childress Townsend at DePauw University in the United States. Gloria has worked tirelessly on behalf of diversity and inclusion in computing. She was a co-founder and co-facilitator of the SIGCSE Committee on Expanding the Women-in-Computing Community, a committee that has led birds-of-a-feather sessions at the Technical Symposium annually since 2005. Gloria worked for decades with ACM-W serving on the Executive Board and as ACM-W chair. She conceived of the idea of small regional celebrations of women in computing and worked as a guide and leader for these celebrations as they spread from the United States across the globe.

The SIGCSE Board created an award to honor the 50th anniversary of the SIGCSE Technical Symposium (celebrated February 27-March 2, 2019 in Minneapolis, Minnesota) that would honor the Top 10 Symposium Papers of All Time from the first 49 proceedings of the SIGCSE Technical Symposia.

The Top Ten Symposium Papers are:

1. “Identifying student misconceptions of programming” (2010)

Lisa C. Kaczmarczyk, Elizabeth R. Petrick, University of California, San Diego; Philip East, University of Northern Iowa; Geoffrey L. Herman, University of Illinois at Urbana-Champaign

2. “Improving the CS1 experience with pair programming” (2003)

Nachiappan Nagappan, Laurie Williams, Miriam Ferzli, Eric Wiebe, Kai Yang, Carol Miller, Suzanne Balik, North Carolina State University

3. “Undergraduate women in computer science: experience, motivation and culture” (1997)

Allan Fisher, Jane Margolis, Faye Miller, Carnegie Mellon University

4. “A Multi-institutional Study of Peer Instruction in Introductory Computing” (2016)

Leo Porter, Beth Simon, University of California, San Diego; Dennis Bouvier, Southern Illinois University; Quintin Cutts, University of Glasgow; Scott Grissom, Grand Valley State University; Cynthia Lee, Stanford University; Robert McCartney, University of Connecticut; Daniel Zingaro, University of Toronto

5. "The introductory programming course in computer science: ten principles" (1978)

G. Michael Schneider, University of Minnesota

6. “Constructivism in computer science education” (1998)

Mordechai Ben-Ari, Weizmann Institute of Science

7. “Using software testing to move students from trial-and-error to reflection-in-action” (2004)

Stephen H. Edwards, Virginia Tech

8. “What should we teach in an introductory programming course” (1974)

David Gries, Cornell University

9. “Contributing to success in an introductory computer science course: a study of twelve factors” (2001)

Brenda Cantwell Wilson, Murray State University; Sharon Shrock, Southern Illinois University

10. “Teaching objects-first in introductory computer science” (2003)

Stephen Cooper, Saint Joseph's University; Wanda Dann, Ithaca College; Randy Pausch Carnegie Mellon University

**Significant papers on new areas that were published in proceedings**

The 2018 ACM International Computing Education Research Conference (ICER 2018) had two best paper awards.

The Chair's Award is selected by the organizing committee and was presented to Jack Parkinson and Quintin Cutts for "Investigating the Relationship Between Spatial Skills and Computer Science." The John Henry Award is selected by the conference attendees and was presented to Greg L. Norman and Andrew J. Ko for "On Use of Theory in Computing Education Research."

In 2019 the SIGCSE Technical Symposium gave best paper awards for three different categories of papers. In each category the top three papers were identified.

In the Experience Report and Tools category the Best paper was “Computer Science Principles for Teachers of Blind and Visually Impaired Students” by Andreas Stefik, Richard E. Ladner, William Allee, Sean Mealin. The Second Best paper was “Developing Soft and Technical Skills Through Multi-Semester, Remotely Mentored, Community-Service Projects” by Janet Davis, Samuel A. Rebelsky. The Third Best paper was “Visualizing Classic Synchronization Problems: Dining Philosophers, Producers-Consumers, and Readers-Writers” by Joel C. Adams, Elizabeth R. Koning, Christiaan D. Hazlett.

In the Curricula Initiatives category the Best paper was “An Argument for SQL Injection Coverage in Database Textbooks” by Cynthia Taylor, Saheel Sakharkar. The Second Best paper was “A Flexible Curriculum for Promoting Inclusion through Peer Mentorship” by Heather Pon-Barry, Audrey St. John, Becky Wai-Ling Packard, Barbara Rotundo. The Third Best paper was “PythonSneks: An OpenSource, Instructionally-Designed Introductory Curriculum with ActionDesign Research” by Austin Cory Bart, Allie Sarver, Michael Friend, Larry Cox.

In CS Education Research category the best paper was “First Things First: Providing Metacognitive Scaffolding for Interpreting Problem Prompts” by James Prather, Raymond Pettit, Brett A. Becker, Paul Denny, Dastyni Loksa, Alani Peters, Zachary Albrecht, Krista Masci. The Second Best paper was “Assessing Incremental Testing Practices and Their Impact on Project Outcomes” by Ayaan M. Kazerouni, Clifford A. Shaffer, Stephen H. Edwards, Francisco Servant. The Third Best paper was “Exploring the Value of Different Data Sources for Predicting Student Performance in Multiple CS Courses” by Soohyun Nam Liao, Daniel Zingaro, Christine Alvarado, William G. Griswold, Leo Porter.

The inaugural ACM Global Computing Education (CompEd) Conference gave two awards. The Best Paper Award was given to Ilenia Fronza, Arto Hellas, Petri Ihantola, and Tommi Mikkonen for their paper “An Exploration of Cognitive Shifting in Writing Code.” The Program Chair’s Award, which is given to the best paper where the lead author is a student, went to Sadia Sharmin, Daniel Zingaro, Lisa Zhang, and Clare Brett for their paper “Impact of Open-Ended Assignments on Student Self-Efficacy in CS1.”

There was a single Best Paper Award given at ITiCSE 2019. It was awarded to Quintin Cutts, Matthew Barr, Mireilla Bikanga Ada, Peter Donaldson, Steve Draper, Jack Parkinson, Jeremy Singer, and Lovisa Sundin for “Experience Report: Thinkathon – Countering an ‘I Got It Working’ Mentality with Pencil-and-Paper Exercises.” The ACM Europe Council sponsored the award and presented the winner with a certificate and a 1000 Euro cheque.

**Significant programs that provided a springboard for further technical efforts**

The SIGCSE Special Projects Fund provides grants up to $5000 per project and has a call for proposals in November and May of each year.

The November 2018 call resulted in 27 applications of which 4 were funded for an acceptance rate of 15%. Colleen Lewis from Harvey Mudd College in the USA was awarded $5000 for a project entitled “Interactive resources for training CS TAs.” Kristin Stephens-Martinez from Duke University, USA was awarded $5000 for a project titled “The CS-Ed Podcast”. Kim Tracy from Rose-Hulman Institute of Technology, USA was awarded $5000 for a project entitled “Software History Examples.” Olga Glebova from Georgia State University, USA was awarded $5000 for a project entitled “Active Learning Materials for Machine Learning.”

The May 2019 call resulted in 39 applications, a 44% increase over the previous round and a new record. A total of four regular projects and one project for the special theme “SIGCSE: 50 Years and Beyond” were funded, for an acceptance rate of 13%. Mark Goadrich from Hendrix College, USA was awarded $4598 for a project entitled “Developing Physical Manipulatives and Games for Teaching Advanced Data Structures.” Kari George from UCLA, USA was awarded $3500 for a project entitled “Decoding Doctoral Student Departure: Faculty and Student Perspectives.” Tia Newall from Swarthmore College, USA and co-applicants Suzanne Matthews and Kevin C. Webb were awarded $5000 for a project entitled “Dive into Systems ? - A Free Online Textbook for Introductory Computer Systems Topics.” Lori Carter from Point Loma Nazarene University, USA and co-applicants Catherine Crockett, Whitney Featherston, and Morgan Wheeler were awarded $2900 for a project entitled “Developing Ethics Modules for Core CS and DS Courses.” And Farah Tokmic was awarded $5000 for the project entitled “ A 50 year retrospective on academic integrity and computer ethics in CS Education.”

ITiCSE 2019 had ten working groups on the following topics: (1) 1.5 Degrees of Separation: Computer Science Education in the Age of the Anthropocene, (2) Fostering Program Comprehension for Novice Programmers – Learning Activities and Learning Trajectories, (3) Pass Rates in Computing and in other STEM Disciplines, (4) Data Science Education: Global Perspectives and Convergence, (5) A Periodic Table of CS Education Learning Theories: Is it possible, is it useful, and what forms could it take? (6) An International Benchmark Study of K-12 Computer Science Education in Schools, (7) Toward Developing a Cloud Computing Model Curriculum, (8) Securing The Human: Attracting More, Diverse Students in the Cybersecurity Field, (9) Towards an Ability to Direct College Students to an Appropriately Paced Introductory Computer Science Course , and (10) Compiler Error Messages: Difficulties, Design Guidelines and Effectiveness . CompEd 2019 had three working groups on the following topics: (1) An International Investigation into Online Judge Systems for Programming Education, (2) A Multi-National Investigation of the Barriers to Adopting the Peer Instruction Pedagogical Approach in Computing Courses, and (3) Teaching of computing ethics: an international review prompted by the new ACM code of ethics and professional conduct. The participants in the working groups develop a research project that culminates in a peer-reviewed paper. The projects foster international research collaborations.

**Innovative programs which provide service to some part of your technical community**

Every other year the SIGCSE Board runs a workshop for department chairs. The SIGCSE Department Chairs Roundtable features small group discussions on challenges of being a Department Chair and finishes with a panel of diverse and experienced Department Chairs. The group discussions tackle topics such as the significant administrative and personnel issues that chairs must handle; leadership and management styles, time management, legal issues, establishing priorities, and communication. The Department Chairs Roundtable took place on February 27, 2019 as a pre-symposium event before the 2019 Symposium. The workshop was organized by Mary Lou Maher (UNC Charlotte) and Ran Libeskind-Hadas (Harvey Mudd College). There were 28 participants in the workshop.

On alternate years the SIGCSE Board runs a workshop for graduate students and new academics. The next New Educator’s Workshop will be held in Portland, Oregon in February 2020.

The 2019 SIGCSE Symposium held thirty three-hour workshops for professional development. In addition, the SIGCSE Symposium provided meeting space for fifteen events: RESPECT/RPPforCS, Integrating Cloud Computing into the Computer Science Curriculum: Beginner Level, Integrating Cloud Computing into the Computer Science Curriculum: Advanced Topics, 2019 CSAB Computing Accreditation Workshop, CS Education Infrastructure for All II: Enabling the Change, POSSE Roundup, Professional Development Workshop for Teaching-Track Faculty, Computing for the Social Good in, Computer Science Education, Peer Teaching Summit, Teaching Cybersecurity in CSP (or Any CS Class): Introducing the Security Mindset, Development and Visualization of Computing Competencies, What to Teach about Accessibility, What!? You want me to include computing ethics, too!??!! Using the ACM Code of Ethics in technical computing topics, Computer Science Principles Providers and Teachers Forum, and FREE Cybersecurity Curriculum.

SIGCSE has a Travel Grant Program for faculty and teachers who have never attended the SIGCSE Technical Symposium. The 50th anniversary of the SIGCSE Technical Symposium took place in 2019, and in celebration of the event the SIGCSE Board sponsored 50 travel grants for attendees of the conference.

There were two doctoral consortia associated with SIGCSE conferences during this year.

A doctoral consortium ran in Espoo, Finland just prior to the 2018 The International Computing Education Research Conference (ICER) which was attended by 20 graduate students in computer science education. Nine of the participants were women, and eleven were men. Eleven participants were from the United States, seven from Europe, and two from India. SIGCSE provided travel grants to the students and partial funding for lodging to the discussants. The students presented their work at the workshop and also during ICER 2018. The SIGCSE Board will continue to fund up to twenty Doctoral Consortium grants for participants of the ICER conference in 2019.

There was also a doctoral consortium in Aberdeen, Scotland associated with ITiCSE 2019. Ten students attended the event, which was supported by the Scottish Informatics and Computer Science Alliance. The doctoral consortium was organized by Mark Zarb and Angela Siegel and focused on nurturing students’ research and orienting them in the ITiCSE community. For example, students heard from a panel on imposter syndrome and worked for an hour with members of a working group to understand the dynamics of that research situation.

**Events or programs that broadened participation either geographically, or among under-represented members of your community**

SIGCSE established a new conference in 2019. The ACM Global Computing Education Conference (CompEd) will be offered initially once every two years and will be hosted in countries that do not currently have an annual SIGCSE conference. The first CompEd conference was held in Chengdu, China in May 2019. The conference included several pre-conference events, including a Computing Curricula steering committee meeting, and ACM-W workshop, and three working groups (as reported above). Conference attendance was 154, and the conference received 100 papers, 3 panels, 8 working group applications, 4 birds-of-a-feather sessions, and 10 posters. In total, more than 320 authors from 25 countries submitted work for review. From these submissions, 33 full papers (33%), 1 panel (33%), 3 working groups (38%), 2 birds-of-a-feather sessions (50%), and 8 posters (80%) were accepted.

The CompEd steering committee will continue to work to support the organizers of the future conferences and to shape the direction that the conference will take in the next six years. The steering committee has an active proposal from organizers in India for 2021. There has also been interest in hosting from SIGCSE members in Brazil and an inquiry from computing educators in Mexico.

SIGCSE held an election in 2019. A diverse set of candidates was placed on the slate, and the resulting Board has four men and four women including two men of color. One slot in the slate of candidates was reserved for SIGCSE members residing outside the United States, and Andrew Luxton-Reilly from New Zealand was elected as SIGCSE Treasurer.

**Key Issues for the Next 2-3 Years**

Several SIGCSE-sponsored conferences have experienced rapid growth in the past few years. The SIGCSE Technical Symposium had attendance of 1253 in 2016, 1501 in 2017, 1735 in 2018, and 1809 in 2019. ICER had attendance of 79 in 2015, 119 in 2015, 105 in 2016, 157 in 2017, and 127 in 2018. ITiCSE had attendance of 228 in 2017, 180 in 2018, and over 280 in 2019. This growth continues even with the creation of a new conference in 2019. The SIGCSE Board is working with conference volunteers to manage the growth of the conferences in a positive way that retains the character of the conferences.

The largest SIGCSE conference, the Technical Symposium, was reorganized several years ago. Previously it was the case that volunteers first served as program co-chair and then moved to conference co-chair. Since the roles require different skill sets, the roles were separated. However, since then it has become more difficult to recruit for the conference co-chair position. The SIGCSE Board and Symposium liaison will work with conference organizers to ensure that there is a wider pipeline of possible conference co-chair volunteers.

SIGCSE is in the process of implementing a new award to recognize excellence in computing education research in the community. The Top Five ITiCSE Papers ranking and award will be presented in conjunction with the 25th annual ITiCSE conference in 2020, and this award was announced at the 2019 (24th annual) ITiCSE conference. A committee is currently being formed to implement the award which was previously approved by ACM.

**SIGDA Annual Report**

**July 2018 - June 2019
Submitted by: Sharon Hu, Chair**

SIGDA has been a vibrant special interest group with multiple activities benefiting the design and design automation community. This is the first year of a new executive committee team. Besides continuing the activities that benefited the community, we have formed two new committees: Diversity Committee and Industry Committee. These two committees aim to strengthen our programs in promoting diversity and connections to industry. We are putting in more effort to broaden participation in areas outside the US. Finally, SIGDA announced the continuation of partnership with Cadence in sponsoring several educational activities.

**AWARDS**

SIGDA gave out two major awards in 2019.

**SIGDA Pioneer Achievement Award:**

To honor a person for lifetime, outstanding contributions within the scope of electronic design automation, as evidenced by ideas pioneered in publications, industrial products, or other relevant contributions. The award is based on the impact of the contributions throughout the nominee’s lifetime.

The SIGDA 2019 Pioneering Achievement Award winner is Professor **Alberto Sangiovanni Vincentelli,** UC Berkeley, *for his pioneering and fundamental contributions to design automation research and industry, in system-level design, embedded systems, logic synthesis, physical design and circuit simulation*.

## A. Richard Newton Technical Impact Award in Electronic Design Automation

To honor a person or persons for an outstanding technical contribution within the scope of electronic design automation, as evidenced by a paper published at least ten years before the presentation of the award.

The ACM/IEEE A. Richard Newton Technical Impact Award in Electronic Design

Automation in 2019 goes to E. B. Eichelberger and T. W. Williams for their paper “A Logic Design Structure for LSI Testability,” *In Proc. of the 14th Design Automation Conference, 1977*.

SIGDA also gave out a list of other awards.

* The winner of the 2019 ACM Outstanding Ph.D. Dissertation Award in Electronic Design Automation is Tsung-Wei Huang, for the dissertation “*Distributed Timing Analysis*,” University of Illinois, Urbana-Champaign (Advisor: Martin D. F. Wong).
* The SIGDA Outstanding New Faculty Award in 2019 goes to Jeyavijayan (JV) Rajendran, Texas A&M University.
* SIGDA has restructured its service awards in 2019, and will be giving two-level of annual service awards:

o Distinguished Service Award: The SIGDA Distinguished Service Award is given to individuals who have dedicated many years of their career in extraordinary services to promoting, leading, or creating ACM/SIGDA programs or events. o Meritorious Service Award: The SIGDA Meritorious Service Award is given to individuals who have performed professional services above and beyond traditional service to promoting, leading, or creating ACM/SIGDA programs or events. o At any given year, the number of Distinguished Service Award will be up to 2, and the number of Meritorious Service Award will be up to 4.

The 2019 SIGDA Service Award recipients are as follows.

## Distinguished Service Awards

* **Naehyuck Chang**, Korea Advanced Institute of Science and Technology. *For many years of impactful service to ACM/SIGDA in various leadership positions*.
* **Sudeep Pasricha**, Colorado State University

“*For a decade of outstanding service to ACM/SIGDA in various volunteer positions*“

## Meritorious Service Awards

* Yinhe Han, Chinese Academy of Sciences. “For outstanding effort in promoting EDA and SIGDA events in China“
* Jingtong Hu, University of Pittsburgh. “For contribution to multiple SIGDA education and outreach activities“
* Xiaowei Xu, University of Notre Dame. “For contribution to the 2018 System Design Contest at ACM/IEEE Design Automation Conference“

# INNOVATIVE PROGRAMS

SIGDA devoted new effort to improve diversity and industry relations. Specifically, we formed two new committees with volunteers from the community.

## Diversity Effort

SIGDA is committed to advancing diversity and supporting a vibrant and diverse group of professionals within the design and design automation community. To help accomplish this mission, we have formed the SIGDA Diversity Committee. Currently, there are 11 members on the committee, and the members spread across North and South America, Asia, and Europe. The chair of the committee is Evangeline Young, Chinese University of Hong Kong. The committee had a physical meeting at DAC and introduced SIGDA Diversity Advancement Grants. The committee is also seeking proposals about programs to better enhance diversity in EDA.

## Industry Collaboration

Cadence continues to be the official “SIGDA Global Education Partner” since June 1, 2018 with an annual sponsorship for multiple SIGDA education activities.

SIGDA recently approved and launched an Industry Committee. The goals of Industry Committee are: 1) Serve as the bridge between SIGDA and industrial community to coordinate the efforts in education, research, and technology development; 2) Provide guidance and suggestions to SIGDA for better serving the needs of EDA industry; 3) Build a strong SIGDA community in EDA industry sector; and 4) Help to solicit supports to SIGDA from industry. The committee is composed of the representatives from major companies in the EDA or relevant industrial sectors. The first chair of Industry Committee is Patrick Haspel from Cadence.

# SIGNIFICANT PAPERS

The paper below has won the 2019 ACM TODAES best paper award and it represents a new direction in design automation i.e. design automation for cyber-physical systems.

Philipp Mundhenk, Andrew Paverd, Artur Mrowca, Sebastian Steinhorst, Martin Lukasiewycz, Suhaib A. Fahmy, and Samarjit Chakraborty. 2017. Security in Automotive Networks: Lightweight Authentication and

Authorization. ACM Trans. Des. Autom. Electron. Syst. 22, 2, Article 25

(March 2017), 27 pages. DOI: https://doi.org/10.1145/2960407

# MAJOR ACTIVITES and OUTREACH

SIGDA supported two international summer schools: 1) International Seasonal School on Physical Design Automation, which is now in its third edition. The event was held from July 29 to Aug. 2, 2019 in Beijing, China, with approximately 110 attendees. This year the event offered 5-day lectures on key subjects related to physical design of integrated circuits (IC) in advanced technology nodes, covering not only fundamental algorithms, computational methods, and modern AI techniques, but also new challenges for the implementation of ever more complex circuits and systems. 2) Seasonal School on Circuits and Systems on IoT, also in its third edition. The event was held from August 5 to August 7 in Porto Alegre, Brazil. The School's technical program included 8 courses of 3 hour each. There was also a panel each day that involved participants into discussions related to the subjects covered, as well as a poster session.

Besides the above activities, SIGDA communicates using SIGDA E-News and continues to deliver an online education program: SIGDA Live Webinar, which is held bimonthly.

## Other education activities

In the past year, ACM SIGDA continues organizing the following education activities. More details can be found on SIGDA webpage.

* PhD/Student Research Forums at DAC, DATE, and ASPDAC
* Design Automation Summer school at DAC
* University Research Demonstration at DAC
* CADAthlon at ICCAD
* CAD Contest at ICCAD
* ACM Student Research Competition (SRC) at ICCAD
* Early Career Workshop at DAC
* Ph.D. Forum at DATE
* Student Research Forum at ASPDAC

## Activities associated with financially sponsored or in-cooperated conferences

• Sponsored/in-cooperated conferences o 16 financially sponsored conferences approved

The following is a list of events financially (co)sponsored by SIGDA.

1. Hardware and Algorithms for Learning On-a-chip at ICCAD

 **KEY ISSUES FACING SIGDA**

1. Design automation conference which is a flagship conference of SIGDA is experimenting a new phase of colocation with SEMICON West and also staying in San Francisco. With proper attention, this has the potential to enhance the reach of SIGDA even further.

1. SIGDA will need to continue investing in new topics and in geographically diverse locations as membership growth increases outside US.

3 SIGDA needs to continue establishing itself as a unique brand while continuing to cooperate with other sister organizations.

**SIGDOC Annual Report**

**July 2018 - June 2019
Submitted by: Emma Rose, SIGDOC Chair**

# Overview

SIGDOC’s mission is to advance the state of knowledge, encourage the research, and support the interdisciplinary practice of the design of communication. The ACM Special Interest Group for Design of Communication (SIGDOC) provides a forum for researchers and practitioners of the design of communication, including information architecture, information design, user assistance, help, and documentation (traditional and user-contributed) as well as technology that supports and enhances communication, including blogs, forums, chat, and wikis.

# Leadership

After several leadership changes in 2017-18, the past year was focused to create stability in the organization. The Executive Committee, lead by Dr. Emma Rose, Chair and Dr. Kristen Moore as Secretary/Treasurer, and advised by Dr. Liza Potts who stepped in to fill the roll of Past Chair. The Vice Chair role remained vacant. Over the past year, we held elections, lead by Dr. Michael Salvo as the Elections Chair. In July 2019, our newly elected Executive Committee transitioned into their leadership roles: Dr. Dan Richards, Chair, Dr. Sarah Read, Vice Chair and Dr. Susan Youngblood, Secretary/Treasurer. Dr, Emma Rose will transition to Past Chair.

The new Executive Committee is planning to invite existing board members to stay on and also look for ways to expand the larger SIGDOC Board. In addition, the new EC has several strategic priorities for the upcoming year and extending into their three year term.

1. Update mission and bylaws: The organizations’ mission and bylaws will be revisited to ensure they reflect the current focus of the organization. The bylaws were revised this past year and are currently under review with ACM. Once approved, SIGDOC members will vote to approve. Currently, we are collecting feedback from our members on the existing mission statement to assess if and how it should be updated.
2. Conference seating strategy: Over the past year, the board has had a variety of discussions on creating a more formal strategy for choosing conference venues. This work will continue this year so we can make conference planning sustainable and effective for our members.
3. Broadening participation and attendance: Over the past year, the EC has engaged in several efforts to broaden participation in our SIG and attendance at the conference. Several initiatives are linked to the priorities of our membership, which include ensuring a connection with industry, focusing on the publication of high quality research in communication design, and focusing on inclusion, equity, and diversity within the organization.
4. Strategic planning: The new executive committee will continue to explore additional initiatives as part of their term.

# SIGDOC Annual Conference 2018

Our flagship conference is our annual SIGDOC conference, which typically takes place in the summer or fall of each year. The SIGDOC 2018 conference took place in Milwaukee, WI on August 3-5, 2018

The conference committee included

* Conference Co-Chair — Tammy Rice-Bailey, Milwaukee School of Engineering
* Conference Co-Chair — Nadya Shalamova, Milwaukee School of Engineering
* Program Chair — Elizabeth L. Angeli, Marquette University
* Program Chair — T. Kenny Fountain, Case Western Reserve University
* Student Research Competition Chair — Jason Swarts, North Carolina State University
* SIGDOC Chair – Emma Rose, University of Washington, Tacoma
* Conference Treasurer — Kristen Moore, Texas Tech University
* Sponsorship Manager — Abigail Selzer King, Texas Tech University
* Social Media Manager — Jason Tham, University of Minnesota
* Communications Manager — Luke Thominet, Florida International University
* Website Manager – Adam Strantz, Miami University

We had 33 items that were peer reviewed and published in the proceedings, including 20 papers and 13 extended abstracts and 73 attendees registered for the conference.

We saw a robust engagement with graduate and undergraduate students who participated in our Microsoft Student Research Competition.

We awarded the 2018 Diana Award to the Center for Civic Design and featured well-known keynote speakers, including Dana Chisnell, who accepted the Diana Award winner on behalf of the Center for Civic Design and Ken Cook, President of Cook Company, a local technical communication firm. We saw robust attendance at our series of professional development workshops, Ignite talks, and the SIGDOC Research Network.

The 2018 conference closed with the following:
Total Revenue: **$ 17,551.00**
Total Expenses: **$ 9,517.79**

Allocation: **$ 1,522.85**
Surplus/Loss:**$ 6,510.36**
Attendance: 73

The research that our members are presenting at our conference continues to address salient and cutting edge issues and themes in the fields of communication design, user experience, and technical communication.

# Awards and grants

At the 2018 conference, SIGDOC awarded the Diana Award which celebrates an orgnaizations’ contribution to the field of communication design, to the Center of Civic Design for their work in improving design and access in voting.

In addition in 2018, SIGDOC awarded its second Best Paper award to Alisha Karabinus and Rachel Atherton for their paper “[Games, UX, and the Gaps: Technical Communication Practices in an Amateur Game Design Community”](https://dl.acm.org/citation.cfm?id=3233949). We plan to continue to present a best paper award at future conferences to highlight the rigorous and impactful work being done in the field.

In 2018-2019, we also awarded two Career Advancement Research Grants each for $1200. Awardees were:

* Participatory Communication Design of Mapping Borderlands: Decolonizing Cartographic Information Design and Creating a Participatory Mapping Interface by Eda Ozyesilpinar, Ph.D. and Victor Del Hierro, Ph.D.
* Improving the Design of Visual Risk Communication through a Content Analysis of a Crowdsourced Public Health App’s Existing User Comments by Kristin Bivens, Ph.D. and Candice A. Welhausen, Ph.D.

**Communication Design Quarterly**

Our publication, Communication Design Quarterly, continues to contribute valuable, peer-reviewed articles that are shared broadly. 2018-2019 marks the first full year of the journal’s new editor Derek Ross. Under his leadership, Derek has increased CDQ’s editorial board from 9 to 47, located internationally, all of whom are experts in some facet of communication design. This increases both our reach, and our ability to thoroughly and professionally address article reviews. He has also made various changes to editorial policies including special issues and length, which are available through our website, which is maintained and updated regularly by Website Manager, Adam Strantz.

In Fall 2018, CDQ moved to an Online First model of publication which allowed us to ensure that cutting-edge research is made available in a timely fashion. Non-special issue articles will be published individually on our website as they are edited and processed, then collected into quarterly journals for archival. We currently have a steady pipeline of submitted articles that are under review.

The current editor and the previous editor have repeatedly raised the issue of the need for funding to support CDQ. SIGDOC is committed to supporting the editors and their work in producing this publication. For this year, we provided additional funding for the editor to support technology purchases and will consider how to continue to support the work of making CDQ a high-quality publication.

Top 5 downloaded articles for the last 12 months

1. “Data visualization” (381 Downloads)
By Manuela Aparicio and Carolos J. Costa
Volume 3 Issue 1, November 2014
2. “Journey mapping: a brief overview” (337 Downloads)

By Tharon Howard

Volume 2, Issue 3, May 2014

1. “The communication design of WeChat: ideological as well as technical aspects of social media” (318 Downloads)
Xiaobo Wang, Baotong Gu

Volume 4, Issue 1, Nov 2015

1. “The past, present, and future of UX empirical research” (201 Downloads)

By Joy Robinson, Candice Lanius, Ryan Weber

Volume 5 Issue 3, November 2017

1. “Big data visualization: promises & pitfalls” (191 Downloads)

By Katherine Hepworth

Volume 4 Issue 4, December 2016

# Social Media

Our social media reach continues to expand, we have a total of 858 followers on Twitter, which 101 more than the previous year, and 60 more Facebook followers, for a total of 486.

# Membership

As SIGDOC continues to rebuild, the leadership team is developing strategic plans for reviving membership in SIGDOC. Currently, our membership is 157, which is an increase of 30 from last year at this time. Our strategic plan is to increase membership to 200 by 2021.

# Upcoming conference

Our 2019 conference will be held on Oct 3-5, 2019 at Portland State University in Portland, Oregon and will feature three days of conference activities, including a meet up event the evening before the conference that is co-hosted with industry partners, four workshops, and a variety of panels and paper presentations, and a community based outreach event hosted by Women in Technical Communication.

# Future plans

Although the strategic plan will be more fully developed in Spring of 2019 as the new officers are onboarded, see our current plans under the future goals section.

* Developing a long-term slate of conference locations, including collocation with other influential organizations in the field;
* Offering webinar versions of conference workshops that require membership;
* Sponsoring SIGDOC panels at other conferences to increase visibility of the organization;
* Creating community-based partnerships with organizations invested in the Design of Communication to deepen the slate of Diana Award nominees and increase membership from the community;
* Committing to industry partnerships through the development of an Industry Liaison position on the board, whose responsibility would be to do outreach for industry partners and solicit and program at least one industry-driven panel;
* Committing to community partnerships through the development of a Community Liaison position on the board, whose responsibility would be to do outreach for community partners and solicit and program at least one community-driven panel;

In addition to these new strategies, we will continue working with Women in Technical Communication and supporting the Microsoft Student Research Competition.

**SIGecom FY’19 Annual Report**

**July 2018 – June 2019**

**Submitted by: Kevin Leyton-Brown, Chair**

SIGecom serves as a bridge between theoretical research on economic systems (conducted by those in the fields of economics and operations research as well as computer science) and the application of such ideas in industry and elsewhere. As this report details, we are very successfully carrying out this mission: we attract top researchers and publications on topics that span theory and practice (with a relative emphasis on the former) and maintain close relationships with—and ongoing conference sponsorship from—some of the most significant companies in our sector (notably Microsoft, Facebook, Uber, Lyft, Google). However, maintaining this position requires a careful balancing act, ensuring that we continue to accommodate the viewpoints, research methodologies, and publication practices of different communities.

SIGecom's four primary activities are convening the annual *Conference on Economics and Computation* (EC), adjudicating paper and dissertation awards which are announced at this conference, producing the electronic newsletter *SIGecom Exchanges*, and running the journal, *ACM Transactions on Economics and Computation* (TEAC).

The 20th ACM Conference on Electronic Commerce (EC'19) was held in conjunction with FCRC in Phoenix AZ, June 24-28, 2019. The program chairs were Nicole Immorlica (Microsoft Research New England) and Ramesh Johari (Stanford University); the general chair was Anna Karlin (University of Washington). We continue to grow year on year; we received 382 technical paper submissions (up 42% from last year) and 577 researchers attended the two-day workshop/tutorial program, the three-day main conference program, or both (up 82% from last year, which was our previous high-water mark).

The SIG gave three paper awards at the 2019 conference. First, we awarded the Test of Time Award to *The Communication Requirements of Efficient Allocations and Supporting Prices*, by Noam Nisan and Ilya Segal, a seminal paper in the application of tools from communication complexity to the analysis of economic mechanisms. Second, we awarded the Doctoral Dissertation Award to Yannai Gonczarowski (Hebrew University of Jerusalem) for the dissertation *Aspects of Complexity and Simplicity in Economic Mechanisms*, advised by Sergiou Hart and Noam Nissan. We also recognized two runners up for this award: Nika Haghtalab (CMU) and Haifeng Xu (USC). Third, we recognized three exemplary papers at the conference. The Best Paper award went to *Obvious Dominance and Random Priority* by Peter Troyan and Marek Pycia; the Best Full Paper Award was given to *Prophet Inequalities for I.I.D. Random Variables from an Unknown Distribution* by Jose Correa, Paul Duetting, Felix Fischer and Kevin Schewior; and the Best Paper with a Student Lead Author Award went to *Combinatorial Auctions with Interdependent Valuations: SOS to the Rescue* by Alon Eden, Michal Feldman, Amos Fiat, Kira Goldner and Anna Karlin. The conference also recognized “exemplary” papers in each of the conference’s four tracks (though these were not official SIG awards). The awarded papers were *Estimating Approximate Incentive Compatibility* by Maria-Florina Balcan, Tuomas Sandholm and Ellen Vitercik (Exemplary AI Paper); *Equilibrium Effects of Pay Transparency in a Simple Labor Market* by Zoe Cullen and Bobak Pakzad-Hurson (Exemplary Applied Modeling Paper); *Observational Data for Heterogeneous Treatment Effects with Application to Recommender Systems* by Akos Lada, Alexander Peysakhovich, Diego Aparicio and Michael Bailey (Exemplary Empirics Paper); and *Obvious Dominance and Random Priority* by Peter Troyan and Marek Pycia (Exemplary Theory Paper; also given the Best Paper award).

The TEAC journal is doing well. It continues to run by-invitation special issues of the most recent EC conferences and also draws papers similarly from the WINE conference. It has two editors (one from computer science and one from economics): David Pennock (CS; Microsoft Research) and Ilya Segal (Econ; Stanford University). They aim to continue growing the journal and cementing it as a preferred destination for work in our field.

Our Exchanges newsletter continues to publish two issues annually. The current editor is Matthew Weinberg (Princeton). For a fifth year in a row, in an effort to improve the EC academic job market, Exchanges has collected and published bios of all job market candidates.

SIGecom’s volunteer development is extremely strong. Many dozens of people serve across a wide range of roles: in the conference organization committee; organizing committees for our various workshops; tutorial presenters; workshop panelists; TEAC editors in chief and associate editors; SIGecom Exchanges editors; SIG executive; three best paper award committees; a wide variety of ad hoc committees and special-topic volunteer roles. We are extremely conscious of diversity—particularly, but not limited to, diversity across research areas, gender, and countries of origin—and have been very successful in ensuring that our volunteer leaders are diverse, reflective of the community at large, and top-caliber researchers without exception.

To increase our community’s geographic diversity, we launched a new program issuing travel grants to researchers from low and middle-income countries. 9 researchers were able to attend EC due to this program; in total, 59 applied. Due to the difficulty some potential awardees faced in getting US visas, we also arranged live streamed “watch parties” in Abuja, Addis Ababa, Kampala, Lagos, and Nairobi.

We continued several new initiatives that were initiated last year:

* We transitioned to double-blind reviewing from single-blind, and continue to monitor the effects of this change. Our hope is that this will lead to a fairer review process and help to increase the diversity of the conference. We presented data analyzing the results of the initial experiment at the 2019 business meeting, and agreed to continue double-blind reviewing next year.
* We continued to follow a new timetable, with workshops on Monday, the conference Tuesday to Thursday, and workshops on Friday. Previously we ran the workshops and tutorials in parallel on the first two days. The change appeared to help ensure that the conference didn’t have declining attendance throughout the technical program on the last day.
* For the third year running, we video recorded all technical talks and tutorials, with the SIG covering the costs. Leveraging the availability of these videos, we initiated a new award last year: Best Presentation by a Student/Postdoc. This award is adjudicated after the conference by a committee that watches the videos after the fact, based on nominations from session chairs. This year, we also began live streaming many sessions, notably to facilitate participation in the conference by researchers who are unable to travel to the conference (e.g., due to visa issues).
* Recognizing that our SIG finances are healthy enough to permit us to take on new expenditures, we continued a mechanism for funding new special initiatives outside our usual operations, adjudicated by the workshop and tutorial chairs and approved by the SIG executive. This year we funded student scholarships through a recently established mentoring workshop; support for two other workshops (on Behavioral EC and on Mechanism Design for Social Good); a DIMACS working group project; and a women’s breakfast.
* We instituted an ACM EC Code of Conduct, which registrants were required to confirm that they accepted during the registration process. We also had a SIG representative on an Ad hoc committee to Combat Harassment and Discrimination in the Theory of Computing Community; we are working to implement this committee’s recommendations, which were presented at the business meeting.
* We held an event called “Highlights Beyond EC”, which invited talks about excellent papers that recently appeared in other publication venues; these talks were selected based on nominations and adjudicated by a dedicated committee. Our goal was preventing fragmentation, drawing in underrepresented communities, and maintaining EC as a “one-stop shop” for cutting edge research at the boundary between economics and computer science. This year we had three papers, all of which happened to appear at top economics journals. We hope to grow this initiative to include more papers next year.
* We continued a process for nominating top, accessible papers for consideration as CACM Research Highlights.

We continue to maintain a couple of practices that are unusual (unique?) among ACM conferences, so the following description is preserved from last year’s summary:

* To accommodate authors who publish journal papers in non-CS venues that do not allow previous conference publication, we allow single-page abstracts (which are reviewed as full papers and presented identically at the conference). This has grown from five or ten percent to over half the papers in the conference, forcing us to think carefully about the link between talks and archival papers. We now structure our best paper awards to allow recognizing an abstract-only paper but to ensure that at least one archival paper is recognized (as, indeed, happened this year). Based on discussion at the business meeting, we may drop this requirement going forward.
* We have an unusual “tracks” system in which papers are designated as belonging to “theory”; “AI”; “applied modeling” and “empirics”. Each of these has a separate SPC who oversee all papers from the track. This reassures minority communities in the conference that their work will be reviewed according to the community’s own standards, but is somewhat complex to handle in the conference management system. We continue to investigate alternative conference management systems that would work more smoothly with our conference structure.

**SIGEVO FY’19 Annual Report**

**July 2018 - June 2019**

**Submitted by: Marc Schoenauer, Chair until July 2019**

**EXECUTIVE BOARD**

Elections to the Executive Board have taken place this year, and one third of the board has been renewed. The following members had their term ending in 2019 (beside myself): Enrique Alba, Kalyanmoy Deb, Michael O'Neill, Terence Soule, Darrell Whitley.

Una-May O’Reilly (current vice-chair) chaired the nomination committee. The newly elected members are Hernán Aguirre, Enrique Alba, Peter A.N. Bosman, Anna Isabel Esparcia-Alcazar, Manuel López-Ibáñez, and Markus Wagner. Current Executive Board is available on [SIGEVO web site](https://sig.sigevo.org/index.html/tiki-index.php?page=SIGEVO%20Executive%20Board).

**BUSINESS MEETING**

GECCO 2019 is formally outside the report period, but very close, so I shall report on the results of the business meeting that took place in Prague during this conference, as they cover most of SIGEVO activities in the last 12 months.

As usual, the chair and EiC of both 2019 and 2020 GECCOs were also invited.

The following announcements and decisions were made at the meeting:

1. The new officers were elected. The new chair is Franz Rothlauf, the new vice-chair is Jürgen Branke, the new treasurer is Enrique Alba, and the new secretary is Peter Bosman. Marc Schoenauer and Darrell Whitley, who are no longer members of the Executive Board, have been nominated to the Advisory Board, joining Ken DeJong. Erik Goodman resigned from the Exec Board, and has been immediately nominated to the Advisory Board too. The mandate on the Advisory Board has been limited to 6 years. A new member will be invited on the Board to replace him – namely the candidate who received the most votes after the 6 new members during the elections (see above).
2. After the huge success of the first GECCO in Asia (Kyoto, Japan) GECCO continued to reach new heights this year, both in terms of submissions (501 this year, vs 513 last year) and in terms of attendance (677, highest in Europe). Acceptance rate was 34.5%, kept below 40%. Direct poster submissions continued to be a success, with 72 submissions (and 66% accepted, not counted in the acceptance rate).
3. GECCO will go back to Northern America next year, but in Mexico, due to the high risk of many attendees being refused a visa if going to the US. The General Chair will be Carlos Coello Coelle, esteemed member of our Executive Board. The organization is already well advanced: the venue has already been chosen, and everything looks on track.
4. The main striking news this year is the creation of a ACM new journal in the field, supported by SIGEVO: the Transactions on Evolutionary Learning and Optimization. Darrell Whitley and Jürgen Branke will be joint Editors in Chief, and the first issue is planned early 2020. This move takes place after years of non-conclusive discussions between ACM and MIT Press, owner of Evolutionary Computation, the oldest journal in the field.
5. The transition of SIGEVO Newsletter EiC from Emma Hart to Gabriela Ochoa has been completed, and issue 12:2 was published just before this GECCO, right on time. Furthermore, all issues are now stored in SIGEVO web space on ACM facilities (with thanks to Pier-Luca Lanzi, who hosted them during more than 10 years at the Politechnico di Milano).
6. The GECCO web site based on tikiwiki CMS has reached a steady-state, thanks to Nadarajen Veerapen, the 2019 electronic media chair, who accepted to continue this year, and will add new functionalities. He will also ensure in the future smooth transitions of GECCO web sites from one year to the next.
7. The concept of SIGEVO Summer School, piggybacking on GECCO, was run by JJ Merelo and Anna Esparcia, members of the Exec Board. Students and mentors met during 3 days before the conference. As in previous year, the students had a small project to work on and present in the last day, and received advice from the mentors about which tutorials, workshops and paper sessions to attend based on their experience and current home projects. Next year, the format of the Summer School will probably change, with new organizers being Vanessa Volz and Christine Zarges (discussions on-going).
8. The 2 new awards, the “Outstanding Achievement” award, and “Best EC PhD Dissertation Award” have now been approved by the ACM Award Committee. The chairs of the 3 committees who will decide on these awards have been nominated by the Exec Board: Marc Schoenauer for the Impact Award, Una-May O’Reilly for the “Outstanding Achievement Award”, and Manuel López-Ibáñez for the “Best EC PhD Dissertation Award”. Decisions must be made by March.
9. SIGEVO has created new “sustainability” positions, both inside the Exec (Markus Wagner volunteered and was nominated) and within GECCO organization (to be nominated by the General Chair soon).

**SIGEVO FINANCES**

SIGEVO continues to be in good shape financially, with events not producing deficits. Our reserves are healthy, and we are looking at ways (cf. Award ad-hoc Committee, Summer School) to use surplus for rewarding our membership through higher visibility and more services for students: Student support in travel grants at GECCO has been at $25K per year (continued this year). Call for innovative projects have been issued during GECCO closing session.

**AWARDS**

**Competitions**: No less than 8 competitions were held at GECCO-2018 with awards and prizes presented at the SIGEVO Annual Meeting. The areas of the competitions were

* 100-Digit Challenge, and Four Other Numerical Optimization
* The Legends of the Three Kingdoms Game
* Bi-Objective Optimisation for the Travelling Thief Problem
* Black Box Optimization
* Niching Methods for Multimodal Optimization
* Evolutionary Computation in Uncertain Environments: A Smart Grid Application
* Internet of Things: Online Anomaly Detection for Water Quality Control
* Virtual Creatures

**Humies Awards**: The most prominent competition at GECCO is the Humies Award for the best human-competitive application of Evolutionary Computation methods published in the last year. Strict criteria are applied for what work becomes eligible in the competition, and a panel of five independent judges is responsible for the selection of winners of $10,000 in cash prizes donated by Third Millennium Online Products Inc.

There were 18 entries, and 11 were selected as finalists, and presented during GECCO. The winners are

Gold Medal*:* [*Automated Self-Optimization in Heterogeneous Wireless Communications Networks*](http://www.human-competitive.org/sites/default/files/lynch.pdf)

David Lynch, Michael Fenton, David Fagan, Stepan Kucera, Holger Claussen, Michael O'Neill, University College Dublin, and Nokia Bell Labs Dublin, Ireland,

Silver Medal: [Evaluation of bi-objective treatment planning for high-dose-rate prostate brachytherapy - A retrospective observer study](http://www.human-competitive.org/sites/default/files/scmaree_0.pdf).

S. C. Maree, Ernst S. Kooreman, Niek van Wieringen, Arjan Bel, Karel A. Hinnen, Henrike Westerveld, Bradley R. Pieters, Tanja Alderliesten, Hoang Luong Ngoc, Peter A. N. Bosman, University of Amsterdam, CWI, and Technical University of Delft, The Netherland.

Bronze Medal (tie)*:* [*Darwinian Data Structure Selection*](http://www.human-competitive.org/sites/default/files/artemis.pdf)

Michail Basios, Lingbo Li, Fan Wu, Leslie Kanthan

Earl T. Barr, University College London, UK.

**GECCO Best Paper Awards** were given in different categories. The same rules as before applied to the nominations (the minimum submission numbers for a best paper award are 20, with smaller tracks collaborating to select a best paper among their union set. The new voting procedure that was experimented with last year was continued: each attendee received one single voting ballot together with her registration badge, allowing her to vote at one single Best Paper Session.

**GECCO Impact Award**: The “SIGEVO Impact Award” is given every year to recognize up to 3 high impact papers that were published in the GECCO conference proceedings 10 years earlier. Criteria for selection are high citation counts and impact deemed to be seminal. Selection is made by the SIGEVO Executive Committee.

This year, the Impact Award was given to the following paper published in GECCO 2009 proceedings:

[A genetic programming approach to automated software repair](https://dl.acm.org/citation.cfm?id=1570031)

Stephanie Forrest, ThanhVu Nguyen, Westley Weimer, and Claire Le Goues

In Franz Rothlauf and Günther Raidl (Eds), Proceedings of the 11th annual conference on Genetic and Evolutionary COmputation, pp 947-954, ACM, 2009.

# **ACM SIGGRAPH Annual Report**

# **July 2018 to June 2019 Fiscal Year 2019**

**Submitted by Jessica Hodgins, President**

 **Mission:**

ACM SIGGRAPH’s mission is to nurture, champion, and connect researchers and practitioners of

Computer Graphics and Interactive Techniques. (Approved by ACM August 2019)

# Five-year Vision: Enabling Everyone to Tell Their Stories

By **Everyone**, we mean not just our traditional audiences of professional movie, animation, and game makers but everyone with a story to tell, be they trained or novice, with significant time for the development of their story or intending to publish with just a single click.

By **Tell**, we mean all mechanisms of conveying a story: watching, experiencing, interacting, and creating.

By **Stories**, we mean not only our traditional media of movies, animations, and games but also newer forms of media such as augmented, virtual, or mixed reality, or forms of interactive and sensory experiences not yet invented. Stories may be narrative, abstract, educational or scientific. They may be purely digital or they may involve the physical artifacts either through incorporation or creation.

**Why this vision?**

* Computer Graphics and Interactive Techniques (CG&IT) is about communicating in innovative and inspiring ways.
* Telling stories using CG&IT, whether it’s explaining research findings, entertaining huge audiences or helping people understand the world, can change societies and cultures-we want to be the showcase for the existing and emerging fields that use CG&IT to connect people.
* We want to ensure we are relevant and meaningful to our existing diverse communities—this diversity of content and community has always been a strength of SIGGRAPH.
* We want to welcome newly emerging communities—this breadth is critical to our future success.

**Strategy Work:**

For the past three years, the ACM SIGGRAPH Executive Committee has been directing its work to support the strategic needs of our communities. We devote the majority of in-person meeting time to strategic discussions and save the administrative and operational work for bi-weekly hour-long tele-cons. We have formed six strategy committees within the EC with the assistance of a few non-EC members and some of the standing chairs:

# Nurturing our Existing Communities

The objective of this committee is to develop strategies to retain existing communities as part of ACM SIGGRAPH, and in particular to encourage participation in our conferences. We have worked on a number of projects, and seen some of them through to implementation.

In general terms the areas we are developing include:

1. Member benefits and Mentoring
2. Conference events
3. Future of our discipline

*Member Benefits*

We are currently developing a detailed report on member benefits and a comparison with the other ACM and IEEE SIGs. The strategic goal is to move our organization to being *the* professional organization for computer graphics and interactive techniques. The way forward we see is through mentoring and this mandate will come under new EC standing chairs.

Providing services to young people and making them feel a part of the organization has long been a SIGGRAPH strategy through student volunteers and student chapters. This year we developed a student travel grant program, and we have a new chair, Mathew O’Toole (CMU Faculty) to build a committee to administer the program. The EC have voted $40k to the program and the new committee is charged with building on these funds. The Diversity and Inclusion Chair, Tony Baylis, is also involved in exploring funding possibilities.

*Conference Events*

Our committee introduced the Thesis Fast Forward at SIGGRAPH 2018 (the major conference of ACM SIGGRAPH held in North America, referred to as SNA going forward), and took over oversight of the doctoral consortium for SA18 (SIGGRAPH Asia) and SNA19. We also introduced the thesis fast forward at SA in 2019. The thesis fast forward was very popular at S18, but the doctoral consortium was a closed event at SNA18 and therefore only serviced 8 students. The open format doctoral consortium at SA18 was reasonably well attended and became more of an event for all PhD candidates as well as the participants. We are keeping the two different formats for 2019 and later this year will review the events and how they meet the objectives of our communities.

We are also introducing more participation by the organization at the SIGGRAPH village, and more communication with our members. Initially this will be done through posters from strategy groups and three separate town halls (BOFs) with the goal of getting input from our attendees and members.

*Future of Computer Graphics and Interactive Techniques*

An initial committee exists to strike a larger committee jointly with Eurographics. A BOF has been organized for SNA2019 led by the 2020 papers chair, Szymon Rusinkiewicz. A report on progress is under preparation, and a workshop is being organized for late 2019 or early 2020.

# New Communities

We are reaching out to new communities to broaden the base of SIGGRAPH to support our members as they evolve their research and industry careers to fit the changing landscape in computer graphics and surrounding areas. Our primary activities are a series of workshops at both SNA and SA and a set of morning talks at SNA.

SIGGRAPH Frontiers Workshops: Full day, interactive workshops on Computer Graphics for

Autonomous Vehicles, Content Generation for Workforce Training, Sim-to-Real: From Skilled Virtual Agents to Real-World Robots, Immersive Visualization, Cybersickness: Causes and Solutions, and Textiles: Virtual to Actual.

SIGGRAPH Frontiers Talks: Morning talks on How Computer Graphics Expertise Will Further the State of the Art in Machine Learning, Imaging a Black Hole with the Event Horizon Telescope, Metric Telepresence, Speculative Futures, Virtual Reality and the Patient Experience, and Telling Complicated

Scientific Stories with Graphics

# Data

The data strategy group's priority is to enhance our understanding of SIGGRAPH’s community and future. We are also pushing for an effort to increase the quality of our data. Past and current data are not validated so the accuracy of our analysis is limited. In the context of membership benefits, we would like to better understand how our membership is evolving. In the last year, a cleanup and analysis of membership and registration data (SA and SNA) is now allowing some questions to be asked about variability of attendance and membership across different demographics. We looked into extracting an aggregate understanding of SIGGRAPH schedules from previous SIGGRAPH mobile apps, but found that this was not possible. Fortunately, with schedules in Linklings for SA2019, there will be new opportunities for understanding how different groups of members prioritize different sessions at the conference.

The data committee has also been working on a new set of short and concise survey questions to help fill in holes in demographic membership and attendance data, with the goal to better understand "who is SIGGRAPH". This effort is in conjunction with Smith-Bucklin Marketing and the Diversity and Inclusion committee. Another effort included an investigation of several recent years of conference submission data, which concluded that total submission counts at all top venues (CGF TOG SA SNA) are flat as opposed to shrinking, however, this is in comparison to strong growth at SIGCHI and enormous growth at ML/vision venues. Other tasks on the agenda (but with minimal progress) include looking into data visualization to allow the whole community to see who SIGGRAPH is, and the development of a quick reference sheet for committee and exec members for answering common questions. There have also been efforts to flush out a collection of SIGGRAPH Stories (tire tracks) to help highlight the impact and achievements of the graphics community. Finally, with the digital presence committee we have recently looked at other existing online networks and future possibilities for helping members network and connect with one another year round (e.g., LinkedIn, Alumnifire).

# Communication

As part of our subcommittee’s mission to reclaim SIGGRAPH’s brand and mindshare as the premiere organization for cutting edge computer graphics and interactive techniques, our team has been focused on three core initiatives:

**Computer Animation Festival Advisory Board:**

This past year, the Computer Animation Festival Advisory Board (“CAFAB”) was established and launched with the goals to leverage, elevate and unify the Computer Animation Festivals and Electronic Theater (from North America and Asia) as the organization’s most visible asset as a means to increase brand awareness of SIGGGRAPH. As part of this, the CAFAB, has started to develop a set of common policies and vision, mission and goals across both conferences as well as for the international Traveling Show. After defining the groups, the Board has prioritized and structured its focus around a five-year strategy, delivering on its first two proposals, digital marketing for the Traveling Show and consistent policies for the Animation Festival Awards between SIGGRAPH Asia and North America.

**Strategic Marketing Audit:**

The ACM SIGGRAPH organization has long struggled to help its constituents and members to understand the value of the organization beyond the conference. Simultaneously, as computer graphics have become ubiquitous, the ACM SIGGRAPH organization has lost some of its value as the brand that represents the cutting edge of computer graphics and interactive techniques in the hearts and minds of top researchers, practitioners and partners. To help reverse these trends, as part of the ACM SIGGRAPH Executive Committee’s strategy work, the Executive Committee has decided to retain a professional marketing and communications consultancy. The EC wishes to understand how the organization is perceived beyond the conference, the landscape in which we currently compete for members and thought leadership, what our strengths and weaknesses are with regard to marketing and communicating our value proposition, and most importantly, make recommendations that are likely within reach of a volunteer driven organization.

**Conference in a Box:**

Similar to how the EC is hoping to use leverage the CAFAB to increase discovery and awareness of SIGGRAPH, the Conference in the Box is the third initiative this team is advancing. The premise is that the EC develops a common piece of branded hardware/equipment that is used for chapter events and conferences outside the normal definition of CG&IT. The common setup is a portable ACM SIGGRAPH Branded display with imagery and video content that introduces the organization. It would also likely include a flat screen monitors and playback device that included recent video loops from the most recent conference that align with strategic marketing messages. For chapters, with the addition of a whatever speakers they want for the main content, along with the provided video segments, they would be able to put-on mini-conference to help their attendees know what the main conferences are about. For ‘analogous’ conferences (conferences that the organization trades space with such as SID and Unity, or with industries who we want to raise awareness (e.g.; Automotive), this same display can sit in a 10 x 10’ booth with more specific video content on the display and volunteers can stand in front of it to talk to people while the video clips play in the background.

# Digital Presence

We are continuing to improve our Digital Presence by collecting and archiving current and historical assets and making them accessible through search and exploration interfaces. We are investigating ways to aggregate and present relevant news and social media content on our website. We are seeking volunteers and contractors to help with these and related projects and exploring a path to partner with SIGCHI.

# Governance

The Governance Committee examines the policies, procedures, and structure of ACM SIGGRAPH and recommends changes to the Executive Committee who approves or rejects them. Almost all of the changes below are reflected in the ACM SIGGRAPH Policy Guidelines.

In the past year the Governance Committee has recommended, and the Executive Committee has approved, the following major changes:

Created eight new Standing Committees: Awards, Diversity and Inclusion, History, Interactive and Immersive Experiences, Lifelong Learning, Practitioner Career Development, Professional Development, Research Career Development, and History.

Substantially modified the mission of the following Committees: Communications, Early Career Development (S3), External Relations, International Resources, and Publications.

Grouped all of the Standing Committees into five groups with one or more EC Directors as liaisons to each group.

Redefined the workload of the elected EC Directors.

Substantially changed Section IV: ACM SIGGRAPH Budgets and Financial Policies.

Revised SECTION VIII: SIGGRAPH ASIA to make it more consistent with SECTION VII: SIGGRAPH Conference.

Revised SECTION IX: SPECIALIZED CONFERENCES to give the Financial Committee more input into the budgets of the Specialized Conferences.

Created SECTION X: VOLUNTEER RECOGNITION to standardize volunteer recognition across all of the ACM SIGGRAPH groups.

Made numerous minor edits and changes in the Policy Guidelines.

Created five new versions of the Policy Guidelines that include all of the above.

Rewrote the Nominations Committee Call for Executive Committee elections to reflect the increased emphasis on strategic work and the bylaws changes.

**Conferences**

# SIGGRAPH 2018

The annual North American SIGGRAPH conference is a five-day, interdisciplinary educational experience celebrating the latest developments in computer graphics and interactive techniques. It includes a three-day commercial exhibition that attracts hundreds of exhibitors from around the world. For SIGGRAPH 2018, more than 16,500 people from Canada and 87 other countries attended. Some events were livestreamed, which generated more than 60K views on ACM SIGGRAPH’s YouTube chancel and more than 50K views on the SIGRGAPH conference Facebook page. The conference also hosts the international SIGGRAPH Computer Animation Festival, the leading annual festival for the world's most innovative, accomplished, and amazing digital film and video creators. This year’s theme was “Generations,” in which 25 short films and presentations explored the theme of the next generation of storytelling.

A couple other offerings in 2018 enhanced the conference experience. It was the inaugural year of the Immersive Pavilion, which included virtual, augmented and mixed reality experiences for attendees. It also marked the return of the Business Symposium with sponsorship and involvement from Creative BC. The Symposium consisted of panels, discussions, roundtables, keynotes and interactive surveys, and featured speakers from an array of industries and backgrounds to explore the future of innovation, design and technology.

To quote 2018 conference chair Roy C. Anthony, “The enthusiasm and energy demonstrated at SIGGRAPH is second to none. I saw thousands of people openly sharing new ideas and expressing their creative energy within every square foot of the Vancouver Convention Centre. This year, I leave energized, not only by the inspiration that SIGGRAPH always delivers, but to have also been able to give back to this wonderful community, which has inspired me to be inventive and to create, as well as helped me along the way in my career. These past 18 months as Conference Chair have been a true honor for me — an experience I will never forget.”

**Breakdowns of Technical Paper Submissions:**

Received 464 complete submissions

Accepted 128 juried

27.5% acceptance rate

**Topics:**

Animation/Simulation - 36 out of 128 = 28%

Imaging/Video - 23 out of 128 = 18%

Interaction/VR - 6 out of 128 = 5%

Methods & Applications - 9 out of 128 = 7%

Modeling/Geometry - 38 out of 128 = 30%

Rendering/Visualization - 16 out of 128 = 13%

**SIGGRAPH Asia 2018**

The 11th ACM SIGGRAPH Conference and Exhibition on Computer Graphics and Interactive

Techniques in Asia took place in Tokyo, Japan, from 4 - 7 December 2018. It is the third time that SIGGRAPH Asia has been hosted in Japan. The annual event, which rotates around the Asian region, attracts the most respected technical and creative people from all over the world who are excited by research, science, art, animation, gaming, interactivity, education and emerging technologies.

This year we received 353 completed submissions, a significant increase compared to last year. Each submission was reviewed by at least 2 members of the papers committee, as well as at least 3 experts from outside the committee. In total, 1636 reviews were completed by 636 reviewers. The papers committee, consisting of 46 experts recruited from academia and industry, then made final decisions to accept 106 papers for presentation at SIGGRAPH Asia 2018. The acceptance rate was 30%.


# Awards

SIGGRAPH presented six awards at SIGGRAPH 2018, and inducted 52 people into the newly formed SIGGRAPH Academy:

# 2018 Computer Graphics Achievement Award: Daniel Cohen-Or

For his seminal contributions in the field of geometry processing, shape analysis and image processing. The Computer Graphics Achievement award is given each year to recognize an individual for an outstanding achievement in computer graphics and interactive techniques.

# 2018 Significant New Researcher Award: Gordon Wetzstein

For his work in advanced display hardware and display-specific rendering techniques. The Significant New Researcher Award is awarded annually to a researcher who has made a recent, significant contribution to the field of computer graphics and is new to the field.

**2018 Outstanding Service Award: G. Scott Owen**

For his long-term, visionary, and dedicated service to ACM SIGGRAPH

# 2018 Lifetime Achievement Award in Digital Art: Monika Fleischmann

For pioneering the field of new media art through research projects based on interface design and new forms of communication

# 2018 Practitioner Award: William T. Reeves

For his ground-breaking techniques in Particle Systems and Z-Depth shadows, and in production software with the RenderMan renderer

# 2018 Outstanding Doctoral Dissertation Award: Jun-Yan Zhu

For his pioneering use of modern machine learning in computer graphics, with the first dissertation to systematically attack the problem of natural image synthesis using deep neural networks.

# 2018 SIGGRAPH Academy inductees

* **Ivan E. Sutherland**: For Sketchpad and for providing a vision for computer graphics that has sustained the field.
* **Donald P. Greenberg**: For pioneering original ideas, and for education of graduate students in computer graphics and computer-aided design.
* **Andries van Dam**: For unwavering pursuit of excellence in the field of computer graphics, and for contributions to computer graphics education and related fields.
* **Ed Catmull**: For outstanding creative contributions as an individual researcher, for inspirational leadership, organizational direction and mentorship
* **José Luis Encarnação**: For leadership in applied research, for work in establishing international graphics standards, and for contributions to computer graphics education.
* **James Foley**: For strong and sustained leadership in computer graphics education and research, and for dedication to the profession through books and his work with ACM/SIGGRAPH and ACM publications.
* **James F. Blinn**: For pioneering work in rendering and educational animation, and for exemplary contributions as an author.
* **Pat Hanrahan**: For leadership in rendering algorithms, graphics architectures and systems, and new visualization methods for computer graphics.
* **Tomoyuki Nishita**: For work in the rendering of natural phenomena that has inspired computer graphics researchers all over the world.
* **Nelson Max**: For pioneering work in scientific visualization, for deep technical contributions, and for generous encouragement and stimulation of ideas and intellectual exchange.
* **Robert L. Cook**: For numerous pioneering technical contributions to rendering, and for extraordinary service.
* **James T. Kajiya**: For numerous pioneering technical contributions to rendering, and computer graphics hardware design.
* **Turner Whitted**: For the invention of recursive ray tracing and for groundbreaking contributions to the areas of shaders, procedural graphics, graphics hardware, novel sensors, and sensor arrays.
* **Henry Fuchs**: For contributions to augmented and virtual reality, telepresence and graphics hardware, and for educating the leaders in the field of computer graphics.
* **Jessica Hodgins**: For foundational work in character animation, for support and cultivation of emerging researchers, and for extensive volunteer service to the computer graphics community.
* **Lynn Hershman Leeson**: For paradigm-changing innovations with a broad range of emergent applications, and pioneering new modes of storytelling, all accomplished with a strong aesthetic and insightful cultural discourse.
* **Roman Verostko**: For seminal contributions to the creation and promotion of digital art.
* **Yoichiro Kawaguchi**: For creative and innovative artistry, giving life to a stunning aesthetic derived from dedicated research in computer technology, biological forms, and contemporary artistic practice.
* **Charles Csuri**: For visionary work in the early recognition of the aesthetic potential of computer graphics, and for a lifetime of dedicated teaching and creative production.
* **Jean-Pierre Hebert**: For pioneering achievements in creating art through computer programming, and using algorithms and innovative techniques for new forms of creative expression.
* **Manfred Mohr**: For pioneering achievements in creating art through algorithmic geometry.
* **Lillian Schwartz**: For pioneering work using computers in art including graphics, film, video, animation, special effects, virtual reality and multimedia, and computer-aided analysis of art and architecture.
* **Steina Vasulka**: For pioneering work in video as a creative medium.
* **Ernest A. Edmonds**: For major contributions to the development of computational art, and to the broader field of contemporary art.
* **Monika Fleischmann**: For pioneering the field of new media art through research projects based on interface design and new forms of communication.
* **James H. Clark**: For the development of the "Geometry Engine."
* **Loren Carpenter**: For pioneering work in the design of algorithms for generating raster computer graphics, and for computer graphic images that mimic photographic realism.
* **Alan H. Barr**: For contributions to graphics, primarily for extending computer graphics shape modeling to include physically based and teleological modeling.
* **John Warnock**: For PostScript, which embodies a major contribution to imaging models, and to integration of graphics and text.
* **Alvy Ray Smith**: For seminal contributions to computer paint systems.
* **Kurt Akeley**: For contributions to the architecture, design, and realization of high performance 3D graphics hardware systems.
* **Marc Levoy**: For pioneering work in rendering volumes without an intermediate surface representation.
* **Przemyslaw Prusinkiewicz**: For work in the modeling and visualizing of biological structures.
* **Michael F. Cohen**: For the development of practical radiosity methods for realistic image synthesis.
* **Tony DeRose**: For seminal work in making subdivision surfaces a practical geometric modeling technique.
* **David H. Salesin**: For pioneering the field of non-photorealistic rendering in computer graphics.
* **David Kirk**: For bringing high performance computer graphics systems to the mass market.
* **Peter Schrӧder**: For pioneering work in geometry processing and multiresolution modeling.
* **Hugues Hoppe**: For pioneering work on surface reconstruction, progressive meshes, geometry texturing, and geometry images.
* **Jos Stam**: For pioneering work on subdivision surfaces, and on fast algorithms for the simulation of natural phenomena, especially fire, fluids, and gasses.
* **Thomas W. Sederberg**: For pioneering work on free-form deformations, and the use of algebraic geometry in geometry modeling.
* **Greg Ward**: For the development of the Radiance synthetic imaging system.
* **Ken Perlin**: For broad contributions to and impact on computer graphics, ranging from novel mathematical approaches for modeling to hardware interfaces.
* **Michael Kass**: For significant contributions to computer graphics, ranging from image processing to animation to modeling, and in particular for the introduction of optimization techniques as a fundamental tool in graphics.
* **Richard Szeliski:** For pioneering contributions at the intersection of computer graphics and computer vision, particularly in image-based modeling and rendering.
* **Greg Turk**: For contributions to physically-inspired mathematical application in graphics, particularly texture synthesis, geometric modeling, and physical simulation involving thin structures.
* **Holly Rushmeier**: For work on global illumination, material capture, and the display of high dynamic range images.
* **Thomas Funkhouser**: For work in 3D shape-based retrieval and analysis, and for work on interactive systems for both visual and acoustic modeling of complex virtual environments.
* **Steve Marschner**: For contributions to modeling the appearance of natural materials.
* **Fredo Durand**: For seminal contributions to the field of computational photography.
* **Ramesh Raskar**: For numerous, impactful research contributions to computational imaging and light transport.
* **Daniel Cohen-Or**: For seminal contributions to the fields of geometry processing, shape analysis and image processing.

**Standing Committees:**

# Chapters Committee

*Promotes, plans and facilitates the full integration of Chapter activities into ACM SIGGRAPH while identifying and facilitating the flow of additional ACM SIGGRAPH benefits through to Chapters. Provides a link for communication between ACM and Chapters regarding the details of ACM policies and procedures. Devises best “face” for Chapters on ACM SIGGRAPH Web presence. Ensures compliance with all relevant policies and procedures.*

Chapters continue to enhance the work of ACM SIGGRAPH. The total number of chapters remains fairly constant. Notably, however, we chartered a student chapter outside of the U.S., in Turkey. Also, the Montreal chapter was resurrected and is doing well. Our conference activities were well received, with successful workshops at both SIGGRAPH and SIGGRAPH Asia. Although smaller in attendance, the workshops increase the camaraderie among chapter leaders and other members of the organization and conference. The PSCC continues to build tools for chapters, including Google team drives for each chapter and a Slack channel for leaders to communicate and ask questions. The current Chair of the PSCC has chosen to step down, and we look forward to working with the new Chair.

# Communications & Membership Committee

*Recommends and then implements appropriate communication channels for the organization and its constituents. Designs and supervises build out of ACM SIGGRAPH electronic presence. Works with the EC to realize strategic communication and marketing goals. Oversees the SIGGRAPH Village at both SIGGRAPH conferences.*

We have had a stable core group of contributors this year. Melanie Farmer has continued to write articles for the website and for the Conference. Theresa-Marie Rhyne has done an exceptional job getting member profiles up and enabling everyone to tell their story. Alex Bryant’s efforts in the social media have increased our rate of forwards and shares by 181%. Adding new people to the team has met with some success. Tosh Araki continues to do design for the organization, and he produced the banners for the Conference in a Box concept. Three other people were interviewed to work with the website, but tasks were never completed by them.

In the last twelve months, my primary focus has been the website and its conversion from Drupal to WordPress. The port to WordPress was done by a contractor, iWitness Design. With this redesign came a new navigation. Most of my volunteer cycles in the past six months has been fixing the broken links and orphaned pages. These were a priority because they effect SEO and adversely affect our rankings in search engines.

Efforts with the strategic planning in both the Marketing and Communication and Online Communities has taken priority in some respects, with the Marketing and Communications team having the most traction. Efforts now are around determining the content needed for the Conference in a Box.

# Digital Arts Committee

*Fosters year-round engagement and dialogue within the digital, electronic, computational, and media arts. Facilitates dynamic scholarship and creative programming for the digital arts within the ACM SIGGRAPH organization. Promotes collaboration between artists and the larger computer graphics and interactive techniques community. Promotes collaboration between the Digital Arts Committee (DAC) and conference art programs.*

This year the Digital Arts Community continued its focus on engaging with the Annual Conferences and the broader Digital Arts Community. At the annual conference in 2018 we debuted a new online, juried exhibition, “Origins + Journeys,” which was developed to be thematically related to the Art Gallery. This was debuted in talks and through kiosk co-located with the Art Gallery. We also developed a second juried, online exhibition with a guest curator, “The Urgency of Reality in a Hyper-Connected Age,” which was soft-launched at SIGGRAPH Asia as part of our presence there, and will be highlighted at the 2019 conference. At S2018 we coordinated the Art Party at a local gallery, attracting approximately 200 participants. We have arranged for the Art Party to take place on-site at the Art Gallery at S2019, a first in several years, as an effort to bring together a wider group at the conference, and also to reach out to the local digital arts community in LA, and in future with DC. After the conference, we revised our mission statement to include a wider range of computational media arts practices in efforts to reach out to a broader community, and are coordinating with Leonardo LEAF on activities for S2019. We also continued to build the Digital Art Archives project, with the support of ACM. We are currently developing a new online platform for showcasing DAC activities in anticipation of retiring the Ning platform, and are prioritizing social media and outreach for next year. We are a as discussing ways to archive digital arts projects alongside written essays with Leonardo as part of future plans for Art Papers.

# Diversity and Inclusion Committee (new in 2018)

*Celebrates the diversity that exists within the ACM SIGGRAPH community and provides opportunities, both in-person and year-round, to connect with others with common backgrounds, ethnicities, and gender for mentoring and inspiration. The goal of this committee is to create a welcoming and nurturing community for everyone working in computer graphics and interactive techniques independent of gender, sexual orientation, ethnic background, or abilities.*

The Executive Committee recruited Tony Baylis for the role of chair of the Diversity & Inclusion Committee in May of 2018. The role is to provide leadership and guidance for ACM SIGGRAPH to be recognized as an inclusive organization that serves all of its members equally.

**2018 Goals and Objectives:**

1. Recruit committee members
2. Develop an activity for the SIGGRAPH 2018, 2019 and SIGGRAPH ASIA 2018, 2019 conferences
3. Fundraising for SIGGRAPH Diversity and Inclusion efforts
4. Create a SIGGRAPH Cares initiative
5. Collaborate with other chairs and current efforts at the conferences
6. Communicate our efforts to the community and affiliated organizations
7. Develop a Mission, Vision, Purpose and goals for our ACM SIGGRAPH Diversity and Inclusion

# Education Committee

*Works to support educators in computer graphics and interactive techniques. This encompasses both technical, creative, applied and interdisciplinary studies at all post-secondary levels that intersect curricular areas of computer science, engineering, art, design and related disciplines. The Education Committee undertakes a broad range of projects and activities in support of the computer graphics and interactive techniques education community, such as developing curriculum guidelines, providing instructional resources, organizing SIGGRAPH conference-related activities and outreach.*

OVERVIEW:

After a period of restructuring and review of goals, the 2018-2019 programming year saw renewed energy and substantial progress in several major areas:

* Supporting for university educators in VR and administrators adding VR courses to existing programs in the form of workshops, surveys, exemplar courses and instructional materials.
* Coordinating and improving youth outreach to high school and pre-major students wishing to explore graphics as a potential future field.
* Improving access to instructional materials from a variety of existing SIGGRAPH resources by using the Education Committee website as filter based on course or topic.
* Strengthen and broaden the conference experience with the addition of an Educators Theater at the Education Booth in SIGGRAPH Village and a much more sophisticated social media plan.

ACCOMPLISHMENTS and HIGHLIGHTS:

Specific accomplishments in each of these areas highlights key steps that have been taken to better serve educators:

1. To support a growing demand for VR Course, the SIGGRAPH Education Committee increased its efforts to provide VR instructional materials, define VR curriculum, conduct a survey and sponsor VR workshops. A workshop was held at VRCAI 2019 in Tokyo and Birds of a Feather Sessions have been organized for at SIGGRAPH 2018 and again for SIGRAPH 2019. Plans are underway to sponsor fall and spring workshops in the Washington DC Region in preparation for the 2020 Conference.
2. Outreach efforts that targeted high school students have been restructured to meet modern best practices and to better coordinate across the entire SIGGRAPH organization. The Pioneer Mentors program is now for students over 18 to explore graphics as a college field of study in a weeklong, one on one experience. High school youth under age 18 have the opportunity to visit the annual conference for a one-day experience in groups if accompanied by adult chaperones, which may apply through the Education Liaison to the Conference Committee.
3. A Resources Subcommittee was charged with revising and coordinating access to the many instructional resources available through existing SIGGRAPH repositories including the ACM Digital Library, SIGGRAPH University, conference submission system, and the Faculty Submitted Student Work showcase. The members have been charged with creating “curated lists” by topics that align with curriculum to help educators quickly find the best resources for a course or module.
4. A Communications Director position was created to coordinate and promote conference related activities by serving as a primary point of contact to work closely with other leaders within the SIGGRAPH organization and the Conference Committee to manage social media posts, SIGGRAPH Village booth design, organize new speaker events at the Educators Booth, promote networking opportunities and Educator Focused content, the SPACETime student art contests and to coordinate budget across these activities. A pilot Educators Theater is scheduled for SIGGRAPH 2019 to invited exhibitors to give informal, education-focused talks.

# External Relations

Elected new Chair, Diana Arellano (replacing Jeff Jortner)

*Manages relationships with professional societies and organizations that are external to ACM. Working with the EC this committee identifies and establishes relationships with new organizations according to the current strategic plan.*

One of the first tasks was to get a summary and details of all of the external agreements the organization has with various organizations and companies. This helped to see which agreements needed to be renewed soon and on which ones there is room for improvement. This led to conversations with Laval Virtual and FMX on how to improve the agreements. For 2019 the representative at Laval was the E-Tech Chair Courtney Starrett and with her help, a summary of take-aways for future Laval attendance was done.

New for this year is the financial support to attend Laval Virtual (Courtney), as well as to the contributions exchange from Laval and DCAJ. Miho Aoki is part of the External Relations Committee, as liaison between our Japanese partners DCAJ and CG-Arts and ACM SIGGRAPH. She is in charge of the communication between both parties. Finally, the biggest endeavor during the past few months was to explore collaboration opportunities between the Academy Software Foundation (https://www.aswf.io/) and SIGGRAPH / ACM SIGGRAPH.

# Information Technology Services

*Provides information services support to the ACM SIGGRAPH community. Manages the siggraph.org server infrastructure (software/hardware). Works with the ACM IS team as needed on technical issues for ACM SIGGRAPH and ACM. Responsible for maintaining a database of accounts and email aliases for tracking purposes (both creation and deletion as appropriate).*

This year, two efforts stand out above the others. The first is working with the EC and Communications committee on the design and roll-out of the new ACM SIGGRAPH website. Supporting of the previous website had been difficult at times, primarily because of being built in Drupal. The switch to a

WordPress based system provides an easier to support platform along with giving us the ability to spread out the support of the site to a wider group as necessary.

The second item has seen a lot of growth this year and it is the use and support of Google Team Drives. Work is being done to migrate all of the current content stored in original Google Drives over to their appropriate Team Drives and verify the correct permissions and people have access.

# Nominations Committee

*Selects slate for the annual Executive Committee election. Recommends candidates for Chairs of Standing Committees to the Executive Committee.*

The Nominations Committee managed applications, conducted interviews, and made recommendations for the following for Chair positions: Diana Arellano (External Relations), June Kim (International Relations Committee), and Victoria Szabo (Digital Arts Community, second term). The EC voted to accept all of these recommendations. Most recently after recommending two individuals for the new Interactive & Immersive Committee Mark Billinghurst was selected as Chair by the EC in late June.

The Nominations Committee also selected the first set of candidates for the EC using the new mini-slate approach with at least two candidates for each of the three director slots. The election will conclude in August 2019.

# Publications Committee

*Documents the content presented at our sponsored events, using channels that are efficient and costeffective. Works with ACM Publications Board as new situations arise and on items with broader implications.*

Ongoing initiatives include working with the organizers of numerous sponsored events to collect content and prepare the proceedings of their event, working with vendors to prepare physical deliverables for distribution, and working with ACM to import that content into the ACM Digital Library. (Events: SIGGRAPH 2018, SIGGRAPH Asia 2018, and CVMP, VRST, I3D, Digipro, ETRA, SCA, SCF, SAP, and Web3D.) This also includes PACMCGIT, now in its second year / volume.

New / updated initiatives include:

1. Working with conference organizers, program chairs and ACM personnel to rewrite several of ACM’s rights management forms to better serve the conferences’ needs and assisting in the migration of select conference programs’ rights management from

“permission on acceptance” to “permission on submission.”

1. Continuing to better the documentation available to authors of works submitted to SIGGRAPH-sponsored events.
2. Continuing my role as co-chair of the Conferences Committee of ACM Publications Board.
3. In that capacity, working to help test the new proceedings production system (TAPS) for ACM, and working with authors of a few events (Web3D is the first SIGGRAPH event) to use TAPS. It will be the default production system later in 2019 and all of our sponsored events will use it.

# Specialized Conferences Committee (SCC)

*Approves and monitors specialized conferences to ensure that they are financially and intellectually healthy and aligned with the mission of ACM SIGGRAPH. Promotes awareness of the specialized conferences and the resulting archival content to the broader community and works to improve the integration of the specialized conferences with other SIGGRAPH events. Together with the External Relations Committee, the SCC works to strengthen existing ties and identify new venues, emerging themes or potential relationships with other conferences and organizations to broaden the scope of SIGGRAPH.*

This year, the SCC invited TVCG sessions at SIGGRAPH 2019 and SIGGRAPH Asia 2018. Added new conferences as in-cooperation events (IEEE Symposium on AI&VR). Coordinated the approval of PAF and TMRF of over two dozen supported or in-cooperation events. Added CVMP 18 as sponsored event – the 15th ACM SIGGRAPH European Conference on Visual Media Production (Although held incooperation for many years, it has now become fully ACM-Sponsored). 16th CVMP will happen in London December 2019. Currently working with the Brazilian Computer Society to have Three New

Brazilian Conferences as co-sponsored events: SIBGRAPI 2019, SBGames 2019 and SVR 2019, the Brazilian Symposium on VR. Ironing out procedures for making 50% of previous years’ surpluses available to sponsored events.

In FY2019, the Specialized Conference Committee approved six sponsored conferences including VRCAI 2018 (Co-located with SIGGRAPH Asia), SAP19, Web3D19, MiG'19, DigiPro'19, as well as six co-sponsored conferences VRST'19 (Co-located with SIGGRAPH Asia), Expressive'19, SCA, UIST, I3D, HPG and 15 in-cooperation (ICAT-EGVE, GRAPP, GI, SPM, SMI, SGP, FMX, CW, CGI, CAD/Comp Graphics 2019, CASA) events. In addition, three conferences co-located with SIGGRAPH

2019, the Digital Production Symposium (DigiPro), EG/ACM SIGGRAPH SCA, and the ACM Web3D).

# Student Services Committee

*Plan, develop and facilitate activities that integrate students into the ACM SIGGRAPH community. Provide demonstrable value to student members throughout the year.*

This year the S3 committee continued to bring additional year round value to ACM SIGGRAPH student members, while broadening our mission to include emerging professionals. S3’s mission is to plan, develop, and facilitate activities that assist with integration into the larger SIGGRAPH community and enhance career development. Emerging professionals are defined as undergraduate and graduate students, as well as, those within the first three years’ of graduation.

S3 also provides continuity and institutional memory for the student volunteer and intern programs at

SIGGRAPH North America and SIGGRAPH Asia and collaborates with other SIGGRAPH entities

(conferences, committees, etc.) on issues that affect student and emerging professional members. S3 has four key programs - resume and reel reviews known as S3R3, mentoring for ACM SIGGRAPH student members known as MentorMe, XSV, and a series of webinars and talks.

**Action Items for the EC:**

* Request: Approval to expand the XSV program for SIGGRAPH Asia.
* Background: XSV program currently runs from September through August on a calendar year to take advantage of the North American SIGGRAPH conference volunteer opportunities. The team is looking to expand the program for SIGGRAPH Asia, which will run on a different calendar cycle and application process. Mentors still need to be identified to have this implemented for SIGGRAPH Asia 2019.

# International Resources Committee

Elected new Chair, June Kim (replacing Diana Arellano)

*Support of the international community of SIGGRAPH through events and activities at the conference, particularly the International Village.*

This year the International Resources Committee (IRC) continued working to achieve its two main goals:

**Collaboration** External:

* To collaborate with other committees – Diversity & Inclusion, Chapters Digital Art Community and Conference committees to share committee members and space to run sessions together.

Internal:

* To empower all members as all round players and leadership

**Development of the Culture of International Resources (IRC)** 1st IRC workshop at the end of SIGGRAPH 2019:

* To support and encourage team members understanding of committee activities and encouraging active participation.
* To discuss new SIGGRAPH recognition policy

# History Committee

Elected New Chair, Mary Whitton.

 *The History Committee is a group of individuals each of whom has an interest in the history of ACM SIGGRAPH and its activities, artifacts, and community and stories. Their priorities are (1) to preserve the stories and artifacts of our community and industry, and (2) to make the collected materials broadly accessible by the public.*

The History Committee was established as a regular standing committee of the EC in 2018. Its charter was updated to include documenting the Impact of SIGGRAPH in development of computer graphics research and the computer graphics industry. This new effort will get underway in FY2020. After a successful pilot activity at S18, the project to record *conversations* between SIGGRAPH notables, e.g., Coons Award winners and attendees at the first conference, is improved and expanded for S2019. We are initiating early planning for history related activities at SIGGRAPH’s 50th conference (2023). Two webbased archives, the ACM SIGGRAPH Art Show Archive and the People Behind the Pixels, added content and improved the robustness of their infrastructures this year. We are interfacing with IT and Online communities in an effort to formalize taxonomy and semantic definitions to support access to SIGGRAPH materials in collections. The projects to archive materials from LA SIGGRAPH (Local Chapter), records from now defunct graphics production companies, and SIGGRAPH Course Notes (not born digital) continued with new deposits of materials made at the Charles Babbage Institute.

# Awards Committee

*The Awards Chair is responsible for the oversight of the various awards committee chairs, and the SIGGRAPH academy chair, and for organizing the Awards Luncheon at SIGGRAPH. The Chair is also responsible for coordinating publicity (e.g., making sure the awardees don’t tell about their awards before SIGGRAPH has a chance to announce them), and working with contractors on the Awards presentation portion of the SIGGRAPH conference. Finally, the Chair is responsible for ensuring that individual awards chairs follow a reasonable sequence of succession, particularly for ensuring that the rising chair for any committee is known before SIGGRAPH, so that they can be announced, and the retiring chair thanked during the awards ceremony. This particular “chair” assignment is a little idiosyncratic, as there is no specified committee or committee meetings.*

Elected new Chair, John (Spike) Hughes

We have awards selected for this year and announced them publicly. We are in the process of ordering plaques and teapots for the award winners and sending checks to those awardees whose award includes an honorarium.

Planning for the Awards lunch is underway. The awards-lunch invitation list was updated by removing several folks who had remained on it long after they should have been removed (members of the technical awards committee from 8 or 9 years ago, for instance), and adding this year’s winners. A more sophisticated spreadsheet has been created which should simplify this process for subsequent years.

**Advisory boards:**

**CAFAB:**

Chair: Jason R.M. Smith

In 2018 the Computer Animation Festival Advisory Board was established with the goal to provide a long term vision to the CAF whilst promoting the SIGGRAPH Organization and Conferences through the international Traveling Show.

After defining the group’s vision, mission and goals, the Board prioritized and structured its focus around a five-year strategy, delivering on its first two proposals, digital marketing for the Traveling Show and consistent policies for the Animation Festival Awards between SIGGRAPH Asia and North America.

The Board also welcomed Chris Wiggum of PIXAR, who joins as the first of two external advisors for the group.

**Art:**

Chair: Mona Kasra

SIGGRAPH ART ADVISORY GROUP (AAG) was established in spring of 2019 to ensure that Art Gallery and Art Papers continue to be valued conference programs serving the artist community and beyond. This newly launched group provides counsel to the Conference Advisory Group (CAG) and SIGGRAPH Asia Conference Advisory Group (SACAG), as needed, on multi-year, cross-conference issues affecting the Art Gallery and Papers community. AAG currently has 11 members (Chair & Exofficio members). Ex-officio members are N-1, N, and N+1 art Gallery and Papers chairs for

SIGGRAPH, SIGGRAPH ASIA, and the current chair of the ACM SIGGRAPH Digital Arts Community (DAC). AAG will be adding 2 to 3 appointed members in the near future. AAG primarily dedicated its first group meeting to addressing the Art Gallery jury process and procedures, as requested by the CAG. AAG Chair later compiled the group's recommendations and submitted them to CAG Chair. In the upcoming months, AAG will assemble a document with general suggestions for the structure of Art jury meetings.

**PAG:**

Chair: Holly Rushmeier

The PAG provided lists of recommended papers chair candidates for SIGGRAPH Asia and SIGGRAPH. The board also responded to various inquiries from the current papers chairs on matters of policy and difficult situations.

**Key Issues facing ACM SIGGRAPH:**

Continued implementation of the five-year strategy for the organization and conferences. Ensuring that all involved groups are aligned with the five-year strategy.

Volunteer development is a critical issue for all aspects of the organization. We have initiated a new recruitment effort for the organization but it is clear that much more needs to be done to ensure a robust and diverse volunteer base. The jobs have a tendency to grow without bound and we turn to the same volunteers repeatedly.

We are focusing on enumerating and enhancing our member benefits. One key initiative there is mentoring and we are recruiting several new standing committee chairs to work in lifelong learning, professional development, career development for researchers, and career development for practitioners.

We plan to work with the Publications Board to ensure that permissions for our submitted content allow the capture of the maximum amount of content into the digital library in video form and to drive more traffic to the DL rather than author’s personal web pages.

**Appendix:**

Chair regroupings with EC reps:

*Career Development: Jessica Hodgins (temporarily)*

 *Early Career Development (formerly S3) – Corinne Price*

 *Research CD -- unfilled*

 *Practitioner CD -- unfilled*

 *Lifelong Learning -- unfilled*

 *Professional Development -- unfilled*

*Online Communities: Paul Strauss*

 *Communications – Barb Helfer*

 *History – Mary Whitton*

 *Information Technology Services – Aaron Hosier*

 *Publications – Stephen Spencer*

*Focused Communities: Brian Wyvill*

 *Digital Arts – Victoria Szabo D&I – Tony Baylis*

 *Education – Ginger Alford*

 *Interactive and Immersive Experiences – Mark Billinghurst*

 *International Resources – June Kim*

 *Chapters – Jacky Bibliowicz*

*External: Paul Kry and Mashhuda Glencross*

 *External Relations – Diana Arellano*

 *Specialized Conferences – Joaquim Jorge*

*Chair's Grouping: (Jessica Hodgins and then the Chair going forward)*

 *Awards -- John (Spike) Hughes*

 *Nominations – Rebecca Strzelec*

**SIGITE Annual Report**

**July 2018 - June 2019
Submitted by: Barry Lunt, Chair**

*Mission Statement*

SIGITE's mission is to provide a forum for the interaction of practitioners, educators and others in the field of Information Technology Education to exchange ideas and engage in activities that advance the knowledge of its members, the curriculum and teaching of information Technology and the development and transfer of innovative concepts and applications in teaching and pedagogy.

*2018 Annual Conference*

The 19th Annual Conference on Information Technology Education was hosted by Broward College and held in Fort Lauderdale, FL at the Riverside Hotel., October 3 – October 6, 2018. There were 84 submissions of papers, posters, panels, workshops, and lightning talks. Of these submissions, 24 of 59 papers were accepted (41%); 11 of 12 posters were accepted (92%), and 12 of 13 (92%) lightning talks were accepted. Attendance was about 145, and it was a very profitable conference, and the attendees rated the conference very positively.

At the 2018 SIGITE Conference, two best paper awards were presented:

|  |
| --- |
| **Submission Date:** October 12, 2018 10:58:55 AM EDT |
| **Award Name:** Best Paper - Applied |
| **Paper Title:** IT Curriculum: Coping with Technology Trends & Industry Demands |
| **Authors:** Jai Kang (Rochester Institute of Technology); Edward Holden (Rochester Institute of Technology); Qi Yu (Rochester Institute of Technology); Erik Golen (Rochester Institute of Technology) |
|  |
| **Submission Date:** October 12, 2018 11:00:08 AM EDT |
| **Award Name:** Best Paper - Research |
| **Paper Title:** An Energy-Efficient Secure Adaptive Cloud-of-Things (CoT) Framework to Facilitate Undergraduate STEM Education |
| **Authors:** Selena He (Kennesaw State Univ.); Meng Han (Kennesaw State Univ.); Patrick Bobbie (Kennesaw State Univ.) |

*Significant conference papers that have proven popular (as measured by download count):*

*Blockchain-Based Whitelisting for Consumer IoT Devices and Home Networks;* Diego M. Mendez Mena, Baijian Yang; DOI 10.1145/3241815.3241853; Purdue Univ, West Lafayette, IN.

*A Novel Blockchain-Based Education Records Verification Solution*; Meng Han, Zhigang Li, Jing (Selena) He, Dalei Wu, Ying Xie, Asif Baba; DOI 10.1145/3241818.3241870; Kennesaw State Univ, Marietta, GA, Univ of Tennessee, Chattanooga, TN, Tuskegee Univ, Tuskegee, AL.

*RFID Security, Verification, and Blockchain: Vulnerabilities within the Supply Chain for Food Security*; Michael Hilt, Daniel Shao, Baijian Yang; Purdue Univ, West Lafayette, IN.

*2019 Annual Conference*

The 20th Annual Conference on IT Education will be hosted by University of Washington-Tacoma in Tacoma, Washington, October 2-5, 2019. There were x submissions of papers, posters, panels, workshops, and lightning talks. x of x papers were accepted (x% acceptance rate).

 *Future Conferences*

* 2020 in Omaha, Nebraska, Washington, hosted by University of Nebraska
* 2021 in Provo, Utah, hosted by Brigham Young University

*Significant programs that provided a springboard for further technical efforts*

The recently established practice of having a standing conference committee in addition to future conference hosts involved in the conference organization has shown benefits. This year’s conference had excellent profitability and offered many activities for participants. We expect this further improvements and maturation in our conference offering.

The SIG played a key role in IT2017 Task Group providing four SIG members to serve in the group, hosting their meetings at our annual conference, and sponsoring a panel discussion at the conference.

We continued our efforts to include students by offering travel scholarships, but continued to see only a very small number take advantage of this. Our plan is to increase the amount of the scholarships in the hope of making it more attractive. Beginning with the 2018 SIGITE Conference we also included a special track for PhD students to both present their work and advertise themselves in the marketplace, but only had 2 students participate.

*A brief description of the SIG’s volunteer development process.*

SIGITE continues to have an atmosphere of contribution amongst its members. Finding volunteers for various activities has never been a problem. We continue to use our standing and ad hoc committees as opportunities for members to “get a taste” of leadership.

*A very brief summary for the key issues that the membership of that SIG will have to deal with in the next 2-3 years.*

Attendance at our annual conference has been growing, but we still struggle with submissions, particularly for the Research in IT (RIIT) conference. For the 2018 SIGITE conference we suspended RIIT, but instead included a special track for research-oriented papers. Based on submissions (36), this proved quite popular. Our annual conferences continue to be the premier event for IT faculty.

While our current membership is very active, the size of the SIG remains flat to slightly decreasing. We need to change that and grow the SIG. As part of this effort, we commissioned a study of IT programs in the USA and how closely they are aligned with the 2017 model curriculum; this will be used to help us reach out to our fellow programs and bring in more participation.

Professional accreditation: we need more members involved in enhancing the communication/coordination flow between SIGITE, CSAB and ABET/CAC. More broadly, we need to establish a tighter relationship between the SIG and accrediting bodies.

**SIGKDD Annual Report**

**July 2018 - June 2019
Submitted by: Jian Pei, Chair**

1. Awards that were given out

-  ACM SIGKDD Innovation Award (winner: Dr. Charu Aggarwal, IBM T.J. Watson Research Center)

-  ACM SIGKDD Service Award (winner: Balaji Krishnapuram, IBM Watson Health)

-  ACM SIGKDD Test-of-Time Award (winners: Christos Faloutsos, Natalie Glance, Carlos Guestrin, Andreas Krause, Jure Leskovec and Jeanne VanBriesen for their research paper “Cost-Effective Outbreak Detention in Networks” published in KDD 2007)

-  ACM SIGKDD Dissertation Award (winner: Tim Althoff at Stanford)

-  ACM SIGKDD Best Startup Research Awards (winners: Alang Liu (RealAI), Chao Liu (TianYanCha), Zhen Wei (Arkive) and Kartik Yellepeddi (Deepair))

2. Significant papers on new areas that were published in proceedings

In KDD 2019, several significant papers on new areas were published. Some examples are

-  Austin Benson (Cornell), David Bindel (Cornell) and Kun Dong (Cornell) for “Network Density of States.”

-  Lotte Bransen (SciSports), Jesse Davis (KU Leuven), Tom Decroos (KU Leuven) and Jan Van Haaren (SciSports) for “Action Speaks Louder Than Goals: Value Player Actions in Soccer.”

3. Significant programs that provided a springboard for further technical efforts

SIGKDD sponsored the Applied Science Invited Speaker Track in the KDD 2019 conference.  22 distinguished speakers from industry were invited to talk about their leading practice in data mining and knowledge discovery.  The track attracted a huge audience from both academia and industry.

4. Innovative programs which provide service to some part of your technical community

SIGKDD sponsored the Applied Science Invited Speaker Track in the KDD 2019 conference.  22 distinguished speakers from industry were invited to talk about their leading practice in data mining and knowledge discovery.  The track attracted a huge audience from both academia and industry.

SIGKDD also sponsored the ACM SIGIR/SIGKDD Africa Summer School on Machine Learning for Data Mining and Search, which is to promote data mining in Africa.

SIGKDD sponsored the Social Impact Program and funded 7 projects. Please see <<https://www.kdd.org/News/view/announcing-the-kdd-impact-program-recipients-for-2018>> for details.

5. Events or programs that broadened participation either geographically, or among under-represented members of your community and;

SIGKDD also sponsored the ACM SIGIR/SIGKDD Africa Summer School on Machine Learning for Data Mining and Search, which is to promote data mining in Africa.

SIGKDD Sponsors the women in KDD lunch during the KDD 2019 conference, which was very well attended.

SIGKDD sponsored the Social Impact Program and funded 7 projects. Please see <<https://www.kdd.org/News/view/announcing-the-kdd-impact-program-recipients-for-2018>> for details.

6. A very brief summary of the key issues that SIG membership will have to deal with in the next 2-3 years.

SIGKDD is in a healthy path.  In the EC meeting held during the KDD conference this month, the EC confirmed that we should continue providing more and more benefits to SIGKDD members in a timely and quality manner.

**SIGLOG Annual Report**

**July 2018 - June 2019
Submitted by: Prakash Panangaden, Chair**

This is my last report as SIGLOG Chair. An election was held in the spring of 2019 and Frank Pfenning of Carnegie Mellon University was elected as the new chair. I am delighted that elections for all 4 offices were contested. Amy Felty was re-elected as Treasurer; Véronique Cortier was elected as vice-chair and Andrzej Murawski was elected as Secretary. None of the four office holders are members of the founding group: I take this as an excellent sign of the health of the community. I also note that we have preserved the gender balance among the office holders without having to make any special effort to do so.

The flagship conference for SIGLOG is LICS which in 2018 was part of the quadrennial Federated Logic Conferences (FLoC) which was held in July in Oxford. This was an enormous gathering of the community with 9 major conferences including LICS and Computer-Aided Verification and over 70 workshops. There were also plenary talks by Shafi Goldwasser, Peter O’Hearn, Georges Gonthier and Byron Cook as well as a special public lecture by Stuart Russell. There were approximately 2000 participants all told. This is about 10 times the membership of SIGLOG. There was a Logic Mentoring Workshop for young researchers and a Women in Logic meeting. Another important aspect of this FLoC meeting is the growing ties between the SIGLOG community and machine learning. FLoC was preceded by a Summer School on the topic of Logic and Learning which was attended by nearly a 100 participants. There could easily have been many more if there had been space for them as the demand for this school was very high.

1. **Awards**

This was the third year that the Church Award was given. It went to Tomas Feder and Moshe Vardi who formulated the CSP dichotomy conjecture. Interestingly this conjecture was recently solved so expect more awards to be given soon for this topic. The citation reads as follows:

CITATION: For fundamental contributions to the computational complexity of constraint-satisfaction problems.

CONTRIBUTION SUMMARY: The Feder-Vardi project aimed at finding a large subclass of NP that exhibits a dichotomy (all problems are either in PTIME or NP-complete). The approach is to find this subclass via syntactic prescriptions. The paper identified a class of problems specified by “monotone monadic SNP without inequality”, which may exhibit this dichotomy. Feder and Vardi justified placing all three restrictions by showing, using Ladner’s theorem, that classes obtained by using only two of the above three restrictions do not show this dichotomy. They then explored the structure of this class. They show that all problems in this class reduce to the seemingly simpler class CSP – Constraint Satisfaction Problems. They divided CSP into subclasses and tried to unify the collection of all known polytime algorithms for CSP problems and extract properties that make CSP problems NP-hard. They conjectured that the class CSP (and therefore, also MMSNP) also satisfy the dichotomy property. This became known as the *Feder-Vardi Dichotomy Conjecture*. The Dichotomy Conjecture stimulated an extensive research program, which culminated in 2017 in two independent proofs, by A. Bulatov and by D. Zhuk, of its correctness.

The award was presented by Prakash Panangaden to Moshe Vardi at FLoC.

The LICS Test-of-Time Award Winners in 2018 were as follows:

* All papers from LICS 1998 were considered for the 2018 LICS Test-of-Time Award. The Award Committee consisted of Christel Baier (chair), Luca Aceto, Anca Muscholl, and Vaughan Pratt.

[*Martín Abadi*](https://lics.siglog.org/archive/papers/A.html#MartnAbadi)[*Cédric Fournet*](https://lics.siglog.org/archive/papers/F.html#CdricFournet)[*Georges Gonthier*](https://lics.siglog.org/archive/papers/G.html#GeorgesGonthier)
**Secure Implementation of Channel Abstractions**

[*Samson Abramsky*](https://lics.siglog.org/archive/papers/A.html#SamsonAbramsky)[*Kohei Honda*](https://lics.siglog.org/archive/papers/H.html#KoheiHonda)[*Guy McCusker*](https://lics.siglog.org/archive/papers/M.html#GuyMcCusker)
**A Fully Abstract Game Semantics for General References**

The Kleene Award for the best paper at LICS by a student went to [*Étienne Miquey*](https://lics.siglog.org/archive/papers/M.html#tienneMiquey)

**A sequent calculus with dependent types for classical arithmetic**

1. **Significant developments in Logic and Computation over the past year**

There were several important results in the past year. The fallout from the 2016 Simons program is still evident in forging links between computational complexity and logic. An important paper in LICS 2018 by Atserias and Ochremiak made important connections between optimization algorithms and logic. Work by Bacci et al. showed the power of a new approach to equational logic pioneered a few years earlier by Plotkin and his collaborators. There were important new papers on probability at higher types and there were follow ups to the solution of Feder-Vardi conjecture. There were other results on game semantics, homotopy type theory, automata theory and quantum computation.

III. **Significant Programs**

SIGLOG continues its support of summer schools, student mentoring workshops and workshops for Women in Logic. There was a lively meeting of the Women in Logic workshop including a session where several women aired grievances over the barriers to participation in the community.

IV. **Innovative programs which provide service to our technical community**

The SIGLOG newsletter continues to be a valuable source of review articles on topics across a whole range of topics. Our support for diversity continues through mentoring workshops and discussions at the main conferences.

V. **Summary of key issues**

SIGLOG is stable for the moment but more effort needs to be put into growing the membership. Many people take advantage of SIGLOG contributions without being members. For example, the SIGLOG newsletter is freely available from the web site. We hope to become more proactive about supporting workshops that build the community and in sponsoring student participation in conferences and summer schools. We are actively cooperating with EATCS and EACSL in these efforts.

**SIGMETRICS FY’19 Annual Report**

**July 2018 – June 2019**

**Submitted by: Giuliano Casale, SIGMETRICS Chair**

ACM SIGMETRICS brings together researchers and practitioners in the area of performance evaluation of computer systems and networks. The SIG promotes research in performance analysis techniques as well as the advanced and innovative use of known methods and tools to understand and improve performance and quality of service, seeking a balance between theoretical and practical issues.

SIGMETRICS concluded a very active and exciting year, which featured several activities to meet the needs of its membership. Some of the highlights for the year were as follows.

**Awards:**

* The SIGMETRICS Achievement Award was awarded to Mary Vernon (University of Wisconsin–Madison) for her sustained fundamental contributions to analytic system performance modeling techniques, and the use of those techniques in the design of impactful hardware, software and communication system architectures that have near-optimal performance and known performance properties.
* The SIGMETRICS Rising Star Research Award was awarded to Anshul Gandhi (Stony Brook University) for fundamental contributions to the analysis, modeling, design, and implementation of energy-efficient systems in data centers and cloud computing.
* The SIGMETRICS Test of Time Award was presented to Shreevatsa Rajagopalan, Devavrat Shah, and Jinwoo Shin from MIT for their work "Network adiabatic theorem: an efficient randomized protocol for contention resolution", published in the Proceedings of ACM SIGMETRICS 2009. This paper designed an algorithm building upon a Metropolis-Hastings sampling mechanism along with selection of 'weight' as an appropriate function of the queue-size. The key ingredient in establishing the efficiency of the algorithm is a novel adiabatic-like theorem for the underlying queueing network, which may be of general interest in the context of dynamical systems.
* The 2019 SIGMETRICS / Performance Best Paper Award was awarded to Richard Combes (Centrale-Supelec, France) and Mikael Touati (Orange Labs, France) for their work “Computationally Efficient Estimation of the Spectral Gap of a Markov Chain”.
* The 2019 ACM SIGMETRICS Kenneth C. Sevcik Outstanding Student Paper Award went to Isaac Grosof, Ziv Scully, Mor Harchol-Balter (Carnegie Mellon University) for their paper “Load Balancing Guardrails: Keeping Your Heavy Traffic on the Road to Low Response Times”.

**Conference and Workshops:**

SIGMETRICS has run a successful edition of its joint conference with IFIP, which was hostedat FCRC 2019. It is the 14th time that SIGMETRICS partners with IFIP for a joint edition, which is aimed at facilitating the interaction of two key communities in performance evaluation. This edition was particularly successful as it attracted the largest number of submissions for at least a decade, over 300 papers. The conference also hosted a number of workshops which had very good attendance.

* NetEcon’19. This is a joint workshop held in conjunction with the EC conference by SIGecom. FCRC 2019 was a very good opportunity to locate the workshop in the same site of EC and SIGMETRICS/Performance, therefore facilitating attendance and interactions from members of the two SIGs.
* MAMA. Now in its 21st edition, the MAMA workshop brings together researchers in mathematical, methodological and theoretical aspects of performance analysis, modeling and optimization.
* CINS.The CINS workshop aims at fostering research in critical infrastructure network security from academicians, critical infrastructure network operators, and representatives of governmental agencies responsible for the proper functioning of these networks.

**Papers on emerging and new areas of performance analysis, measurement and modeling:**

Research published in SIGMETRICS typically focuses on performance evaluation, computer systems and networks. Technical areas of interest to the community include, but are not limited to, network performance, load balancing, systems, pricing, queueing, workload optimization, caching, control and resource allocation, memory, forecasting, graph analysis and learning.

The 2019 ACM SIGMETRICS/Performance conference had a rich programme on the areas listed above and also featured work on exciting topics of increasing applied and theoretical interest, some examples include:

* “Understanding the Networking Performance of Wear OS” by X. Zhu, Y. E. Guo, A. Nikravesh, F. Qian, and Z. M. Mao is one of the first works to explore the role of network performance and application quality-of-experience in operating systems used in smartwatches and smart wearable devices.
* “Securing Distributed Machine Learning in High Dimensions” by L. Su and J. Xu illustrates the increasing activity in SIGMETRICS for works at the interface with machine learning. The authors study unreliable distributed machine learning systems that are prone to system failures or adversarial attacks.
* In “Everything you should know about Intel SGX performance on virtualized systems”, T. D. Ngoc, B. Bui, S. Bitchebe, A. Tchana, V. Schiavoni, P. Felber, and D. Hagimont pioneers a detailed performance analysis of software guard extensions in a virtualized system in comparison with a bare-metal system, opening new systems research questions for the performance evaluation community.

**Broadening participation and significant activities and programs:**

* The last year has marked the third edition of our flagship conference since we made a major switch to a “jourference” model featuring 3 submission deadlines and proceedings published in POMACS (PACM series). One of the main goals of the SIG was to grow submissions, without compromising acceptance rates and quality of the technical program. The 2019 edition featured a record 50% increase in submission rate compared to the 10-year average, suggesting that the community has reacted extremely well to this innovation. Indeed, this trend did not affect acceptance rate, which this year was around 15% and well aligned to the historical acceptance rates.
* This year our conference also trialled a new Highlights beyond SIGMETRICS session to expose work in neighboring communities to our members and identify new synergies and novel outlets for joint research. Authors from top papers presented at ICML, IMC, and NSDI were invited to present their work at SIGMETRICS/Performance 2019. The session was well attended and generated several interesting questions and discussions. The SIG board is considering to continue this experiment in future editions.
* A workshop hosted at SIGMETRICS/Performance 2019 open to students and junior faculty discussed how to improve the participation of under-represented groups in Sigmetrics proposing activities for future editions of our conference.

Next year’s conference will be held in Boston, Massachusetts, in June 2020.

**Key issues for the next 2-3 years:**

* Scaling our conference. The increase in submissions volumes and number of accepted papers pose novel challenges for our community in terms of scaling space, attendance and number of events at our flagship conference.
* Updating membership benefits. We would like in the next few years to increase the value for our members by updating the benefits model for our SIG membership, for example by offering more options to volunteer.
* Defining a knowledge base. The SIG board wants to consolidate best practices and governance materials in order to provide a persistent knowledge base for future chairs and SIG boards.

**Other Issues**

* Given the recent trend of many major conferences to run editions in regions outside the USA and Europe, the SIG will need to understand how to increase our activity and membership in those regions, while mitigating risks associated with moving away from established sites and practices.

**SIGMIS Annual Report**

**July 2018 - June 2019
Submitted by: Fred Niederman, SIG Chair**

Overall, the ACM SIGMIS is extremely viable and vibrant. We do face some challenges with both strengths and areas of growth are discussed below.

**1. Awards that were given out**

This year SIGMIS had two new awards approved by ACM’s governing board. The first, a lifetime achievement award was presented for the first time to Ephraim R. McLean, Ph.D.,

Regents’ Professor and George E. Smith [GRA] Eminent Scholar’s Chair in Information Systems, Robinson College of Business, Georgia State University. The nomination letter is presented below in appendix 1.

The second new award was not presented due to late notice prior to our annual conference. We have, however, assigned a chair to the nomination and selection committee, Dr. Mike Gallivan, a long time SIG member who is examining scientometric tactics for identifying promising candidates.

Conference Awards were:

Magid Igbaria best paper award: When Agile Means Staying: Examining the Relationship Between Agile Development Usage and Individual IT Professional Outcomes by Tenace Setor (University of Nebraska Omaha), and Damien Joseph (Nanyang Technological University)

Doctoral travel reimbursement scholarship recipients for our annual conference were: Faiz Ahamad (Tata Institute of Social Sciences), Bernie Fabito (De La Salle University), and Rui Sundrup (University of Cincinnati).

Best poster award: What Motivates You? Linking Enterprise Social Media Use, Gratification, Performance and Well Being by Jeanetta Grover (Trident University).

DATABASE Recognitions were:

In December 2018, we awarded Senior Editor of the Year for 2018 to Pratyush Bharati and Reviewer of the Year to Amy Connolly. In December 2018, we recognized Puzant Balozian and Dorothy Leidner for Paper of the Year (published in 2017).

**2. Significant papers on new areas that were published in proceedings**

The annual conference was highlighted by the Keynote talk: *Were You There When??*

By Dr. Ephraim R. McLean. The session reviewed key events in the history of MIS which were largely observed and participated in by Dr. McLean. This was universally noted as highly educational both for newcomers and middle career people.

Program Chairs’ report • Theme: Enduring Issues in MIS and Work • Program committee (reviewers) comprised of over 55 people from around the world. • Submissions: - 42 submissions in total - 29 accepted papers - Acceptance rate of 69% - 34 accepted papers and posters - Acceptance rate of 80% •

Significant panels included:

(1) *Technology Entrepreneurship in the Digital Age,* presented by panelists: J.P. Allen, T. Paul Thomas, and Jonathan Ford. Content focused on how our lives are increasingly touched by almost-ubiquitous information technology. Entrepreneurial enterprises, rather than traditional conglomerates developed much of this technology. Although entrepreneurship has long existed, the digital age has influenced the nature and impacts of entrepreneurship. The panel will consider questions related to the nature of entrepreneurship in the digital age, as well as issues related to the environment in which entrepreneurship exists, and its impact on the nature of work in the future.

(2) *The Future of the IT Workforce,* presented by panelists:Manuel Wiesche; Damien Joseph

Manju Ahuja; Mary Beth Watson-Manheim; and Nishtha Langer. This panel discussed a wide range of views on the future of the IT workforce at the heart of our discipline. It addressed how technological, organizational, and environmental trends will affect the IT workforce. Based on these changes, it explored how IT workforce research need to advance discuss fruitful directions.

From among a wide variety of papers, two that stood out and illustrate the range of topics the membership addresses were:

(1) *Integrating Development and Operations in Cross-Functional Teams – Toward a DevOps Competency Model*, presented by Anna Wiedemann, Manuel Wiesche, and Helmut Krcmar. This paper dealt with the integration of cross-functional teams for new product development is still an elusive aim. Cross-functional information technology (IT) teams are used to provide new initiatives in fast-changing and challenging environments. Moreover, concepts such as Development and Operations (DevOps) appear in practice and bring software development and operations tasks in one team. Organizations are currently searching for necessary, suitable competencies for setting up high collaborative cross-functional teams that manage the tasks of the software delivery lifecycle. Therefore, in this paper, employing a multi-perspective research approach, we conducted a workshop and a multiple-case study. Hence, this paper presents a competency model for enabling a high level of collaboration within a team and explains how these competencies are implemented in IT functions. Additionally, we identified six competencies and two major challenges associated with DevOps team setups.

(2) *Sustaining the IT Workforce: A Review of Major Issues in 25 Years and Future Directions, presented by* Caroline E. Oehlhorn, Sven Laumer, and Christian Maier. This presentation looked forward to issues facing employers attracting, recruiting and retaining a sufficient number of information technology professionals which remains a key issue for organizations. Although research and practice call upon this issue for quite some time and suggest various interventions, the shortage of qualified IT professionals does not decline, but seems to increase. Thus, sustaining the IT workforce represents a recurring issue faced with challenges that are fixed firmly within the domain. This literature review identifies the major issues related to sustaining IT professionals from a human resource management perspective. Sixty-seven research articles from the AIS Senior Scholars’ basket are reviewed to identify the major issues respectively to the past times from the dot com boom during the 1990s, across industry recession in 2001 up to the present day. Four major issues are explained and discussed.

**3. Significant programs that provided a springboard for further technical efforts**

In 2018 we awarded the first grants as part of the new research grant award program. These were awarded to two scholars who both completed their research and presented their work at the annual conference in Nashville.

The first was entitled: *Blockchain Ethics Research: A Conceptual Model* authored by Yong Tang; Jason Xiong; Rafael Becerril-Arreola; and Lakshmi Iyer. The research focused on Blockchain being widely adopted far beyond finance into numerous domains of society and promises unprecedented potential to disrupt organizations, businesses, industries, and economies. However, Blockchain is still in its infancy and its future is highly controversial, arousing phenomenal enthusiasm, high expectations, and even intense criticism. The possible impacts of Blockchain and its applications on the society could be fundamental and revolutionary, inevitably bringing unpredicted ethical challenges in the foreseeable future. Identifying the ethical challenges of Blockchain is urgent and critically needed to ensure that Blockchain is adopted ethically. However, discussions on the ethics of Blockchain are largely insufficient, which leaves a void of theoretical understanding so far. In this paper, we provide a systematic discussion on the ethics of Blockchain applications and map the main social challenges raised by its technology and applications. The paper starts with a review of the technological concepts and applications of Blockchain. Then, it overviews the current research on the ethics of technologies and general research on Blockchain to briefly introduce the authors’ approach. Afterwards, a conceptual model of Blockchain ethics research is developed. This research hopes to serve as an initial roadmap for the study of Blockchain ethics, and to raise timely awareness and stimulate further debate on the ethics of Blockchain in the IS community.

The second is *What Makes Us IT People? Autistic Tendency and Intrinsic Interests in IT* authored by Ronnie Jia and Heather H. Jia. They ask: What makes us IT people? Why are certain individuals more intrinsically interested in IT than others? The existing IS literature offers few answers about origins of such interest as most research models treat it as an exogenous variable and focus almost exclusively on its consequences in user attitudes and behavior. Building on the autism research literature, this study aims to establish autistic tendency as an antecedent of one’s intrinsic interests in IT. Results of this research may have several implications. In addition to examining intrinsic interest in IT as a user trait and contributing to the adoption literature, this work also explores it as potentially a distinguishing characteristic of IT professionals, researchers and students, thus contributing to the perennial discussion of “Are IS people different?”

Due to vacations and a number of committee members being unavailable during the annual conference, we are still in the midst of evaluating the two submitted papers for this year’s research grant process. It was a bit disappointing to only receive two applications, however, we are looking at ways to improve our distribution of the call for proposals next year and for coming years.

**4. Innovative programs which provide service to some part of your technical community**

At this year’s conference, we presented a portion of an NSF funded play that illustrates and brings to life the issues facing young women considering a technical career. This play provided insights that are not easily conveyed with traditional research and presentations. The activity was called: Addressing Social Inclusion in the IS Field through Theatre and is based on the play by Eileen Trauth. The following individuals took part in bringing the play to life: Eileen Trauth; Allison Bryant; Curtis Cain; Leigh-Ellen Potter; Jeria L. Quesenberry; Suzanne Trauth and Craig van Slyke. The play, iDream, was written to communicate through characters, plot and dialogue the results of NSF-funded research about young women experiencing, internalizing and overcoming barriers to inclusion in the information technology fields. The purpose of using theatre is to create awareness, stimulate attitude change, and inspire action about the IT profession and who can participate in it. This panel employs the play, iDream, as a vehicle to inspire dialogue among members of the SIGMIS community and beyond about ways to address social inclusion issues in the information systems field. A staged reading of selected scenes from the play is performed by members of the ACM SIGMIS community. This is followed by a panel discussion with the actors/panelists and members of the audience about the themes in the play and what can be done to address them.

**5. Events or programs that broadened participation either geographically, or among under-represented members of your community and;**

This year a new undergraduate program was added to the SIGMIS activities. Hollis Greenberg of Wentworth Institute of Technology serves as advisor to the new group. Seven of these students attended the annual conference in Nashville and presented superb poster presentations regarding their on-going research.

Our annual Doctoral Consortium was conducted prior to the annual conference and featured a highly diverse group of participants. We had 16 doctoral student applicants of whom 8 were selected for participation. Co-Chairs and Faculty Mentors for the event were: Indira Guzman (Trident University International), Michelle Kaarst-Brown (Syracuse University), Shuyuan “Mary” Ho (Florida State University), Stacie Petter (Baylor University), Sven Laumer (Friedrich-Alexander-Universität Erlangen-Nürnberg), and Tim Jacks (Southern Illinois University - Edwardsville). Student Participants were: Asif Shaikh (Florida State University), Faheem Ahmed Shaikh (Nanyang Technological University), Jeanetta Grover (Trident University), Jens Mattke (University of Bamberg, Germany), Katharina Pflugner (University of Bamberg, Germany), Kerri Ludwig (Trident University), Mashael Almoqbel (New Jersey Institute of Technology), and Sahar Farshadkhah (Louisiana Tech University).

We also co-sponsor the ICIS conference each December where we support the best doctoral dissertation in information systems award, host a reception, and staff a booth primarily to promote our publication, DATABASE. We also fund the annual best PhD dissertation award for AIS. This year we are scheduled to visit with the ICIS doctoral consortium participants to introduce them to our programs and invite their participation.

We are planning the 2020 conference to be in Nuremberg Germany. This continues a tradition of frequent annual meetings outside the US.

**6. A very brief summary of the key issues that SIG membership will have to deal with in the next 2-3 years.**

Our publication, DATABASE, continues a concerted marketing campaign of research conference visibility focused on impact and intellectual innovation. We have distributed 4 issues regularly for many years. This year (2018) we added a 5th issue focused on cybersecurity which has already been distributed. Note also that we produced a 50th anniversary special issue published in January 2019. This issue chronicles much of history of our group and its journey with ACM. This year the term of our co-editors concluded. We have retained one of the co-editors, Thomas Stafford, and have added a new one, Deborah Armstrong. We will be expressing our thanks for excellent service to Stacie Petter at our annual reception at ICIS this December. A key issue going forward will be the adjustment of the publication to new leadership and perhaps some fine tuning of directions. Note that in recent years a new section of philosophy of science and another on research methods, particularly path analysis have been added to updating the strategic direction of the publication. Note also that submissions continue to increase, pressuring the review system, however, editors are recruiting new associate editors as needed. We are also moving from requiring university host institutions from funding publication related expenses such as proofreading and hosting booths at key conferences to taking these on within the SIG. We expect that this will improve performance, but will also require seeking a new offsetting set of revenue streams.

SIGMIS has a Facebook page ([https://www.facebook.com/acmsigmis](https://urldefense.proofpoint.com/v2/url?u=https-3A__www.facebook.com_acmsigmis&d=DwMFaQ&c=Pk_HpaIpE_jAoEC9PLIWoQ&r=mfzinlR4v6OkOAQMx4moqwxkxV5mablJEco5R_Sto4Y&m=9c50WAjMVpQvuUAaElN3tEPS7i12ps6G6eF2JvfzSZI&s=AMYpOrkaOKrlKBEiYF2n15kAQ6SuxLe4wOBhgoRZooU&e=)) and a LinkedIn profile ([https://www.linkedin.com/groups/5148399](https://urldefense.proofpoint.com/v2/url?u=https-3A__www.linkedin.com_groups_5148399&d=DwMFaQ&c=Pk_HpaIpE_jAoEC9PLIWoQ&r=mfzinlR4v6OkOAQMx4moqwxkxV5mablJEco5R_Sto4Y&m=9c50WAjMVpQvuUAaElN3tEPS7i12ps6G6eF2JvfzSZI&s=i4ZU6TN5rZGrL3dK6TZpA8e0fzuIbJw-y16WRe93yIk&e=)) and our new Twitter account ([https://twitter.com/acmsigmis](https://urldefense.proofpoint.com/v2/url?u=https-3A__twitter.com_acmsigmis&d=DwMFaQ&c=Pk_HpaIpE_jAoEC9PLIWoQ&r=mfzinlR4v6OkOAQMx4moqwxkxV5mablJEco5R_Sto4Y&m=9c50WAjMVpQvuUAaElN3tEPS7i12ps6G6eF2JvfzSZI&s=W9Le2-X_fKX5h4r68QfQ_ZOImyQjh3MRAykmyuuEVJM&e=)). As these are relatively new, we haven’t yet developed a thorough sense of their effectiveness or how to best use them to communicate the right amount and type of information with members, but we continue to enhance our presence in the social media arena.

The current slate of officers has begun serving a two year term in 2019, however, it is unlikely that all of them would want to continue on in current roles. Thus we will need to both recruit potential candidates and very actively create the process for electing a new set of officers.

We have begun the planning for the 2021 conference and are considering returning to a rotation from western US, to Midwest, to East Coast, to Germany (or alternative outside of US site). The idea is to be able to schedule further ahead and to regularize our conference processes.

Damien Joseph has assumed leadership of the in-cooperation program with other groups seeking our support relative to their conferences. It turns out there are a much larger number than expected of requests in this area and we want to redesign our approach. It takes some effort to evaluate each of these in detail and decide whether our support is warranted as well as how to generate more benefit to our members.

We have begun a process of seeking out collaborations with AIS special interest groups particularly regarding leadership and diversity/inclusion. The strategy is to make focused events and activities of interest to ACM SIGMIS members available before or during all major MIS conferences – ICIS, HICSS, AMCIS, ECIS, and PACIS – as well as our own stand alone conference. This is slower going than expected but I anticipate will continue to grow over the next few years.

In terms of strategy, we have reasserted central interest in IS personnel, leadership, and inclusion. We also welcome for both the conference and publication a wide range of MIS topical areas including ethics, all aspects of work, and IS entrepreneurship. The question will be whether it will be more effective to focus more narrowly on traditional topics or to continue expanding the range of issues we deal with.

We continue seeking a way that allows AIS and ACM to extend distribution of DATABASE to AIS members. Due to the nature of revenue streams and business models, these discussions are sensitive but we are hopeful that this can be developed as a greater conduit for mutual benefit.

**SIGMM Annual Report**

**July 2018 - June 2019
Submitted by: Alan Smeaton, Chair**

**Mission**: SIGMM provides an international interdisciplinary forum for researchers, engineers, and practitioners in all aspects of multimedia computing, communication, storage and application.

1. **Awards:**

SIGMM gives out three awards each year and these were as follows:

* **SIGMM 2018 Technical Achievement Award** was given to Dr. Yong Rui in recognition of his pioneering contributions to multimedia analysis, retrieval and understanding.   Dr. Rui is a Fellow of ACM, IEEE, IAPR and SPIE.
* **SIGMM 2018 Rising Star Award** was given to Dr. Xavier Alameda-Pineda was given in recognition of his contribution to multimodal social behavior understanding.
* **SIGMM 2018 Outstanding PhD Thesis in Multimedia Computing Award** was given to Zhisheng Yan for a thesis entitled "Sustained Mobile Visual Computing: A Human-Centered Perspective” at the University of Buffalo, NY, USA.
1. **Significant Papers:**

The SIGMM flagship conference, ACM Multimedia 2018, was held in Seoul, Korea and presented the following awards:

## Best Paper Award

**Beyond Narrative Description: Generating Poetry from Images by Multi-Adversarial Training**Bei Liu (Kyoto University), Jianlong Fu (Microsoft Research Asia), Makoto P. Kato (Kyoto University), Masatoshi Yoshikawa (Kyoto University)

## Best Student Paper Award:

**Understanding Humans in Crowded Scenes: Deep Nested Adversarial Learning and A New Benchmark for Multi-Human Parsing**Jian Zhao (National University of Singapore and National University of Defense Technology), Jianshu Li (National University of Singapore), Yu Cheng (National University of Singapore), Terence Sim (National University of Singapore), Shuicheng Yan (National University of Singapore and Qihoo 360 AI Institute), Jiashi Feng (National University of Singapore)

## Best Open Source Software Awards:

**1. VIVID: Virtual Environment for Visual Deep Learning**Kuan-Ting Lai (National Taipei University of Technology), Chia-Chih Lin (National Taiwan University), Chun-Yao Kang (National Taiwan University), Mei-Enn Liao (National Taiwan University), Ming-Syan Chen (National Taiwan University)

**2. A General-Purpose Distributed Programming System using Data-Parallel Streams**Tsung-Wei Huang (University of Illinois at Urbana-Champaign), Chun-Xun Lin (University of Illinois at Urbana-Champaign), Guannan Guo (University of Illinois at Urbana-Champaign), Martin D. F. Wong (University of Illinois at Urbana-Champaign)

## Best Demo Awards:

**1. AniDance: Real-Time Dance Motion Synthesize to the Song**Taoran Tang (Tsinghua University), Hanyang Mao (Tsinghua University), Jia Jia (Tsinghua University)

**2. Meet AR-bot: Meeting Anywhere, Anytime with Movable Spatial AR Robot**Yoon Jung Park (Media System Lab at Yonsei University), Yoonsik Yang (Media System Lab at Yonsei University), Hyocheol Ro (Media System Lab at Yonsei University), JungHyun Byun (Media System Lab at Yonsei University), Seougho Chae (Media System Lab at Yonsei University), Tack Don Han (Media System Lab at Yonsei University)

The 10th ACM **International Conference on Multimedia Systems** (MMSys 2018), was held in Amherst, MA, USA, June 2019, and presented a range awards including:

* Best paper award to “Cost-driven framework for progressive compression of textured meshes” by Cédric Portaneri, Michael Hemmer, Lukas Birklein and Elmar Schoemer

# Best student paper award to “Content-aware video encoding for cloud gaming” by Mohaned Hegazy, Khaled Diab, Mehdi Saeedi, Boris Ivanovic, Ihab Amer, Yang Liu, Gabor Sines and Mohamed Hefeeda.

The **International Conference in Multimedia Retrieval (ICMR)** 2019 was held in Ottawa, Canada, and presented a range of awards including:

* Best Paper Award to: C. Otto, M. Springstein, A. Anand, and R. Ewerth for their paper titled: Understanding, Categorizing and Predicting Semantic Image-Text Relations
* Best student paper Award to W. Gu, X. Gu, J. Gu, B. Li, Z. Xiong, and W. Wang for their paper titled: Adversary Guided Asymmetric Hashing for Cross-Modal Retrieval

In addition to the above, SIGMM presented the 2018 ACM Transactions on Multimedia Computing, Communications and Applications (TOMM) Nicolas D. Georganas Best Paper Award to the paper **Learning from Collective Intelligence: Feature Learning Using Social Images and Tags (TOMM vol.13, Issue 1)**Hanwang Zhang, Xindi Shang, Huanbo Luan, Meng Wang, Tat-Seng Chua.

1. **Significant Programs that Provide a Springboard for Further Technical Efforts**
* SIGMM provided support for student travel through grants, at all of our SIGMM-sponsored conferences.
* A large part of our research area in SIGMM is driven by the availability of large datasets, usually used for training purposes. Recent years have shown a large growth in the emergence of openly available datasets coupled with grand challenge events at our conferences and workshops. Mostly these are driven by our corporate researchers but this allows all of our researchers the opportunity to carry out their research at scale. This provides great opportunities for our community and is an activity we continue to support.
1. **Innovative Programs Providing Service to Some Part of Our Technical Community**
* SIGMM continued our effort to co-locate conferences and other events. This year the ACM MultiMedia Systems (MMSys) conference was co-located with **MMVE 2019, the**  11th International Workshop on Immersive Mixed and Virtual Environment Systems, **NOSSDAV 2019, the 29th** ACM SIGMM Workshop on Network and Operating Systems Support for Digital Audio and Video and **PV 2019, the** 24th Packet Video Workshop. It also hosted the TPC meeting for the ACM Multimedia 2019 conference thus saving further travel costs.
* SIGMM has launched a Conference Ambassador Program. Following an open call, applicants submit a case for SIGMM to fund them to attend a non-SIGMM sponsored conference which they attend, they identify a paper presented at that conference which they believe would be of most interest to the multimedia community and they invite that presenter to re-present their paper at our SIGMM flagship conference, MULTMEIDA, sponsored by SIGMM. For 2019 SIGMM has approved two such non-SIGMM papers at the October MULTMEDIA Conference.
* SIGMM has agreed to sponsor a Summer School and a Strategic Workshop in Multmedia in Stellenbosch, South Africa, in 2020, our first sponsored event in that continent.
1. **Events or Programs that Broaden Participation**
* Following our study of gender distribution among the organization roles at SIGMM conferences, which was published and presented at our flagship conference, we have appointed a SIGMM Director of Diversity of Inclusion whose role will include coordinating the various diversity support activities at our events. Lunches to support minorities and to promote diversity take place at the MULTIMEDIA and MMSys conferences.
* The first conference in the new series Multimedia Asia which will take place in Beijing, China, in December 2019, consolidating two existing multimedia-focused conferences in Asia under the sponsorship and governance of SIGMM.
* The expansion we put in place in our social media communication team has continued to raise our profile on social media. At our major conferences we invite conference attendees to post on social media about papers, demos, talks, etc. that they think are most thought provoking and forward looking at the event, and the most active of these are rewarded with a free registration at a future SIGMM-sponsored conference.
1. **Issues for SIGMM in the next 2-3 years**
* Improving the diversity of the community is essential to maintaining our importance and relevance, including diversity in gender, in geographical location, and in many other facets. We believe some consolidation and sharing experiences among SIGs would be of benefit to us all.
* We wish to reach to other SIGs with whom we could have productive engagement because we see multimedia as a technology enabler as well as an application unto itself. We have tried, but unsuccessfully to date to hold joint panels or workshops at our conferences and our Conference Ambassador program mentioned earlier is a smaller step in that direction.
* The availability of open datasets and grand challenge competitions held at our conferences and workshops is our lifeblood. As mentioned in previous reports, these datasets are often provided from the corporate sector and this is both an opportunity for us to do research on datasets otherwise unavailable to us, as well as being a threat to the balance between corporate influence and independence. This point is being realized by funding agencies.
* In previous annual reports we highlighted the difficulties caused by a significant portion of our conference proceedings not being used as input into CSRankings, a metrics-based ranking of Computer Science institutions primarily in the US. Despite our best efforts we have not succeeded in doing this. Publishing at venues which are considered in CSRankings’ operation is important to much of our community and the experience of other SIGs and support of ACM on making this case would be welcome.

**SIGMOBILE FY'19 Annual Report**

**July 2018 – June 2019**

**Submitted by: Marco Gruteser, Chair**

The purpose of ACM SIGMOBILE is to promote research and development by bringing together researchers and practitioners and fostering interest in the mobility of systems, users, data, and computing. SIGMOBILE will address the above spectrum of topics, sharing one common theme - mobility. The group's technical scope reflects the emerging symbiosis of portable computers and wireless networks, addressing the convergence of mobility, computing and information organization, its access, services, management and applications.

 In the past few years, mobile computing has developed into a fast moving, topical, and exciting area of computer science and engineering. Supporting the mobile computing and wireless networking research community, SIGMOBILE sponsors multiple successful conferences and workshops (e.g., MobiCom, MobiSys, MobiHoc, SenSys, UbiComp, PerDis, SEC, and HotMobile) that are well attended by its members, and generating high-quality and widely cited publications. These are valuable services for SIGMOBILE’s members and the community, resulting in a strong Special Interest Group, with about 700 members.

SIGMOBILE’s Executive Committee (EC) in this period comprised of:

* Chair: Prof. Marco Gruteser (Rutgers University, New Brunswick, USA)
* Vice Chair: Prof. Jason Flinn (University of Michigan, Ann Arbor, USA).
* Secretary: Prof. Giovanni Pau (Sorbonne Universite, France)
* Treasurer: Prof. Falko Dressler (University of Paderborn, Germany)
* Past Chair: Prof. Suman Banerjee (University of Wisconsin, Madison, USA)

**Awards**

SIGMOBILE has a number of awards that it bestows on community members. In addition to the Outstanding Contributions Award (OCA) for career-long achievements, the Rockstar award for early career achievements, the Distinguished Service Award for service to the community, the Doctoral Dissertation Award for best PhD work in the field, the The Test of Time award for papers that had a significant influence in the community, and various best paper awards at the leading conferences. In addition, SIGMOBILE also recognizes some of the best work in the current year, as identified by a selection committee, which are considered the Research Highlights of SIGMOBILE.

Some of the notable award winners are mentioned below.

Outstanding Contributions Award: Dr. Roy Want (Google)

Rockstar Award: Prof. Xia Zhou (Dartmouth College)

The SIGMOBILE Test of Time awards were selected by a committee chaired by Prof. Guiseppe Bianchi. The committee comprising Prof. Badri Nath, Prof. David F. Kotz, Prof. Shyam Gollakota, Dr. Stefan Saroiu, Prof. Tanzeem Choudhury, and Dr. Thyaga Nandagopal selected the following articles:

* Patrick Murphy, Ashutosh Sabharwal, and Behnaam Aazhang. "Design of WARP: a wireless open-access research platform," European Signal Processing Conference, 2006.
	+ WARP was a groundbreaking open-source specialized hardware platform for high-performance wireless research. As one of the very few university hardware projects that moved outside the university, WARP has served as an experimental enabler for hundreds of ideas, which otherwise would have hardly been demonstrated, due to code base limitations and the large cost of wireless platforms capable of supporting high-end research. In the process, WARP was instrumental in changing the way the SIGMOBILE wireless community did research – strong experimental evidence versus oversimplified simulations.
* Prashanth Mohan, Venkata N. Padmanabhan, and Ramachandran Ramjee. "Nericell: Rich Monitoring of Road and Traffic Conditions using Mobile Smartphones," ACM SenSys, 2008.
	+ Nericell pioneered the use of smartphones as a vehicular sensing platform, at a time when these devices lacked the sensing capabilities that are commonplace today. Nericell showed how smartphones could be used to sense various aspects of road and traffic conditions. In addition to the technical achievements, it influenced a large body of research,inspired others to develop novel uses of smartphone sensors, and fostered new lines of academic and commercial research.
* Emiliano Miluzzo, Nicholas D. Lane, Kristof Fodor, Ronald Peterson, Hong Lu, Mirco Musolesi, Shane B. Eisenman, Xiao Zheng, and Andrew T. Campbell. "Sensing meets mobile social networks: the design, implementation and evaluation of the CenceMe application," ACM SenSys, 2008.
	+ CenceMe was the first paper to demonstrate how smartphones can be used to derive rich behavioral insights continuously from onboard sensors. Since its publication, the work has inspired a huge body of research and commercial endeavors that has continued to increase the breadth and depth of personal sensing. Some of the activity inference methods that are now common in smartphone operating systems can be traced back to the original CenceMe system.

**Highlight Papers**

* Mehrdad Moradi, Eugene Chai, Karthik Sundaresan, Z. Morley Mao, Sampath Rangarajan, "SkyCore: Moving Core to the Edge for Untethered and Reliable UAV-based LTE Networks," MobiCom 2018.
	+ SkyCORE presents a new implementation study of a mobile LTE core network on UAVs. This paper embodies our vision of a untethered, reliable UAV-based LTE network, and presents the necessary re-design of the traditional EPC architecture to realize this vision. This is the first real-world prototype of a fully functional LTE core network that harnesses the high mobility offered by UAVs to achieve a uniquely reliable and scalable core network that can be deployed anywhere at short notice. The insights gained from this re-engineering of the EPC, as well as the real-world UAV evaluations presents an exciting and significant development in UAV solutions.

UAV technology has advanced to the point that operators are now empowered to deploy on- demand, real-time sensing and communication solutions. However, UAV solutions are constrained by the limited resources on UAV platforms, and require research to fully harness the power, flight, mobility and autonomous features in order to develop future UAV-based solutions. SkyCORE presents an early demonstration and direction of UAV solutions, and is of general interest to the CS research community.

* Nivedita Arora, Steven L. Zhang, Fereshteh Shahmiri, Diego Osorio, Yi-Cheng Wang, Mohit Gupta, Zhengjun Wang, Thad Starner, Zhong Lin Wang, Gregory D. Abowd, “SATURN: A Thin and Flexible Self-powered Microphone Leveraging Triboelectric Nanogenerator”, IMWUT 2019
	+ SATURN showcases the novel device design, fabrication, and evaluation of an audio and vibration sensing material. SATURN is one of the first prototypes for the new compelling vision of self-sustainable computational material where innovation has been achieved in all parameters -- power, form factor, and cost to create a material which can sense sound and vibrations in the environment.
	In particular, SATURN leverages triboelectric effect or static electricity to convert tiny mechanical vibrations caused by sound on the surface it hits into electrical energy. The design of SATURN has been experimentally and theoretically optimized to allow it to be used as a self-powered sensor or a sound-energy harvesting device. A small SATURN patch of 4x4 cm2 as self-powered sensor achieves sensitivity comparable to an active microphone (which consumes power) till 6000 Hz frequency band. The same patch as a sound harvester generates 10 microwatts in the presence of loud sound. Furthermore, SATURN consists of a multilayered structure of thin and flexible materials - Paper and dielectric PTFE. The work explores easy, reliable and reproducible ways of deploying SATURN on everyday objects and surfaces. Finally, SATURN is made of cheap and readily available materials and has a simple assembly technique to support an easy and large-scale manufacturing process.
* Rajalakshmi Nandakumar, Vikram Iyer, Shyamnath Gollakota, “3D Localization of Sub-Centimeter Sized Devices”, ACM SenSys 2018.
	+ Existing wireless localization systems do not address the needs of size-constrained IoT applications. Today, it is difficult to continuously track objects through walls in homes and warehouses using a small size coin cell battery. While Wi-Fi and ultra-wideband radios can track objects through walls, they consume tens of milliwatts of power and can run only for a month on coin cell batteries. On the other end, RFID tags are passive and small but they have very limited range and does not work consistently across walls. Instead, we propose the first sub-centimeter sized localization system ‘uLocate’ that consumes microwatts of power at a mobile device and can be localized across multiple rooms in settings such as homes and hospitals.

uLocate is a multi-band backscatter system that operates across 900 MHz, 2.4 and 5 GHz and can extract the backscatter phase information from signals below the noise floor. The sub-centimeter sized prototype consumes 93 uW and can last five to ten years on button cell batteries. The system achieves a range of up to 60m from the router as well as enables 3D tracking capabilities.

* Mao, Mei Wang, Lili Qiu, “AIM: Acoustic Imaging on a Mobile Wenguang,” Mobisys 2018.
	+ Acoustic imaging is an attractive complement to camera based imaging since it can image under darkness and/or obstruction. This is the first work that brings acoustic imaging to widely available smartphones without any special hardware. Their smartphone app lets a user image an object by simply swiping the phone across the target. The app plays a special audio file through a smartphone speaker and processes the acoustic signals reflected from the target to the smartphone microphone to produce an image within 100 ms. It can not only image an object in clear sight but also under clothes and plastic bags.

The work is inspired by RADAR imaging, but addresses several unique challenges in using narrowband acoustic signals available on smartphone. Its design is creative and rigorous. It is not only theoretically sound but also has been empirically validated extensively. The work deepens our understanding of RADAR technology, significantly advances the state-of-the-art in acoustic imaging, and has the potential to make impact (e.g., weapon detection, cognitive assistance, and health applications).

* Umar Farooq, Zhijia Zhao, “RuntimeDroid: Restarting-Free Runtime Change Handling for Android Apps,” Mobisys 2018.
	+ This work presents the first formative study on runtime change handling of real-world Android apps. The study not only reveals the current landscape of runtime change handling, but also points out a root cause of various runtime change issues, i.e., activity restarting. Based on the findings, this work designs a restarting-free runtime change handling solution, which can automatically load resources online without restarting the activity. More importantly, the solution ensures that the user interaction state is properly preserved during the resource loading. By avoiding activity restarting, this paper shows that the proposed solution successfully fixed a large set of reported runtime change issues, meanwhile reducing the handling delays by an order of magnitude.

**Significant and Innovative Programs**

After a successful inaugural Internet of Things Day with a keynote by Dr. Vint Cerf (Google), SIGMOBILE held an Internet of Things Day again with MobiSys’19 in Seoul this year to establish it as an annual event. The program included keynotes by Dr. Feng Zhang (CTO Haier) and Dr. Jaeyeon Jung (Samsung), a panel on “The Convergence of 5G, AI and IoT and its Impact on Human Productivity” moderated by Dr. Fahim Kawsar (Nokia Bell Labs and TU Delft), as well as invited talks from industry and academia. The event grew to about 250 participants this year. More details are available here:

<https://www.sigmobile.org/mobisys/2019/iot_day/>

Under the direction of SIGMOBILE’s information director Prof. Xia Zhou (Dartmouth), SIGMOBILE launched a significant update of its web presence that serves as an introduction to the SIGMOBILE, a hub for upcoming events, as well as a better reflection of SIGMOBILEs overall activities. The website can be found:

<https://www.sigmobile.org/>

Dr. Landon Cox (Microsoft) is the new editor-in-chief of *GetMobile,* SIGMOBILE’s significantly transformed quarterly publication, which is a revamped version of the ACM SIGMOBILE Mobile Computing and Communications Review (MC2R). Each issue of GetMobile consists of a set of regular sections curated by a committed group of editors and has won a lot of praise from the broad community for improved quality of content and articles.

SIGMOBILE’s MobiCom conference will continue a multiple submission deadline model with a summer and winter deadline per year. Papers submitted to both deadlines undergo the same rigorous review process with decisions rendered at an in-person technical program committee meeting after the reviewing phase for each deadline. To reduce travel, one of the TPC meetings will be co-located with the conference itself this year.

SIGMOBILE is continuing to expand the SIGMOBILE YouTube channel through which we provide video-recorded talks from our major conferences and workshops. This content is publicly available and anyone can now watch the talks from our conferences at their convenience, even if they were not able to attend the conference itself. Engagement on this channel is rising significantly, with a 52% increase in watch time in 2018. Many of our viewers seem to be from countries that are traditionally underrepresented at our conferences, including Asia and South America. This channel thereby allows us to reach many more constituents than our conferences and workshops currently do.

**Events or Programs to Broaden Participation**

SIGMOBILE operates a program to broaden participation that involves several key activities: workshops designed for underrepresented groups, informal lunch meetings and mentoring, and student travel grants.

To ensure coordination and stewardship of resources, SIGMOBILE has created a broadening participation committee. With the start of the next fiscal year, the role of the committee is to:
- Advise organizers and SIG officers on best practices regarding broadening participation
- Prioritize broadening participation-related funding requests within a given budget

- Develop measurable objectives for our broadening participation program and track its progress
- Help publicize SIGMOBILE’s activities (through website, email, Twitter, for example)

- Coordinate among the different activities and groups that SIGMOBILE sponsors

The initial committee members are Prof. Ana Aguiar (Univ. of Porto), Prof. Rajesh Balan (SMU), Prof. Katia Jaffres-Runser (IRIT), Prof. Robin Kravets (UIUC), and Dr. Thyaga Nandagopal (NSF).

SIGMOBILE periodically holds the Asian Students Symposium on Emerging Technologies (ASSET. The goal of ASSET is to empower students from developing countries and regional universities with technical writing, speaking, and presentation skills and also allow them to experience a top-tier research conference. Each ASSET participant usually prepares a short research project writeup, record a 30s elevator pitch research presentation video, and present a research poster. These artefacts were evaluated by five faculty mentors (in small groups) and the students iterated their submissions based on this feedback. The feedback from the student participants was very positive and we plan to organize more such events, particularly also to broaden our reach to other continents.

In partnership with the N2Women group, we are hosting a N2Women dinner meeting at MobiCom’19. We also continue meetings at other main conferences, often in the form of a lunch meeting and occasionally as a full day workshop. These serve as a forum for researchers from underrepresented groups to network and to discuss career questions. Meetings are organized by a graduate student under the mentorship of a senior researcher from the community. The graduate student is usually supported with a travel grant.

SIGMOBILE operates a student grant program that co-sponsors students travel costs to SIGMOBILE conferences. Conference organizers are asked to explicitly consider the goal of broadening participation when selecting travel grant awardees.

Budget permitting, SIGMOBILE also occasionally sponsors activities from partner organizations focused on broadening participation, such as the CRA-W conference.

**Key issues facing the community**

**Greater industry engagement:** We believe that SIGMOBILE can engage even better with the mobile and wireless industry that is having such a significant impact in the world today. We have taken some initial steps, e.g., the IoT Day, a Wireless Industry Days workshop, the Youtube channel, and the revamped GetMobile publication with a broader appeal. But much more can and should be done, and we need to look for better and greater ways of engaging with our broader industry.

**Conference co-locations:** SIGMOBILE today sponsors multiple major conferences --- MobiCom, MobiHoc, MobiSys, SenSys, UbiComp, along with newer additions such as PerDis. Each conference has a slightly different focus, has thrived over the years, and is considered a premier venue in the field. However, sometimes there is a concern that too many conferences may dilute a community and there maybe need for periodic co-locations and greater coordination. This is an issue that requires further introspection.

**Summary**

Mobile computing and wireless networking are among the fastest growing fields within computer science and engineering, and as a result SIGMOBILE continues to be a strong, successful, well-supported organization. This year, newer SIGMOBILE initiatives included establishing the IoT Day to reach out to industry and the wider technical community as an annual event through a second successful meeting, a new SIGMOBILE website to serve the community, and expanding broadening participation activities under a broadening participation program.

The SIG’s conferences and workshops are well attended, creating a wealth of publications for the ACM digital library and the SIG’s members. The community continues to create significant impact both technically and to the broader society through research, education, and other activities.

**SIGOPS Annual Report**

**July 2018 - June 2019
Submitted by: Robbert van Renesse**

SIGOPS addresses a broad spectrum of issues associated with operating systems research and development. Although many of the members are drawn from industry, academic and government professionals are also represented in the membership. SIGOPS remains a highly active organization. In addition, the two main chapters of SIGOPS, EuroSys and ChinaSys, are both very active. Eurosys organizes a large conference annually and ChinaSys organizes two large meetings per year. Professional SIGOPS membership dues remain at $10, and student membership is just $5 per year.

Board elections were held this year. Two people ran for Chair, three for Vice-Chair, and two for Treasurer. The elected board consists of Shan Lu, University of Chicago (Chair), Phillip Stanley-Marbell, University of Cambridge (Vice-Chair), and Brad Karp, University College London (Treasurer).

One of the most exciting highlights of the last year was the newly created summer school: the SIGOPS Summer School on Advanced Topics in Systems (SATIS), held in August 2018 in Norway (http://site.uit.no/satis2018/). The three-day summer school was attended by Ph.D. students, junior faculty, and engineers, and was immediately sold out. We are in the planning stages for the next installment to be held in 2020, although the location is currently under reconsideration.

SIGOPS publishes a quarterly newsletter, *Operating Systems Review (OSR)*, which focuses on specific research topics or research institutions, manages an electronic mailing list, and maintains a web site: <http://www.sigops.org/>. The newsletter was not working well, and the new co-editors, Mark Silberstein (Technion) and Chris Rossbach (UT Austin), were not able to turn things around. Together with Kishore Pusukuri (LinkedIn), Chris Rossbach (UT Austin), and Robbert van Renesse (Cornell), we are trying a new formula. We are going to publish two special issues of invited papers each year. The first, which is ready, is on Systems for AI and AI for Systems. Concurrently, Mark Silberstein is looking into the creation of an online blog forum.

SIGOPS encourages participation in conferences and career building activities for young members of the community. For example, substantial funding was provided this year as travel grants for students to attend conferences and diversity workshops, with many of these grants targeted at women and underrepresented minorities. We support SOSP, Eurosys, PODC, APsys, CRA Grad Cohort Workshop, SOCC, and VEE with student travel grants. We also provide sponsorship for childcare services and travel grants earmarked for female and URM participants at major systems conferences in the past year to promote diversity.

SIGOPS provides various awards to the community: the Dennis M. Ritchie Doctoral Dissertation Award, the Hall of Fame most influential paper award, and the Mark Weiser achievement award. The various winners of the awards are listed at https://www.sigops.org/awards. We appointed Nickolai Zeldovich (MIT) as the Awards Chair, but each award has its own committee.

SOSP 2019 will be held at the Deerhurst Resort, Huntsville, Ontario, Canada. Tutorials and Workshops will be held Sunday Oct 6, 2019, and the conference Monday Oct 7 - Wed Oct 9, 2019. Tim Brecht and Carey Williamson serve as General Chairs, and Remzi Arpaci-Dusseau and Yuanyuan Zhou as PC Chairs.

We sponsor various conferences and workshops, including Symposium on Operating Systems Principles (SOSP), Eurosys, Asia-Pacific Workshop on Systems (APsys), Systems and Storage Conference (SYSTOR), Hot Topics in Operating Systems (HotOS), Diversity Workshop, Architectural Support for Programming Languages and Operating Systems (ASPLOS, 25%), Virtual Execution Environments (VEE, 50%), Principles of Distributed Computing (PODC, 33%), Symposium on Cloud Computing (SOCC, 50%), and Embedded Networked Sensor Systems (SenSys, 10%). We are in-cooperation with USENIX OSDI, NSDI, and FAST. We also co-sponsor the CRA-W Grad Cohort Workshop.

**SIGPLAN FY 2019 Annual Report.**

**July 2018 - June 2019.**

**Submitted by: Jens Palsberg, SIGPLAN Chair.**

SIGPLAN has four annual conferences that weigh equally as flagship conferences:

 - Int. Conf. on Functional Programming (ICFP),

 - Conf. on Programming Language Design and Implementation (PLDI),

 - Symp. on Principles of Programming Languages (POPL), and

 - Conf. on Systems, Programming, Languages, and Applications:

 Software for Humanity (SPLASH).

Each of those conferences has an attendance of 500 people.

Additionally, SIGPLAN sponsors or co-sponsors eight other conferences.

**1. Awards**

SIGPLAN gave the following awards:

- SIGPLAN Programming Achievement Award: Alex Aiken (Stanford).

- SIGPLAN Robin Milner Young Researcher Award: Martin Vechev (ETH).

- SIGPLAN Software Award: Scala, by Martin Odersky (EPFL) and seven others.

- SIGPLAN Most Influential Paper awards to papers presented 10 years earlier:

 - ICFP 2008: "Parametric higher-order abstract syntax

 for mechanized semantics", by Adam Chlipala.

 - OOPSLA 2008: "jStar: towards practical verification for Java",

 by Dino Distefano and Matthew J. Parkinson.

 - POPL 2009: "Compositional shape analysis by means of bi-abduction",

 by Cristiano Calcagno, Dino Distefano, Peter O'Hearn, and Hongseok Yang.

 - PLDI 2009: "FastTrack: Efficient and Precise Dynamic Race Detection",

 by Cormac Flanagan and Stephen Freund.

Additionally, SIGPLAN decided on who will receive two additional awards;

SIGPLAN will give those awards in FY 2020.

**2. Significant Papers**

The following three papers, first presented at SIGPLAN conferences, appeared as CACM research highlights:

- "Bringing the web up to speed with WebAssembly",

 by Andreas Haas and eight others; CACM Research Highlight in Dec 2018;

 first presented at PLDI 2017.

- "How to implement any concurrent data structure",

 by Irina Calciu, Siddhartha Sen, Mahesh Balakrishnan, and Marcos Aguilera;

 CACM Research Highlight in Dec 2018; first presented at ASPLOS 2017.

- "Predicting program properties from big code",

 by Veselin Raychev, Martin Vechev, and Andreas Krause;

 CACM Research Highlight in Mar 2019; first presented at POPL 2015.

**3. Significant Programs**

SIGPLAN is committed to gold open access to papers in conferences that have joined Proceedings of the ACM on Programming Languages (PACM PL).

In a three-year pilot period (until July 2020), SIGPLAN pays the $400 fee per paper for gold open access, unless authors pay themselves.

SIGPLAN provides $120,000 annually in travel grants, which go mostly to students.

Additionally, SIGPLAN provides a total of $80,000 annually to support of the Programming Languages Mentoring Workshops. This money goes to cover the travel costs of students.

Also, SIGPLAN provides a total of $35,000 annually to support three summer schools. This money goes mostly to cover the travel costs of students.

 The SIGPLAN communications director sends a monthly newsletter via email to every SIGPLAN member.

The newsletter contains information about upcoming SIGPLAN conferences and other activities that may be of interest to SIGPLAN members. Additionally, SIGPLAN has a presence on Facebook and Twitter.

SIGPLAN has a permanent conference manager who is essential to the smooth organization of the flagship conferences and PLMWs.

**4. Innovative Programs**

SIGPLAN does video recording and live streaming of all the main tracks of the flagship conferences and puts the videos on youtube.

In June 2019, SIGPLAN started a blog, patterned after the SIGARCH blog.

The editor is Michael Hicks, former SIGPLAN Chair (2015-2018).

SIGPLAN has a committee on climate change, chaired by Benjamin Pierce (who is also the SIGPLAN Vice Chair). The committee advocated for ACM to have a carbon offset program, and eventually ACM introduced

such a program in Feb 2019. The idea of the program is that conference registration forms may include a check-off box for conference attendees to make a carbon offset contribution.

The SIGPLAN committee helped the organizers of FCRC 2019 get ready to be the first to try the program. Additionally, the SIGPLAN committee has authored a paper that has been accepted to appear in CACM.

The paper advocates that every ACM-sponsored conference should publicly report its carbon footprint.

**5. Broadening Participation**

SIGPLAN has a Programming Languages Mentoring Workshop (PLMW) co-located with every flagship conference so four PLMWs annually. Each PLMW has 30-40 attendees, which are a mix of undergraduate and graduate students. The goal of each workshop is to make the participants interested in pursuing more education in computer science in general and programming languages in particular.

CRA (CERP) surveys the participants, both right after each workshop and one year later; CRA sends SIGPLAN reports with the outcomes. SIGPLAN uses those reports to understand the impact of PLMW and to raise funds from the National Science Foundation and industry.

SIGPLAN donates $15,000 annually to support the CRA-WP activities to increase participation of women in computer science.

The four flagship conferences use a variant of double-blind peer review to ensure fairness, particularly to under-represented groups.

SIGPLAN plans to start a CARES committee, patterned after the one in SIGARCH and SIGMICRO. The goal is to aid reporting of discrimination and harassment at SIGPLAN conferences.

**6. Key Issues**

For gold open access, SIGPLAN is aware that the current $400 fee per paper is a discounted fee that may change. The SIGPLAN Chair is in contact with Scott Delman and keeps an eye on whether the fee is likely to change.

SIGPLAN's conference manager does an outstanding job but appears overworked. The SIGPLAN Chair is working on decreasing the conference manager's workload.

**SIGSAC Annual Report**

**July 2018 - June 2019
Submitted by: Ninghui Li, Chair**

1. Awards that were given out

        2018 SIGSAC Outstanding Innovation Award:    N. Asokan

        2018 SIGSAC Outstanding Contributions Award: Ahmad-Reza Sadeghi

        2018 SIGSAC Doctoral Dissertation Award:            Daniel Gruss

        2018 SIGSAC Doctoral Dissertation Award:            Dennis Adriaan Andriesse

       2018 SIGSAC Doctoral Dissertation Award Runners-Up: Xiaojing Liao

2. Significant papers on new areas that were published in proceedings

3. Significant programs that provided a springboard for further technical efforts

4. Innovative programs which provide service to some part of your technical community

5. Events or programs that broadened participation either geographically, or among under-represented members of your community and;

6. A very brief summary of the key issues that SIG membership will have to deal with in the next 2-3 years.

There were 4 major conferences in the area of cyber security, with ACM CCS being one of them.  At this point, all four conferences

went to multiple submission deadlines per year.  This puts a heavy toll on the community and affects the review quality.  We are

exploring the possibility of alternative review models.

**SIGSIM Annual Report**

**July 2018 – June 2019**

**Submitted by: Margaret Loper, SIGSIM Chair**

***The Mission of SIGSIM is to become the world-wide leader in providing professional services on modeling and simulation. SIGSIM actively seeks to meet this objective in a variety of ways, including: sponsorship of both the Winter Simulation Conference (WSC) and the SIGSIM Conference on Principles of Advanced Discrete Simulation (SIGSIM PADS).***

**Awards**

* SIGSIM Distinguished Contributions Award was given at the 2018 Winter Simulation Conference to Dr. Adelinde Uhrmacher from the University of Rostock, Germany
* WSC PhD Colloquium Award was given to Matías Bonaventura for the paper “Unified Packet-Level and Fluid-Flow Simulation of Large-Scale Networks”
* SIGSIM-PADS PhD Colloquium Award was given to Sultanah Al-Shammari for the paper “A data-driven computational epidemic modeling to assess the risk of disease outbreaks at global mass gatherings”
* 9 Travel Awards (up to $1k in expenses) to PhD students to attend WSC 2018 in Gothenburg, Sweden (Dec 2018)
* 5 Travel Awards (up to $1k in expenses) to PhD students to attend the ACM SIGSIM-PADS Conference in Chicago, IL (May 2019)

**Significant Papers**

* 2019 SIGSIM-PADS Best Paper Award “A Distributed Virtual Time System on Embedded Linux for Evaluating Cyber-Physical Systems ” by Christopher Hannon, Jiaqi Yan, Dong Jin and Yuan-An Liu

**Significant Programs**

* SIGSIM-PADS joined the ACM Reproducibility Initiative this year by successfully creating a reproducibility committee to evaluate papers. Lessons learned will be shared with other SIGSIM sponsored conferences.
* Continual expansion of MSKR: [www.sigsim.org](http://www.sigsim.org) (Balci, Editor in Chief)

**Innovative Programs**

* We created an informal committee to help identify SIGSIM members who are qualified to apply for ACM Fellow status. The committee is composed of ACM Fellows, and their purpose is to mentor candidates on the process and requirements.
* SIGSIM Digest started 08/14: digest.sigsim.org (Fishwick, Chair). Current Subscribers: 60 individuals + SIGSIM email list, # of posts: 385, # of views: 8,462 cumulative
* Twitter feed started 02/15, Current Followers: 261, up from 203 last year
* M&S education material is linked from the MSKR, including access to courseware, videos, and M&S area resources (e.g., books, journals, conferences)
* We have a new Digital Media committee that is responsible for Email, Twitter, LinkedIn, and SIGSIM Digest. They will make suggestions on outreach and help grow our visibility.

**Events or programs that broadened participation either geographically, or among under-represented members of your community**

* Held 2018 Winter Simulation Conference in Gothenburg, Sweden
* Held 2018 International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM) conference in Montreal, Canada

**Summary of the key issues that SIG membership will have to deal with in the next 2-3 years**

1. Increasing the registration for the annual SIGSIM-PADS conference

Attendance at the conference has been inconsistent (’13 – 66, ’14 - 43, ’15 – 54, ’16 – 65, ’17 – 45, ’18 - 46, ’19 - 54). This year allowed “invited papers” from known contributors and researchers from national laboratories to present. This helped increase attendance some. Next year we need to advertise the conference outside of the traditional SIGSIM-PADS attendees to gain visibility with new M&S researchers, and collaborate more with other SIGSIM-sponsored conferences (WSC and MSWiM) to identify opportunities for cross-over activities and advertising.

b) Coordination & Collaboration Across SIGSIM Conferences

Our three major conferences are Winter Simulation Conference (WSC) – 25% sponsor, SIGSIM Conference on Principles of Advanced Discrete Simulation (SIGSIM-PADS) – 100% sponsor, and the Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM) Conference – 100% sponsor. There is some sharing across these conferences, but it is mostly done by individuals that attend two or more of the conferences. We need to bring the steering committees together across these conferences to share knowledge about issues such as PhD colloquiums, travel grants, paper awards, reproducibility initiative, etc. Doing this should bring more collaboration across the communities, help us optimize conference planning, and share lessons that benefit all three conferences. We also need to integrate conference operation and reporting into the executive committee discussions.

**SIGSOFT FY’19 Annual Report
July 2018 – June 2019
Submitted by: Thomas Zimmermann, Chair**

*SIGSOFT seeks to improve our ability to engineer software by stimulating interaction among practitioners, researchers, and educators; by fostering the professional development of software engineers; and by representing software engineers to professional, legal, and political entities.*

ACM’s SIGSOFT had another excellent year, both technically and financially in 2018-2019. This report provides a summary of key SIGSOFT activities over the past year.

**AWARDS GIVEN OUT**

The SIGSOFT awards program recognizes the many achievements of the software engineering community. The awards, including our prestigious service, research, and education awards, were presented again this year at the International Conference on Software Engineering (ICSE 2019) in Montreal, Canada.

* The ACM SIGSOFT **Outstanding Research** **Award** was presented to Mark Harman from Facebook, UK, for “outstanding contributions in search-based software engineering.”
* The ACM SIGSOFT **Influential Educator Award** was presented to Ahmed E. Hassan from Queen’s University, Canada, for “outstanding contributions to software engineering education including raising generations of mining software engineering researchers.”
* The ACM SIGSOFT **Distinguished Service Award** was presented to Matthew B. Dwyer from the University of Virginia, USA for “outstanding contributions to the software engineering community including extraordinary leadership to improve conference and journal venues and exemplary student outreach and support.”
* The ACM SIGSOFT **Early Career Research Award** was presented to Jeff Huang from Texas A&M University, USA, “for outstanding contributions in the area of software engineering as an early career investigator.”
* TheACM SIGSOFT **Outstanding Doctoral Dissertation Award** was presented to Sergey Mechtaev, for his Ph.D. dissertation titled “Semantic Program Repair.” The dissertation was completed at the National University of Singapore under the guidance of Professor Abhik Roychoudhury. An Honorable Mention for the Outstanding Doctoral Dissertation Award was presented to Christoffer Quist Adamsen for his PhD Thesis on “Automated Testing Techniques for Event-Driven and Dynamically Typed Software Applications”, advised by Anders Møller, Aarhus University, Denmark.
* The ACM SIGSOFT **Impact Paper Award** recognizes a paper published in a SIGSOFT conference at least 10 years earlier that has had exceptional impact on research or practice. This year, the award went to the paper “CUTE: A concolic unit testing engine for C” by Koushik Sen, Darko Marinov, Gul Agha, published in the Proceedings of the joint 10th European Software Engineering Conference and the 13th ACM SIGSOFT Symposium on the Foundations of Software Engineering (ESEC/FSE 2005).
* The Impact Paper Award is in addition to the **Most Influential Paper Awards**, also known as “test of time awards”, which are given to papers that have appeared at a particular conference. At ICSE the SIGSOFT co-sponsored conference with the longest track record of awarding Most Influential Papers, the award went to the ICSE 2009 paper “Automatically finding patches using genetic programming”, by Westley Weimer, ThanhVu Nguyen, Claire Le Goues, Stephanie Forrest. The ESEC/FSE conference recognized two papers from FSE 2018: “Latent Social Structure in Open Source Projects”, by Christian Bird, David S. Pattison, Raissa M. D’Souza, Vladimir Filkov, Premkumar Devanbu and “Differential Symbolic Execution”, by Suzette Person, Matthew B. Dwyer, Sebastian G. Elbaum, Corina S. Pasareanu
* We recognized the new ACM Senior Members, Distinguished Members, and Fellows from the SIGSOFT community. Samuel A. Ajil, Kester Quist-Aphets, Santanu K. Rath, and Jim Lawson have been elevated to **Senior Member**. Sven Apel, Rajesh Balan, and Marsha Chechik have been elevated to **Distinguished Member**. Three members have been elevated to ACM **Fellow**:Gul Agha, University of Illinois at Urbana-Champaign, for research in concurrent programming and formal methods, specifically the Actor Model; Premkumar T. Devanbu, University of California, Davis, for contributions to using software data and meta-data to improve software tools and processes; and John Hughes, Chalmers University, for contributions to software testing and functional programming
* Many of SIGSOFT’s sponsored meetings also presented **Distinguished Paper Awards**. SIGSOFT allows up to 10% of the accepted papers to be selected for this award. The list of recognized papers is available at http://sigsoft.org/awards/distinguishedPaperAward.html

**SIGNIFICANT PAPERS ON NEW AREAS**

Software is still eating the world. A unique aspect of software engineering is that it branches into a range of different application domains as well as other research areas in computer science, such as human-computer interaction, mobile computing, artificial intelligence, distributed systems, and more recently big data and machine learning, and so on. This is because everything depends now on software. As examples for the breath of the software engineering field, we highlight below distinguished papers from the ESEC/FSE 2018 and ICSE 2019, two of the main general software engineering conferences sponsored by SIGSOFT. Some areas like testing, verification, and performance have and always will be important. Building solutions at scale has also been important for software engineering and this has only increased over the past years. Today software can have hundred million of lines of code. In addition to scale of the systems being built, the scale of research has increased. Rather than studying a few projects, empirical research now investigates hundreds if not thousands of projects, often at the level of entire ecosystems. The community is also making progress is leveraging biosensors such as fMRI and fNIRS to better understand software developers. A trend over the past few years has been the adoption of machine learning and artificial intelligence in software. This has led to research both on leveraging ML and AI to improve the way software is being built (AI4SE), but also to research that incorporate SE concepts into ML and AI processes and workflows (SE4AI). Being able to understand ML and AI system and ensure their fairness and that they behave responsible is one of the important challenges ahead.

*Distinguished papers at ESEC/FSE 2018.*

* James Davis, Christy Coghlan, Francisco Servant and Dongyoon Lee. The Impact of Regular Expression Denial of Service (ReDoS) in Practice: An Empirical Study at the Ecosystem Scale
* Shengjian Guo, Meng Wu and Chao Wang. Adversarial Symbolic Execution for Detecting Concurrency-related Cache Timing Leaks
* Dileep Kini, Umang Mathur and Mahesh Viswanathan. Data Race Detection on Compressed Traces
* Felix Pauck, Eric Bodden and Heike Wehrheim. Do Android Taint Analysis Tools Keep their Promises?
* Yu Gao, Wensheng Dou, Feng Qin, Chushu Gao, Dong Wang, Jun Wei, Ruirui Huang, Li Zhou and Yongming Wu. An Empirical Study on Crash Recovery Bugs in Large-Scale Distributed Systems
* Vaibhav Saini, Farima Farmahini Farahani, Yadong Lu, Pierre Baldi and Cristina Lopes. Oreo: Detection of Clones in the Twilight Zone

*Distinguished papers at ICSE 2019.*

* Nandor Licker and Andrew Rice. Detecting Incorrect Build Rules
* Yu Huang, Xinyu Liu, Ryan Krueger, Tyler Santander, Xiaosu Hu, Kevin Leach and Westley Weimer. Distilling Neural Representations of Data Structure Manipulation using fMRI and fNIRS
* Emerson Murphy-Hill, Edward Smith, Caitlin Sadowski, Ciera Jaspan, Collin Winter, Matthew Jorde, Andrea Knight, Andrew Trenk and Steve Gross. Do Developers Discover New Tools On The Toilet?
* Huilian Sophie Qiu, Alexander Nolte, Anita Brown, Alexander Serebrenik and Bogdan Vasilescu. Going Farther Together: The Impact of Social Capital on Sustained Participation in Open Source
* Junjie Wang, Ye Yang, Rahul Krishna, Tim Menzies and Qing Wang. iSENSE: Completion-Aware Crowdtesting Management
* Pengfei Su, Shasha Wen, Hailong Yang, Milind Chabbi and Xu Liu. Redundant Loads: A Software Inefficiency Indicator
* Kihong Heo, Hakjoo Oh and Hongseok Yang. Resource-aware Program Analysis via Online Abstraction Coarsening
* Emilio Cruciani, Breno Miranda, Roberto Verdecchia and Antonia Bertolino. Scalable Approaches for Test Suite Reduction
* Gang Fan, Rongxin Wu, Qingkai Shi, Xiao Xiao, Jinguo Zhou and Charles Zhang. SMOKE: Scalable Path-Sensitive Memory Leak Detection for Millions of Lines of Code
* Akond Rahman, Chris Parnin and Laurie Williams. The Seven Sins: Security Smells in Infrastructure as Code Scripts
* Junwen Yang, Cong Yan, Chengcheng Wan, Shan Lu and Alvin Cheung. View-Centric Performance Optimization for Database-Backed Web Applications

**SIGNIFICANT PROGRAMS**

Over the past several years, SIGSOFT has introduced several programs to aid and expand our membership. Two signature programs are the Webinars and the CAPS funding.

* The SIGSOFT **Webinar series** remains very popular; in the past year, SIGSOFT organized 12 webinars on topics such as gender-inclusive software engineering, the role of programmers in the age of AI, intelligent software engineering, 50 years of software engineering, and successful expert software designers.
* Through the **Conference Aid Program for Students (CAPS),** we provide travel support to conferences for dozens of graduate and undergraduate student-members as well as support to defray the costs of childcare for all members of our community (faculty qualify as well). CAPS has been extended to help defray travel costs of a certain number of professional SIGSOFT members as well. The new program will launch this Fall.

**INNOVATIVE PROGRAMS**

Several new programs or efforts were launched at SIGSOFT in the past year

* **Conference surplus reinvestment**. The past Executive Committee approved a surplus reinvestment program, which was implemented in FY19. The surplus reinvestment for Year N of a conference is 25% of the Conference Net from Year N-2 and 25% of the Conference Net from Year N-3.
* **Special projects.** We launched a call for projects that benefit SIGSOFT members, future SIGSOFT members or members of the software engineering community.
* **SIGSOFT Initiatives.** To encourage more volunteer participation, we launched several strategic initiatives with an open call for volunteers. The initiatives included Diversity, and Inclusion; Open Science; Data-driven Introspection; Conference Operations; Paper and Review Quality; and many more. The goal was to provide the community with a platform for topics they feel passionate about. The response was immense: 123 people volunteered. The initiatives are:
	+ Conference Operations (led by Laura Moreno, Alexander Serebrenik): Improve the experience for conference attendees.
	+ Data-driven Introspection (led by Tim Menzies, Bogdan Vasilescu): Drive the understanding of the entire ecosystem of software engineering conferences.
	+ Diversity and Inclusion (led by Jo Atlee, Kelly Blincoe, Byron J. Williams): Lead the efforts for increasing diversity, inclusion, and belonging.
	+ Open Science (led by Jonathan Bell, Daniel Graziotin): Increase open science practices in the software engineering community. Help the community to increase the accessibility, reproducibility, and replicability of our research outcomes.
	+ Paper and Review Quality (led by Paul Ralph and Romain Robbes): Increase the quality of our research papers and reviews, for example by developing guidelines on how to review certain types of papers. Make recommendations on how to improve review processes.
* **PC Member Nominations.** After a successful pilot at ASE 2019, we launched an open call for reviewers for the top three software-engineering conferences co-sponsored by SIGSOFT. Members of the community could nominate themselves or a colleague for the program committees of ASE 2020, ESEC/FSE 2021, and ICSE 2021.
* **Open Science.** Many SIGSOFT sponsored conferences pushed heavily on open science and appointed dedicated chairs to help authors increase the openness of the research. A great resource on open science in double blind review settings is by Daniel Graziotin.

https://ineed.coffee/5205/how-to-disclose-data-for-double-blind-review-and-make-it-archived-open-data-upon-acceptance/

* **New SIGSOFT logo.** We also announced a new logo. The logo is composed of two tuning forks. The logo will be rolled out throughout the rest of the year.



**BROADENING PARTICIPATION**

Several events or programs were focused on broadened participation either geographically, or among under-represented members of your community and

* The ICSE 2019 Student Mentoring Workshop was aimed at advanced undergraduates and first/second year graduate students. e goal of the workshop is to attract students to research careers in software engineering, to de-mystify the graduate school experience, and to offer first-hand perspectives on graduate study from recent Ph.D. graduates, young scholars, and senior researchers. The workshop was inspired by similar workshops organized by SIGPLAN. The goal for SIGSOFT to increase the number of student programs over the coming years.
* Diversity and Inclusion Chairs at Conferences. Several software engineering conferences (for example, ASE 2019) have started to appoint diversity and inclusion chairs to organize D&I activities at meetings. At SIGSOFT level, we appointed three chairs to lead the SIGSOFT wide diversity and inclusion efforts. Improving the diversity of the community that we serve is a priority.
* To broaden, reach and membership, SIGSOFT has established national chapters in India (iSoft) and China (cSoft). Each chapter has a liaison on the SIGSOFT EC, in addition to our long-standing International Liaison. The ICPE 2019 conference was held in Mumbai India. ISSTA 2019 was held in Beijing, China.

**KEY ISSUES FACING SIGSOFT**

While SIGSOFT is stable and strong, there are several challenges we continue to face:

* Despite a large growth of software engineers, SIGSOFT’s membership numbers have not been growing. We will aim increase membership by providing more benefits to SIGSOFT members, increased visibility of SIGSOFT at conferences, and a focus on practitioners with the help of the industry liaison. We are also working on engaging SIGSOFT members more.
* We will also work to increase the global reach of SIGSOFT by continuing to establish long-term working relationship with our Indian, Chinese, and South American colleagues, as well as expanding the reach of SIGSOFT into Africa. Over the past few years, China has grown to the second most active country in software engineering research. We will work towards further growing the community and interest in SIGSOFT in these regions.
* The conference registration fees have been rising. While SIGSOFT provides travel support with the CAPS program and recently adopted a model to return conference surpluses to future editions of the same conference, this will likely not be enough to keep the registration fees affordable. In addition to registration is a major cost factor for attendees. Inspired by the success of the webinars, we will explore to what extent virtual conferences can provide similar benefits as physical conferences at lower cost.
* Several members of our community have raised concerns over the lack of gold open access offerings at SIGSOFT conferences. This may become a problem for researchers who are subject to the Plan S – Open Access Mandate. We are looking into how the changing open access landscape will affect SIGSOFT and how ACM’s policies, practices, and initiatives can work for SIGSOFT members.

**SIGSPATIAL FY19 Annual Report**

**July 2018-June 2019**

**Submitted by: Cyrus Shahabi, SIGSPATIAL Chair**

# **SIGSPATIAL CONFERENCES AND WORKSHOPS**

The core mission of SIGSPATIAL is to promote academic and industrial research that addresses issues related to the acquisition, management, and processing of spatial data and knowledge generation, with a focus on conceptual, design, algorithmic, geometric, visual, and systems implementations aspects.

Historically, the scope of SIGSPATIAL initially included geographic information systems (GIS), along with data storage, query processing, indexing and data mining. However, in recent years our scope diversified with interest from a variety of researchers and practitioners whose data sets have spatial information as the key enabling component for their systems, e.g., traffic systems, location-based social networks, ride sharing apps, IoT platforms, etc.

The categories of problems, as well as the plethora of novel solutions, address issues of high societal relevance in various application domains, arising due to the increasing availability of GPS data in ever-increasing number of mobile devices and smart phones. The use of navigation, routing and online mapping systems offered from companies such as ESRI, HERE, Microsoft (Virtual Earth) and Google (Google Maps and Google Earth) in settings ranging from tourism, traffic management, emergency/disaster remediation and agriculture only further accentuate the importance of the topics that define the main thrusts of the SIGSPATIAL conference and workshops.

SIGSPATIAL continues to offer an annual conference, focusing on high-quality research papers, along with system and vision papers. It also includes a set of diverse workshops, the numbers of which have been steadily growing (e.g., there were thirteen workshops collocated with the SIGSPATIAL 2018 conference). These are differentiated from other venues in the area by focusing on the computational and system aspects of the field rather than on the available commercial products.

A key aim of the SIGSPATIAL leadership is keeping the flagship conference – the ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM SIGSPATIAL) – affordable. This way we believe it can continue to be of good value to its attendees and be competitive not only in quality but also price-wise with related conferences. For example, the late registration fees for ACM SIGSPATIAL 2018 were only $500 for ACM members; $550 for non-ACM members; $400 for students. With only an additional $100 difference, the community can also attend any of the workshops that are collocated with the conference.

Achieving low fees has been made possible by active solicitation of sponsor contributions and a great deal of vigilance and active involvement of the Organizing Committee, from venue selection to many other logistics of the event. This, in turn, enables a reduced financial burden in terms of contractual obligations when planning the conference. In addition, enabling a healthy build-up of our financial reserves.

ACM SIGSPATIAL GIS 2018 was the 26*th* event of an annual series of symposia and workshops with the mission to bring together researchers, developers, users, and practitioners carrying out research and development in novel systems based on geo-spatial data and knowledge. However, 2018 was the 11*th* year that the conference was held under the auspices of the new ACM Special Interest Group on Spatial Information - SIGSPATIAL - and the flagship conference was held in Seattle, Washington (November 6 - November 9, 2018).

During the one-day workshops and the two-and-a-half-day single track conference, the ACM SIGSPATIAL attracted 414 attendees. **This was the first time the conference had attendance more than 400!** There was also an exceptional increase of attendance from industry – 148, which was also an all-time high!

The conference received a total of 150 research submissions and 19 industrial experience and systems submissions. 38 of the submissions were accepted as full 10-page research papers for oral presentation, resulting in an acceptance rate of 22.5%. Additional 40 submissions were accepted as poster presentations (46.2% cumulative acceptance rate) and published as 4-page papers. There were 24 demonstration submissions, of which 14 were accepted for live demonstrations, published as 4-page papers (acceptance rate of 58%). Finally, once again we encouraged the submission of papers describing visionary ideas. Of the 12 vision papers submitted, 4 were accepted for oral presentation and publication as 4-page papers.

Continuing the tradition, ACM SIGSPATIAL 2018 had a Cup, programming contest, which focused on analyzing large spatial networks in order to find upstream features from a given set of starting points. The competition received 15 submissions and the teams totaled 42 members submitting these formal entries. Three entries were selected as winners and were additionally qualified for an invited paper.

For the third time, after its debut in 2016, the conference had a Student Research Competition that aimed at providing a forum for students to share their research results and exchange ideas with other students, judges, and conference attendees. This year, 7 papers (co-)authored by graduate students were selected to enter the final round of the competition.

Our reviewers put in a significant amount of effort in reviewing the papers and our hope is that the reviews were beneficial even to those authors whose papers were not accepted. The committee consisted of 112 regular members from all over the world and additional 21 senior members. The technical program of the conference was decided in a two-stage process:

(1) Each submitted paper was first reviewed by at least three members of this carefully chosen program committee (PC) consisting of experts in the relevant fields. The assignment of papers to reviewers involved a bidding stage, during which the PC members were allowed to express ranked preferences regarding their willingness to review a particular submission. In addition to the three reviewers from the PC, each paper was also assigned a designated Senior PC member who studied the reviews, discussed the merits of the submission with the reviewers, wrote a metareview, and formulated an accept/reject recommendation.

(2) We continued to have a rebuttal phase, where the authors received preliminary versions of the reviews and the metareview and were offered the opportunity to address the concerns raised therein by submitting a response. The reviews, metareviews, and accept/reject recommendations were then finalized taking into account the authors’ responses. The selection of papers to include in the conference program was ultimately made by the PC Chairs.

Certain papers that were not accepted for the conference – with an explicit permission from the authors -- were forwarded to the conference’s Workshop Chairs to be considered for inclusion in relevant workshops co-located with SIGSPATIAL. This is to promote good ideas that are not ready for a conference presentation to be discussed during the workshop sessions which cover a vast array of emerging topics. We also aim to gain time and optimize our efforts by using the reviews submitted by the PC of the conference at the workshop level as well.

ACM SIGSPATIAL 2018 had two distinguished speakers: Xin Chen (HERE Technologies) with a keynote presentation “HD Live Maps for Automated Driving: An AI Approach”, and Daniel Delling (Apple Maps) whose keynote addressed “Route Planning in Transportation from Research to Practice”.

The 2018 conference was again run as a single track with one of the highlights being the fast-forward poster session where each poster author was given two minutes to present the highlights of their work to the audience and promote their poster. This was followed by a poster and demo reception in the evening where the conference participants had an opportunity to interact with the poster authors. The poster and demo components of the conference proved to be very popular with both the conference audience and the poster and demo authors. We appear to have a good mechanism to match interested researchers to poster directly with the fast-forward session.

The conference also included a business meeting for SIGSPATIAL which was open to all SIGSPATIAL members as well as to all the conference attendees. The main purpose of the business meeting is to provide a report of the annual achievements and seek feedback from the community.

We host a number of collocated workshops which has increased from 7 to 15 (for SIGSPATIAL 2019) over the last ten years. This shows increasing interest from the community regarding new topics that attendees would like to discuss within the realm of SIGSPATIAL conference. The 2018 conference was preceded by the following 13 workshops:

1. Geospatial Humanities (GeoHumanities 2018)
2. Analytics for Local Events and News (LENS 2018)
3. Recommendations for Location-based Services and Social Networks (LocalRec 2018)
4. Indoor Spatial Awareness (ISA 2018)
5. Geoadvertising Meets Geosocial (Geoadvertising 2018)
6. Prediction of Human Mobility (PredictGIS 2018)
7. GeoSpatial Simulation (GeoSim 2018)
8. Geographic Information Retrieval (GIR 2018)
9. AI for Geographic Knowledge Discovery (GeoAI 2018)
10. Computational Transportation Science (IWCTS 2018)
11. Advances on Resilient and Intelligent Cities (ARIC 2018)
12. Analytics for Big Geospatial Data (BigSpatial 2018)
13. Safety and Resilience (Safety and Resilience 2018)

(With 2018, we have started to make a clear distinction between, full-day, half-day morning and half-day afternoon workshops.)

With a large number of very generous corporate sponsors who in 2018 year contributed more than $100,000 in sponsorship, we are pleased to be in a secure financial position. The list of sponsors for SIGSPATIAL 2018 includes: Amazon, Apple, and HERE (Platinum Sponsors), Esri, Lyft, and Uber (Silver Sponsors), Oracle (Bronze Sponsor), and Microsoft and IBM, many of whom have supported this conference for multiple years. We are also grateful for the publishing sponsorship by Springer Publishers. The National Science Foundation (NSF) was an institutional sponsor enabling travel-grants for students. Additionally, IBM and ESRI provided financial sponsorship for the SIGSPATIAL Cup and the awards for the winners. Finally, three vision papers received awards sponsored by Computing Community Consortium (CCC).

# **SIGSPATIAL PUBLICATIONS**

The first issue of ACM Transactions on Spatial Algorithms and Systems (ACM TSAS) has appeared in August 2015. Since then, it has appeared quarterly, with the latest issue on August 2019. The Editorial Board of ACM TSAS includes Walid Aref (Purdue University) as the Editorin-Chief, three Senior Associate Editors: Ralf Hartmut Guting (University of Hagen, Germany), Dinesh Manocha (University of North Carolina at Chapel Hill, USA), David Mount (University of Maryland College Park, USA) as well as 29 Associate Editors.

We have initiated efforts in the last year for TSAS to be considered by numerous indices. It is now indexed by Emerging Sources Citation Index. In addition, ACM SIGSPATIAL is being pursued by our members for inclusion into numerous international conference rankings. To create synergy between TSAS and SIGSPATIAL, we have added special issues to the publication schedule which include inviting best paper award nominees from the previous year’s SIGSPATIAL conference to submit extended versions to the journal. Other special issues on emerging topics such as Deep Learning for Spatial Algorithms and Systems are being considered for TSAS.

We continued to maintain the SIGSPATIAL Special Newsletter, with Andreas Zuefle (George Mason University, USA) as the editor. This newsletter has three issues per year (March, July, and November). Each issue has become a special issue concerned with one emerging topic of interest to the research community as well as news related to SIGSPATIAL, such as news from the SIGSPATIAL conference from 2018 appearing in March 2019 edition of the newsletter. The newsletter editor recruits prominent associate editors for each issue in his role. The associate editor(s), in turn, invites selected articles related to the topic of interest for the respective special issue. With the latest issue of March 2019, the SIGSPATIAL Special Newsletter became a reference to SIGSPATIAL community for new emerging topics.

# **AWARDS**

We now have two prominent and well-recognized awards in our portfolio: 10-Year Impact Award and Best Paper Award.

*10-Year Impact Award*: This is a new annual award, inaugurated at SIGSPATIAL 2018, and it is given to a full paper published at our main conference 10 years ago, with the main criteria that its value and prescience have become apparent over a longer period of time. It is chosen by a committee from the research community. The winner of this award for 2018 was:

“NewsStand: A New View on News” by
Benjamin Teitler (University of Maryland, USA)
Michael Lieberman (University of Maryland, USA)
Daniele Panozzo (University of Maryland, USA)
Jagan Sankaranarayanan (University of Maryland, USA)
Hanan Samet (University of Maryland, USA)
Jon Sperling (Department of Housing and Urban Development, USA)

*Best Paper Award*: This annual award is given to one of the full papers of the main conference that demonstrates a significant new research finding in the areas related to SIGSPATIAL. The winner of this award for 2018 was:

“Flood Risk Analysis on Terrains under the Multi-Flow-Direction Model” by Aaron Lowe (Duke University, USA) and Pankaj Agarwal (Duke University, USA).

# **OTHER SIGNIFICANT CONTRIBUTIONS**

In addition to the best paper, we have nominated three papers from the 2018 conference to the CACM Research Highlights. These papers make significant contributions to the discipline that we feel should be heard by the wider community.

The first nominated paper was, “Balanced centroidal power diagrams for redistricting” by Vincent Cohen-Addad, Philip N. Klein, and Neal E. Young. There has been little work on the algorithmics of computing districts. Such work is particularly topical, not only because of recent high-profile court cases, not only because the 2020 Census will be followed by redistricting nationwide, but also because there is a new hunger among voters for nonpartisan districting. Recently, voters in Ohio, Utah, Colorado, Michigan, and Missouri enacted redistricting reform laws, despite the intense resistance from state legislators who stand to lose power to engineer districting plans to support their political goals. Even before these votes, many states---including Alaska, Arizona, Arkansas, California, Hawaii, Idaho, Montana, New Jersey, Pennsylvania, and Washington---had commissions responsible for redistricting (in some cases only for state legislature elections). Almost all of the recent work on the mathematics of redistricting seeks to quantify gerrymandering. It is up to computer scientists to demonstrate what is possible, to show the public at large that districts need not be contorted or imbalanced. The article provides algorithmic methods and mathematical arguments that are to a degree accessible to a wide range of CACM readers. Furthermore, the full version provides pictures that illustrate the beauty and simplicity of districting plans based on the method described, in contrast to the contorted and complicated districts of a gerrymandered plan. The potential appeal to ACM members of this area is illustrated by the fact that a news article on a preliminary version was syndicated by ACM News.

The second paper selected for the CACM research highlights was “On the Value of Spatiotemporal Information: Principles and Scenarios” by Heba Aly, John Krumm, Gireeja Ranade, Eric Horvitz. This paper describes a technique for computing the monetary value of a person’s GPS data from a company’s point of view. Currently consumers give away location data to large web search companies and social media companies for free. In addition, some smartphone apps secretly gather location data to sell to other companies for targeted advertising. This paper instead postulates that companies pay people for their location data, and it shows how to compute the monetary value of such GPS points. The paper introduces a general framework that can be adopted by any company/application requiring GPS data from users. The introduction of related principles means that both buyers and sellers can set fair prices for GPS data. Establishing these prices is a first step toward building a marketplace for location data, which has vast implications by itself.

Last but not the least, the paper “Prescriptive Analytics System for Long-Range Aircraft Conflict Detection and Resolution Publication” by Samet Ayhan, Pablo Costas, and Hanan Samet was nominated. At the present time, there is no mechanism for Air Navigation Service Providers (ANSP) such as the FAA to probe new flight plans filed by the Airlines Operation Centers (AOCs) against the existing approved flight plans to see if they are likely to cause conflicts or bring sector traffic densities beyond control. In the current Air Traffic Control (ATC) operations, aircraft conflicts and sector traffic densities are resolved tactically, increasing workload and leading to potential safety risks and loss of capacity and efficiency. To strategically address the aircraft conflict detection and resolution problem, this paper proposes a novel Prescriptive Analytics System that detects and resolves conflicts among multiple aircraft long before they depart. Given a set of predicted aircraft trajectories, the system declares a conflict when a protected zone of an aircraft on its trajectory is infringed upon by another aircraft. The system resolves the conflict by prescribing an alternative solution that is optimized by perturbing at least one of the trajectories involved in the conflict. To achieve this, the system learns from descriptive patterns of historical trajectories and pertinent weather observations and builds a Hidden Markov Model (HMM). Using a variant of the Viterbi algorithm, the system avoids the airspace volume in which the conflict is detected and generates a new optimal trajectory that is conflict-free. The key concept upon which the system is built is the assumption that airspace is nothing more than a horizontally and vertically concatenated set of spatio-temporal data cubes where each cube is considered as an atomic unit. In particular, the proposed prescriptive analytics approach exploits machine learning techniques to predict conflicts and prescribe an optimized solution based on constraints introduced to the system. The experiments on real trajectory and weather datasets from two continents show that the proposed system achieves lateral and vertical accuracies that are within the boundaries of conventionally accepted minimum separation values, set by the ANSPs. This translates to the fact that, ANSPs can now detect and resolve potential conflicts long before the aircraft depart, thereby resulting in a safer and greener airspace with more efficiency and capacity, and thereby increasing the Air Traffic Management automation and reducing the air traffic controller workload.

# **ACM DIGITAL LIBRARY**

SIGSPATIAL expanded its presence in the ACM Digital Library by soliciting workshop proposals both in its role as a sponsor and on an in-cooperation status. This can be seen by the number of workshops that it sponsored in 2018, which has increased to 13 co-located workshops and will increase to 15 in 2019.

# **SIGSPATIAL CHAPTERS**

SIGSPATIAL has four Chapters: SIGSPATIAL Australia, SIGSPATIAL China, SIGSPATIAL Korea, and SIGSPATIAL Taiwan. These chapters are representative of the amount interest in SIGSPATIAL from members at these regions and are reflected by their participation in the flagship conference as both authors and attendees, as well as their active involvement in the PC and various other roles in the Organizing Committee. A noteworthy news is the achievement of the SIGSPATIAL Australia chapter: thanks to their efforts, ACM SIGSPATIAL is now in the category of rank-A conferences in Australia.

# **OFFICERS**

The Executive Committee (EC) consists of elected officers for a three-year term. Presently, the EC team (from July 1, 2017 through June 30, 2020) consists of:

Chair: Cyrus Shahabi, University of Southern California, USA

Vice-Chair: Goce Trajcevski, Iowa State University, USA

Secretary: Egemen Tanin, University of Melbourne, Australia

Treasurer: John Krumm, Microsoft Research, USA

According to the SIGSPATIAL bylaws, the past SIGSPATIAL EC chair, Mohamed Mokbel, is also a member of the EC. The two additional non-voting members of the EC are: Newsletter Editor – Andrea Zufle, George Mason University, USA; and Webmaster: Chrysovalantis Anastasiou, University of Southern California, USA.

# **ACHIEVEMENTS AND INITIATIVES**

SIGSPATIAL continues its dedicated work towards fulfilling its mission of maintaining high quality research conferences and workshops and is actively seeking more sponsors and creating activities to make it more attractive for the potential sponsors as well as the community at large.

Following are the key achievements of the past year. First, our new policy related to advanced conference preparation has been adopted and its implementation has started with the preparations of the 2020 conference already, commencing two years in advance. Second, we have decided to move outside USA for the first time starting 2020. China is announced to be the 2020 destination for SIGSPATIAL. It is important to note that we would like to use this opportunity to promote SIGSPATIAL in Asia further and apply ACM SIGSPATIAL to be ranked among top-tier conferences by the China CCF ranking agency in the coming round. Last, we have now moved to a new website/design for our SIGSPATIAL homepage (please visit our new site at www.sigspatial.org)

Future initiatives that we are considering for second part of 2019 and beyond are:

1. A key issue we would like to address in the next 2-3 years is increasing the students’ participation to the conference. Although we have seen a significant increase in industry participation recently, we aim to repeat this success on the student participation front as well. Ideas being discussed on this front include, but not limited to, increasing recruitment related activities targeted to students during the ACM SIGSPATIAL conference. We are planning to build on the company recruiting events we had in recent years, which were very successful and appreciated by the audience.
2. Another issue we would like to address is improving the presentation quality during workshops and conferences for certain presentation. The quality of presentations appears to fluctuate between different papers during the conference. We would like to try different initiatives with methods such as mentoring for junior presenters, as well as varying presentation durations based on the associated paper reviews and draft presentation submissions. Initial discussions on this front will take place during the 2019 conference, with first trials aimed at the 2020 ACM SIGSPATIAL conference.
3. We are also considering the addition of a new session, starting with the 2020 conference, called “practitioner session” in order to broaden participation. In particular, we plan to target Geographers by using one of our Industry Sponsor’s network, ESRI, to reach out to geographers and ask them for submissions of 1-page abstracts (which is the norm in their community for attending conferences). We plan to accept a dozen of these abstracts and provide 5-8 minutes presentation time-slots for each submission at the practitioner session. If successful, we will broaden this idea to other fields. Ground work for this will be done during the 2019 conference.

**SIGUCCS Annual Report**

**July 1, 2018 - June 30, 2019**

**Submitted by: Laurie Fox, Chair**

*SIGUCCS' mission is to foster the professional development of practitioners involved in the support, delivery, management, and leadership of information technology services in higher education. This is pursued through providing forums for interaction and sharing knowledge and experiences, professional development opportunities, and recognition for leaders who contribute in the field.*

### Awards

######  Penny Crane Award for Distinguished Service

The Penny Crane Award for Distinguished Service was first awarded in 2000 and recognizes an individual’s significant and/or multiple contributions to SIGUCCS, the IT profession, and higher education over an extended period of time. The 2018 recipient was **Nancy Bauer**.

######  SIGUCCS Hall of Fame

The Hall of Fame awards were first awarded in 2000. They recognize nominated individuals who have contributed their time and energies to benefit SIGUCCS. The 2018 recipients were: **Miranda Carney-Morris**, Lewis & Clark College, **Trevor Murphy**, Williams College, **Mo Nishiyama**, Oregon Health & Science University (OHSU), and **Gail Rankin**, Salem State University.

###### Communication Awards

The Communication Awards are an annual competition where the winners are invited to participate in the annual conference as poster presenters. A full description of categories can be found at <http://siguccs.hosting.acm.org/wp/?page_id=406>

* Category 1 – Computing Services Public / Mobile Website
	+ Best of Category: Alberta, Chief Information Security Officer Website (CISO)
* Category 2 – Computing Newsletter
	+ Best of Category: St. Edward’s University, Faculty Door Hangers
* Category 3a – Printed How-To Guides
	+ Best of Category: Metropolitan State University of Denver, Student & Faculty/Staff Technology Road Map
* Category 3b – Electronic How-to Guides
	+ Best of Category: Clemson University, How to Enroll in Two-Factor Authentication at Clemson University
	+ Award of Excellence: SUNY Geneseo, CIT Self Help
* Category 4b – Quick Reference Guides
	+ Best of Category: Texas A&M, IT Pros Booklet
	+ Award of Excellence: University of Rochester, Box Flier
* Category 5a – General Service Promotional Materials
	+ Best of Category: Indiana University, Learning Technologies Speed Dating
	+ Award of Excellence: Virginia Commonwealth University, Explore Lynda
* Category 5b – General Services Campaign
	+ Best of Category: Texas A&M, “Keep Tradition Secure” – Cyber Security Awareness Month 2017
	+ Best of Category: University of Alberta, Tax Season
* Category 6a – Short Promotional Video
	+ Best of Category: University of Alabama at Birmingham, Dissecting a Phish
	+ Award of Excellence: St. Edward’s University, PSA: How to Write a Spam Email
* Category 6b- Long Promotional Video
	+ Best of Category: University of Rochester, The Walking Dread – Top 10 Security Tips
* Category 7 – Social Media
	+ Best of Category: University of Kansas, CyberSecurity Awareness Twitter Campaign
* Category 8 – Student Created Materials
	+ Best of Category: University of Alabama at Birmingham, IT Annual Report Website
	+ Award of Excellence: University of Louisville, Card Box – Departmental Folders

### Proceedings

There were 40 papers submitted in the proceedings of the 2018 ACM Annual Conference on SIGUCCS. At the annual conference, presentations were also provided by industry leaders and panels. Significant topics included: Infrastructure and Strategic Planning, Instructional Technology, Lab Management and Desktop Support, Leadership and Career Development, Service Management, and Training, Documentation, and Engagement. The full citation in the ACM Digital Library can be found at: <https://dl.acm.org/citation.cfm?id=3235715>

### Programs

######  Mentoring Program

The Mentoring Program kicked off its 7th annual cohort in December 2018. SIGUCCS is committed to developing IT Service and Support professionals. We started the mentoring program in 2012 to pair service professionals together for 1 year to learn and grow. An advisory team administers the program and provides support for mentor pairs. We pair professionals with individuals who work at similar institutions in similar jobs or who have similar development interests. The expectation is that mentors and mentees communicate once a month about professional development topics. This program runs from January through October.

There are 47 participants this year. At the end of the program, mentors and mentees celebrate at a networking event during the annual conference.

######  Pre-Conference Seminars

Pre-conference seminars provide an opportunity to explore topics in-depth and learn and share with colleagues around the world. At SIGUCCS 2018, we offered 2 traditional seminars. We also offered a tour/workshop offered by Disney that went behind the scenes of their operations. We had to cancel 1 seminar due to low registrations. We had a much more even registration spread across the two traditional seminars as compared to 2017, when the leadership one dominated the numbers.

A total of 50 people attended the 3 seminars. This represents roughly 25% of the total conference attendees. This number is consistent with 2017.

* Disney Business Behind the Magic - 22 attendees (with 4 additional on a waitlist)
* Project Management for Non-Project Managers (Elizabeth Young, Lewis and Clark University) - 13 attendees
* Reaching for the Stars: Becoming and Inspirational Leader (Beth Rugg, University of North Carolina, Charlotte, and Joan Cheverie, EDUCAUSE) - 15 attendees

######  Webinars

SIGUCCS offered nine webinars on a variety of topics. These webinars are available to the public as an opportunity to share information about SIGUCCS. Popular or timely topics from the conference are selected as topics for webinars. Past webinars are available on our web page, and we have content dating back to 2010.

The SIGUCCS Marketing Committee also created a brief presentation for the start of each webinar that introduces SIGUCCS and shares announcements about the annual conference, awards programs, and other SIG activities. Each webinar is recorded and made available on our YouTube Channel. (<https://www.youtube.com/user/SIGUCCSVideos>)

* Developing a Culture of Care
* What Cats Teach Us About Excellent Customer Service
* Revitalizing Student Worker Training
* Small Carrots, No Sticks: Engaging Campus Business Partners in the Design and Deployment of New Enterprise Services in a Decentralized Campus Environment
* Trading Places: An Exchange of (Human) Resources
* The “I” in Team: How developing individual strength builds a great team
* Collaborating with Digital Natives on Digital Citizenship
* SIGUCCS 2018 Conference Newcomers Webinar
* How to Create an Effective Poster for Presentation at the Poster Session

###### Book Club

A handful of active SIGUCCS members started to read together a new book each month. Participation has ranged from 4-12 people each month, and the books are discussed in Slack and in and online hangout. The book club is open to anyone, and we are hoping to encourage more people from the community to participate. Books read so far in 2019 are:

* Daring Greatly, Brené Brown
* Atomic Habits, James Clear
* Getting Things Done, David Allen
* EQ Applied, Justin Bariso
* The Phoenix Project, Gene Kim
* QBQ! ; the question behind the question, John Miller

### Broadening Participation

######  Conference Attendance Grants

The purpose of the SIGUCCS Conference Attendance Grant program is to provide partial support for individuals in institutions of higher education to participate in the annual SIGUCCS Conference. This support is funded by SIGUCCS and consists of a full registration to the Annual Conference; hotel room accommodations; and registration for one half-day pre-conference seminar. The Fall 2018 recipients were: **Patricia Carpenter,** Harvey Mudd College, **Jennifer Houston,** Earlham College, and **Rouben Tchakhmakhtchian,** University of Toronto.

###### Communication Efforts and Online Communities

The Marketing Committee coordinates our communication schedule to ensure that we send a message to the community every weekday. The messages come from a variety of Committees: the Executive Committee, our annual conference, marketing, awards selection, and professional development. We focus on two primary communications channels: the SIGUCCS-L email list and Facebook. We also do some minor communications on Twitter through automatic announcements of our newsletter articles and conference content announcements and monthly recaps on LinkedIn.

###### SIGUCCS Webinars YouTube Channel

We have continued to upload our monthly webinars to YouTube, and organize them into a playlist. We also let the community know when the video is available.

###### Slack

SIGUCCS is utilizing Slack to facilitate communications among SIGUCCS colleagues. Our SIGUCCS Slack domain is: siguccs.slack.com There are several channels established in our domain – #general, #conference, #productivity, and #academictechnology. A group of SIGUCCS colleagues also participate in a monthly #book-club chat, and one of our members posts a question in the #weeklychallenge channel.

### Key Issues in the next 2-3 years

###### Tracking volunteers

SIGUCCS continues to seek a solution to tracking our members’ contributions to the community. This becomes most necessary when we nominate individuals for awards and have to search through multiple locations for their contributions. It is also needed to identify future conference and executive committee volunteers.

###### Outreach beyond existing member list

Outreach and increasing our community continues to be a priority for SIGUCCS. We are continuing to focus on frequent communication about our activities and offering compelling webinars. We hope to expand our online communities by sharing unique content in order to assist in finding volunteers and attendees that live near future conference locations.

###### Identifying volunteers for leadership positions

SIGUCCS struggles to fill conference leadership positions in light of travel support issues from colleges. Volunteers cannot guarantee that they will be able to attend our annual conference 2-3 years in a row to participate on a core leadership committee. We are also concerned about identifying members willing to run for Executive Committee positions in 2020.

**SIGWEB Annual Report**

**July 2018 - June 2019
Submitted by: Dick C.A. Bulterman, Chair**

# Mission Statement

SIGWEB, the ACM Special Interest Group on Hypertext and the Web, is a community of scholars, researchers, and professionals who study and use the concepts and technologies of linked information that were originally conceived as hypertext and are most famously realized on the Web. The SIGWEB community’s interests range widely and include hypertext in all its forms, social networks, knowledge management, document engineering, digital libraries, and the Web as both an information tool and a social force. SIGWEB encourages innovative research, open discussion of new ideas and the development of methodologies and standards through conferences and a variety of communication resources for its members and the world.

# Recent Highlights

In the spring of 2018, Sir Tim Burners-Lee gave is ACM Turing Award at the Vrije Universiteit Amsterdam, as part of the WebSci 2018 conference. The lecture drew a large and enthusiastic crowd and was seen by many more during and after the event’s live stream. We at SIGWEB were honored that one of our own was given ACM’s top award and we were pleased that Sir Tim enriched WebSci 2018 with his presence and presentation.

At ACM Hypertext 2018 (July 2018), the following two named awards were presented:

* Douglas Engelbart Best Paper Award: A Deep Joint Network for Session-based News Recommendations with Contextual Augmentation; Lemei Zhang, Peng Liu and Jon Atle Gulla.
* Ted Nelson Newcomer Award: Know Thy Neighbors, and More! Studying the Role of Context in Entity Recommendation; Sumit Bhatia and Harit Vishwakarma.

# SIGWEB Conferences

SIGWEB continues to offer its members a compelling series of conferences that are supported in whole or in part by the SIG. Each of these conferences have a loyal following and are able to provide compelling scientific content. SIGWEB has a nice balance of small and large events, meeting the needs of young and established researchers. Some of our conferences are mature, others are working to find a longer-term identity.

Our membership remains relatively constant at about 250 members. It is clear that our ‘true’ members are those that attend the SIG’s events. This totals over a thousand researchers per year.

# Volunteer Involvement

SIGWEB realizes that involving volunteers in SIG activities is a non-trivial task. Many of our members have been with the community for many years and have become accustomed to operating within a ‘well-oiled’ environment. At the SIG business meetings held at each of our fully-supported conferences, it is clear that motivating our membership to take leadership roles is both an opportunity and a challenge.

The primary road that we offer for volunteer involvement is through the organization of our conferences and symposia. For Hypertext and DocEng (two of our three 100% supported conferences), strong mechanisms are in place to help ensure long-term viability. For WebScience, which is supported for 100% by SIGWEB but managed together with the Web Science Trust, concerted attention will be required to help with long-term planning and organization. Our co-sponsored conferences (CIKM, JCDL, WISDM) are mature conference support structures are in place, in cooperation with SIGIR, SIGCHI and IEEE.

In terms of participation at events, we actively support child care at conference and provide funding for student (and possibly senior) travel. We require all of our events to offer reduced registration for members and extra discounts for students and retirees.

In order to increase volunteer involvement, we have a program in which local groups can get seed funding for new initiatives to explore new scientific areas of interest. The expectation is that some of these new areas can mature and either join existing conferences (as new tracks or workshops), or evolve into new symposia.

The elected volunteer leaders of the SIG at the end of FY 2019 were:

* Chair: Dick Bulterman (CWI & Vrije Universiteit Amsterdam)
* Vice-Chair: David Millard (University of Southampton)
* Secretary/Treasurer: Yeliz Yesilada (METU North Cyprus)

The appointed SIGWEB Executive Committee has the following members:

* Simon Harper (Past Chair & ACM SGB)
* Ethan Munson
* Jessica Rubart
* Charles Nicholas
* Peter Brusilovsky
* Claus Atzenbeck

Additional volunteers working with the SIG are:

* Hamman W. Samuel (Webmaster)
* Caroline Jay (Broadening Participation / Full Inclusion)
* Andrew Brown (Senior and Junior SIGWEB Awards)

All of these people fill important roles for the SIG, and all welcome your input and observations on SIGWEB activity.

One of the goals of SIGWEB in the coming year will be to recruit new members for the executive committee, assign new persons to be liaisons at our conferences and have attract new members to operational functions within the SIG.

# Concerns and Opportunities

In my years as chair, I have travelled to all of our 100%-sponsored conferences to speak with members of our community directly. The goal of these sessions is introduce both SIGWEB and ACM to conference participants and to engage in a discussion on what the SIG (and what ACM) can do to help advance the state of the art within our interest domain, as well as to advance the careers of our members.

There is a tremendous opportunity to reach out to new members. We have 6 times more event participants than registered members. As with other SIGs, however, the advantages of SIG membership are not well understood by many conference participants: the Web and social media are assisting them in establishing a feeling of community better than the SIGs can; the financial advantages of SIG membership are not directly felt by participants (for whom conference registration is covered by grants and is only a small portion to the full travel expense of coming to a scientific meeting); the advantages of ACM DL access typically are not considered as special (since their host institutions nearly always already offer library-based institutional subscriptions).

The challenge before SIGWEB (and ACM) is to design a total benefits package that makes a compelling personal offer for new membership. This package should include sufficient financial and scientific incentives (such as having advance registration discounts only available to existing SIG members, plus unlocking special features of the DL that are available to members on top of any benefits from existing [institutional] subscriptions), and it should provide incentives for continued long-term membership (such as access to funds to support local events or perhaps scaled discounts to SIG conferences).

We realize that these concerns are not unique to SIGWEB and look forward to actively coordinating our efforts with other SIGs.

# SIGWEB and the Environment

It is clear that all ACM SIGs have a role to play in the environmental discussion around long-distance travel. Each year, we encourage more than a thousand researchers and practitioners to get onto airplanes, book hotel rooms (or rent short-stay apartments), and to eat more food than what they would probably eat at home. Is this sustainable? The climate impact of our conferences has been an active topic of discussion at semi-annual SIG meetings organized by ACM. There are no simple solutions to reduce our footprint. From SIGWEB’s perspective, we encourage organizers to hold events at locations that do not require multi-hop flights, and where people who need to travel less than 1,000 miles have an alternative transportation option. We plan to participate in ACM’s new program that allows carbon offsets to be (optionally) purchased during conference registration. We also encourage organizers to select hotels and venues that try to do what they can to compensate their environmental footprint. While compensation is good, it does little to actually reduce conference-related emissions. For this reason, I favor a more pro-active approach: encourage organizers to hold vegetarian events (or: maybe vegetarian days at events). As a carnivore, I realize that giving up meat completely is a major lifestyle choice, but at the same time, nearly everyone can be a vegetarian for three days. SIGWEB would be able to subsidize high-end veggie food, to ease the transition. I would be interested to hear thoughts from members on this kind of tangible to reducing our footprint, which seems more do-able than having all of our events be accessible without having to fly.

# SIGWEB Elections

SIGWEB help elections in the Spring of 2019. I am happy to report that Peter Brusilovsky was elected Chair, Eelco Herder was elected vice-chair and that Milena Dobreva was elected secretary-treasurer. While all three are relatively ‘fresh’ faces when it comes to SIGWEB management, all three have been very active within the various communities that are addressed by SIGWEB activities. I am also very thankful for the efforts of my co-SIGWEB elected officials from the past six years: Dave Millard and Yeliz Yesilada. Together we have seen the SIG grow in terms of number of sponsored events and to achieve the financial stability required to allow us to do the work that is needed to support our activities.

# Closing Comments

Financially, SIGWEB is in an excellent position to develop and experiment with new initiatives to help promote a vibrant scientific community within our domain. We have excellent conferences, we have existing partnerships with other SIGs and we have an extensive network of in-coop conferences that help ensure future viability. At the same time, we recognize the challenges of running a volunteer organization in an age of soloists. The current board has done its best to balance the needs of SIGWEB’s members.

SGWEB organizes a wide range of events. Our 100% events have been stable for many years. ACM Hypertext – SIGWEB’ long-time flagship conference – will be celebrating its 30th anniversary and ACM DocEng will be celebrating its 19th anniversary in its present form, both in September 2019. ACM WebScience will host its 10th edition in July 2019. While all of these events have a dedicated following, it is always healthy to evaluate the future impact that these events will have in the already crowded spectrum of computer science conferences supported by ACM. SIGWEB is evaluating several alternatives that may result in bringing in new events or combining existing events into a more coordinated set of conferences offerings. I see this as the main challenge for SIGWEB’s new board. Luckily, we can perform this evaluation from a position of strength. All of us on the current board (myself, Dave Millard and Yeliz Yesilada) see SIGWEB’s future with confidence.

**SIGIR Annual Report**

**July 2018 – June 2019**

**Submitted by: Diane Kelly, SIGIR Past Chair**

***SIGIR focuses on all aspects of information storage, retrieval and dissemination, including research strategies, output schemes and system evaluations.***

**Key Initiatives and Accomplishments**

**Students**

* Awarded approximately $270K in student travel scholarships to those attending SIGIR-sponsored and co-sponsored conferences: SIGIR, CHIIR, ICTIR, CIKM, WSDM and JCDL.
* Continued to support the *Student Affairs Chair*, and the *Student Liaisons Program*. Added an additional *Student Affairs Co-Chair* to help with workload, and staggered terms to help with transitions. Recruited new student liaisons to replace those who graduated. Created a budget for the student liaisons to use to support their events and activities, and a mechanism for requesting funds, and documenting use of the funds. Student liaisons organized student parties at three SIGIR sponsored conferences (CHIIR, WSDM and SIGIR).
* Hosted a student lunch at the SIGIR Conference.

**Diversity, Equity and Inclusion**

* Hosted a *Diversity, Equity and Inclusion Lunch* at2019 SIGIR Conference.
* Provided space and support for the *Women in IR* group at SIGIR 2019, which was launched several years ago by our members.
* Sponsored CRA-W and supported several students who were funded through ACM-W conference travel grants by waiving conference registration and finding mentors.
* Created new volunteer positions, *SIGIR Diversity, Equity and Inclusion Co-Chairs*, and appointed three people to serve in these roles. The basic charge for this committee is to unify and coordinate existing DEI efforts; identify ways to sponsor and encourage DEI programs at co-sponsored SIGIR conferences; and develop and implement the SIGIR Diversity Scholars travel grant program. This team will also lead the way in creating a DEI agenda and vision for SIGIR.

**Community**

* The SIGIR 2018 Conference had strong attendance with 747 participants. The 2019 conference, which took place in July in Paris broke a recent record in 2017 for the largest SIGIR conference with nearly 1,000 attendees.
* Appointed an inaugural *SIGIR Historian*, Donna Harman, who attended the ACM workshop for historians earlier this year. Donna continued her ongoing work on the *SIGIR Museum*, which is a collection of white papers and other early, seminal research papers in IR. She will also send materials to the ACM to be archived at the Charles Babbage Institute.
* The *SIGIR* *ACM Badging Taskforce*, which was appointed last year, concluded its work and made recommendations at this year’s SIGIR Conference about how to move forward with badging.
* Initiated a co-sponsored *1st ACM SIGIR/SIGKDD Africa School on Machine Learning for Data Mining and Search (AFIRM)*. This event took place at the end of January 2019 in Cape Town, South Africa. This event was targeted to junior faculty at institutions in sub-Saharan Africa. We provided USD25,000 in travel support and received 275 applications for this support. We were able to support 36 applicants, and ultimately 27 participants, representing 13 different African countries, attended. *AFIRM 2020* is scheduled for January 27-31, 2020. It will be held in Cape Town, South Africa for a second time in response to demand.
* Awarded approximately $42K through our *Friends of SIGIR* program to SIGIR members hosting local, IR-related events. Funding went to support events in a number of countries and included the *Forum on Information Retrieval Evaluation* (India), *IR Autumn School* (Germany), *Asia Information Retrieval Societies Conference*, *Australasian Document Computing Symposium* and *CORIA* (French Information Retrieval Conference).
* As described in last year’s report, we have had significant problems with our website backend in part because of the large number of Word Press installations that need to be managed. The SIGIR domain hosts the organization’s website as well as sponsored conferences’ websites: SIGIR, CHIIR, ICTIR. All websites had to be shut-down on two occasions last year, including just before SIGIR 2018, because a large volume of spam was being generated from one site. During the 2018-2019 terms, we investigated a number of different options for having a professional service manage our webserver so that it is easier for volunteers to create and maintain sites. We also spoke extensively with ACM about different options and how other SIGs manage these resources. After discussion with SIGCHI, we decided to create a website redesign taskforce and have a “hack-a-thon” which took place in April 2019. Included in the taskforce was a professional designer who lead the team through exercises to create mission and vision statements for SIGIR, a new logo and a new design, layout and architecture for website. The new mission, vision and logo were presented at the 2019 SIGIR Conference and received very positive reviews (see images at the end of this report). The team also outlined a variety of digital assets to make available to conference organizers, including a standard Word Press template for each unique conference that can be used multiple years in a row. The designer is currently developing these assets, as well as continuing to work on the SIGIR website.
* Piloted the use of iThenticate to evaluate papers submitted to the 2019 SIGIR conference, which was helpful in flagging instances of plagiarism.
* Hosted the second annual SIGIR Conference organizers meeting at the 2019 SIGIR Conference, and created a document describing best practices and lessons learned with respect to hosting a SIGIR Conference.
* Live-streamed and captured all presentations made at the 2019 SIGIR Conference. Videos will be uploaded to ACM digital library.

**Ongoing and Future Initiatives**

* We will continue to work on the redesign of the SIGIR website and on the creation of digital assets (e.g., conference website templates, conference signage) for conference organizers.
* We will continue to work on documenting policies and procedures which have traditionally been passed down orally. The ACM set-up a GSuite space for us to use, which we’ve started organizing and populating. We’ve asked the steering committees of our fully-sponsored conferences, CHIIR and ICTIR, to also use this space for all of their documentation.
* We have discussed creating a SIGIR Academy as a way to recognize people’s contributions to the field of IR. Currently, we sponsor only a life-time achievement award, the Salton Award, and we would like a way to recognize more people’s accomplishments.

**Significant Papers**

* See award winning papers below.

**Awards**

* At the SIGIR 2018 Conference in July, we presented the *Salton Award* to Kalervo Järvelin from the University of Tampere, Finland, which is the highest award given by SIGIR. This award is given every three years.
* Nominated members for various awards, including ACM Fellow.
* Financially sponsored SIGIR Best Paper Awards, CHIIR Best Paper Awards and ICTIR Best Paper Awards.
* Submitted proposal, which was approved, to create an official ACM SIGIR Best Short Paper Award. Proposals are planned this year to make the CHIIR and ICTIR Best Paper Awards official ACM SIGIR awards.
* At SIGIR 2018 (July 2018), the following awards were made:
	+ **Best Paper**: *Should I Follow the Crowd? A Probabilistic Analysis of the Effectiveness of Popularity in Recommender Systems* (Rocío Cañamares, Pablo Castells)
	+ **Best Short Paper**: *Cross Domain Regularization for Neural Ranking Models using Adversarial Learning* (Daniel Cohen, Bhaskar Mitra, Katja Hofmann, W. Bruce Croft)
	+ **Best Short Paper Honorable Mention**: *Towards Designing Better Session Search Evaluation Metrics* (Mengyang Liu, Yiqun Liu, Jiaxin Mao, Cheng Luo, Shaoping Ma)
	+ **Best Doctoral Consortium Presentation**: *Addressing News-Related Standing Information Needs* (Kristine Rogers)
	+ **Time of Time Award**: *Improving web search ranking by incorporating user behavior information* by Eugene Agichtein, Eric Brill, and Susan Dumais, SIGIR 2006
	+ **Time of Time Honorable Mention:** *Learning user interaction models for predicting web search result preferences* by Eugene Agichtein, Eric Brill, Susan Dumais and Robert Ragno, SIGIR 2006
	+ **Time of Time Honorable Mention:** *Formal models for expert finding in enterprise corpora* by Krisztian Balog, Leif Azzopardi and Maarten de Rijke, SIGIR 2006
	+ **Test of Time Honorable Mention:** *LDA-based document models for ad-hoc retrieval* by Xing Wei and W. Bruce Croft, SIGIR 2006
* At SIGIR 2019 (July 2019), the following awards were made:
	+ **Best Paper**: *Variance Reduction in Gradient Exploration for Online Learning to Rank* (Huazheng Wang, Sonwoo Kim, Eric McCord-Snook, Qingyun Wu, Hongning Wang)
	+ **Best Short Paper**: *Block-distributed Gradient Boosted Trees* (Theodore Vasiloudis, Hyunsu Cho, Henrik Bostrom)
	+ **Best Short Paper Honorable Mention**: *Critically Examining the “Neural Hype”: Weak Baselines and the Additivity of Effectiveness Gains from Neural Ranking Models* (Wei Yang, Kuang Lu, Peilin Yang, Jimmy Lin)
	+ **Time of Time Award**: *Novelty and Diversity in Information Retrieval Evaluation* by Charles L.A. Clarke, Maheedhar Kolla, Gordon V. Cormack, Olga Vechtomova, Azin Ashkan, Stefan Büttcher, and Ian MacKinnon, SIGIR 2008
	+ **Time of Time Honorable Mention:** *AdaRank*: A Boosting Algorithm for Information Retrieval by Jun Xu and Hang Li, SIGIR 2007

**Significant Challenges**

* One of our biggest concerns at the moment is that the organizers for the 2020 SIGIR Conference in Xi’an, China, have not submitted a TMRF that has been approved despite a large amount of prodding by many people, including from the ACM, over a long period of time. It is unclear to us what steps we should take in this type of situation.



**SIGMICRO FY'19 ANNUAL REPORT**

**Submitted by: Michael Gschwind, Chair**

The following are highlights of SIGMICRO's activities during fiscal year 2019.

**SIGMICRO** has worked to ensure the success of our flagship MICRO conference (in conjunction with co-sponsor, IEEE Technical Committee on Microarchitecture (TCµArch)). MICRO celebrated its 51st anniversary last year in Fukuoka, Japan. The conference offered an excellent technical program. Attendance was above levels seen in the past several years. SIGMICRO has also helped start and support several other major conferences since 2001: CASES, CGO, and Computing Frontiers. All are at present doing well as reported below. MICRO has gone thru a transition period after its 50th anniversary conference in Boston, MA following anniversary festivities that highlighted a half century of growth of this successful conference, but also put a focus on the need to strengthen woman and minority representation and participation in conference leadership and planning. A newly appointed SIGMICRO SC, the SIGMICRO board, and TCuArch have been working in consultation with the larger MICRO community create MICRO bylaws to guide the MICRO conference in the future. The new MICRO SC bylaws were unveiled in time for MICRO 51 in Fukuoka, together with a detailed review of a community survey at the MICRO-51 business meeting.

As also reported below, we have a strong program to encourage attendance at our conferences by women and underrepresented minorities (URM), students and those facing financial hardship, with numerous travel grants provided to help defray cost of attendance, in addition to heavily discounted student registration rates.

SIGMICRO has instituted a new Distinguished Service Award. No award was given during the last fiscal year.

SIGMICRO awarded plaques to the seven 2018 inductees to the Micro Hall of Fame: (https://www.sigmicro.org/micro-hall-of-fame/), Alper Buyuktosunoglu, John Kim, Tao Li, Vijay Janapa Reddi, Daniel Sanchez, Yiannakis Sazeides, Chris Wilkerson.

**SIGMICRO CONFERENCE Activities**

**MICRO-51:** October 20-24, 2018.

<https://www.microarch.org/micro51/>

SIGMICRO's flagship conference was quite successful with an excellent registration count with over 600 attendees. The conference received a record **351** submissions from all over the world (~**10** countries). Of the **351** submissions, **74** were accepted with a **21** % acceptance rate. There were also a total of 5 workshops: RISC-V Day Workshop, Photonics-Optics Technology Oriented Networking, Information, and Computing Systems, Network-on-Chip Architectures, Career Workshop for Women and Minorities in Computer Architecture, Workshop on Domain Specific System Architecture and 6 tutorials: Getting Started with Intermittent Computing, Introduction to Grand Challenges and Research Tools for Quantum Computing, GenSim: A Toolset for Efficient Binary Translation, Labeled RISC-V: A Case for Software-Defined Architecture, Energy Efficient Computing in Multicore CPUs: Design Margins and Variability, Intel-NSF panel: Reinvigorating foundational microarchitecture research towards general purpose performance. The main technical program included a “Poster Session” in addition to the regular paper presentations. In addition to traditional papers, 90 sec lighting talk videos are also available from the Micro homepage. The MICRO-51 conference allocated at least $40500 for student travel grants, of which $7500 was committed by ACM SIGMICRO. Additional student travel grants were awarded for attending the CAREER workshop for women and underrepresented minorities, of which a significant part was committed by ACM SIGMICRO.

MICRO attendees enjoyed excellent technical talks, keynotes, workshops, and tutorials.

The keynote speakers were: Prof. Satoshi Matsuoka (Riken-CCS and Tokyo Institute of Technology), Prof. Ruby B. Lee (Princeton), Mike Davies (Intel)

The local organization and facilities were excellent. SIGMICRO polled attendees using surveymonkey.com as in prior years. The satisfaction levels were very high.

**Location**: Fukuoka, Japan

**Excursion (including Banquet):**

The organizers did an excellent job in organizing the conference excursion and banquet.

**General Chair:** Prof. Mark Oskin (University of Washington) and Prof. Koji Inoue (Kyushu University}
**Program Chair:** Prof. Hyesoon Kim and Prof. Sudhakar Yalamanchili (Georgia Tech)

**Bob Rau Memorial Award Recipient:**

* Ravi Nair, “for contributions to branch prediction in processors, microarchitecture techniques in heterogeneous processing, microarchitecture support for virtual machines, and near-memory processing.”

**Best Paper Award:**

Four best paper candidate papers were selected by PC members after the PC meeting. The four papers were presented at the best paper session and the best paper selection committee selected the best paper award, which was given to Moinuddin Qureshi (Georgia Institute of Technology). The paper’s title is CEASER: Mitigating Conflict-Based Cache Attacks via Encrypted-Address and Remapping .

**Best Paper Award:**

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**CGO 2019:** February 16-20, 2019

http://www.cgo.org/cgo2019; co-located with HPCA-2017 and PPoPP-2017

*Also Co-Sponsored by ACM SIGPLAN.*

**CGO** [**C**ode **G**eneration and **O**ptimization] was held in Washington, DC. Submissions: 114 papers (up from 108 last year); of which 27 were accepted (22%). CGO 2017 featured three keynotes, a welcome reception / student poster session, and numerous workshops and tutorials.

**General Chair**: Mahmut Taylan Kandemir, Penn State

**Program Chairs**: Alexandra Jimborean, Uppsala University

Tipp Moseley, Google

**Keynotes**: Michael O’Boyle (University of Edinburgh)

Srini Devadas (MIT)

Karin Strauss (Microsoft Research)

**Tutorials and Workshops:**

* Science, Art, Voodoo: Using and Developing The Graal JIT Compiler.
* Vulkan: Graphics and compute compilation on GPU.
* Workshop on the Intersection of High Performance Computing and Machine Learning.
* LLVM Performance Workshop.
* Optimization, Modeling, Auto-Tuning and Space Exploration (OMASE) Workshop.
* Workshop On Code Optimisation For Multi And Many-Cores (COSMIC).
* Workshop on Compilers for Machine Learning.

Best Paper Award

Function Merging by Sequence Alignment . Rodrigo C. O. Rocha and Pavlos Petoumenos (University of Edinburgh, UK); Zheng Wang (Lancaster University, UK); Murray Cole and Hugh Leather (University of Edinburgh, UK) .

Test of Time Award

Automatic Feature Generation for Machine Learning Based Optimizing Compilation. Hugh Leather (University of Edinburgh, UK); Edwin Bonilla (University of Edinburgh, UK); Michael O’Boyle (University of Edinburgh, UK) .

Student Research Competition Awards

*Undergraduate Category*

Gold: Brandon Neth (University of Arizona). “Automatic Parallelization of Irregular x86-64 Loops”.

*Graduate Category*

Gold: Robin Kruppe (TU Darmstadt, Germany). “Extending LLVM for Lightweight SPMD Vectorization: Using SIMD and Vector Instructions Easily From Any Language”.

Silver: Keren Zhou (Rice University, USA). “A Tool for Performance Analysis of GPU-accelerated Applications”.

Bronze: Alok Mishra (Stony Brook University). “Kernel Fusion/Decomposition for Automatic GPU-Offloading”.

**CASES 2018:** September 30 – October 5, 2018

<https://www.esweek.org/archive/home>

*in cooperation with ACM SIGBED*

**CASES** [**C**ompilers, **A**rchitecture, and **S**ynthesis for **E**mbedded **S**ystems] joined two other embedded systems conferences in 2006 to create a larger "*ESWeek"* grouping and promote cross-fertilization of efforts in the embedded area. The combination of conferences was a success, and *ESWeek* has been repeated ever since, with ESWEEK 2018 held in Turin, Italy. As always, the paper selection process has been very competitive. Last year [2017], CASES introduced a dual publication model comprising two tracks, namely the Journal track and the Work-in-Progress (WiP) track. This year [2018] all the accepted papers in the journal track are being published in a special issue of the IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems (TCAD). CASES received 93 registered submissions in the journal track, of which 74 turned into complete submissions and went through the review process. Similarly to past two years, CASES adopted a two stage review process. In the first stage, each paper was reviewed by at least four reviewers. Based on the first round of reviews and an online discussion, 25 papers were shortlisted for the second stage and authors were given the opportunity to revise their submissions in light of the review comments. The revised submissions were reviewed again, and 18 papers were accepted after another round of online deliberations by the program committee, with a final acceptance rate of 24%. Through it all, the program committee worked tirelessly to ensure quality and rigor of the review process.

**Location**: Turin, Italy

CASES is one of 3 Conferences in Embedded Systems Week: http://www.esweek.org

* **CASES**
* CODES+ISSS (Co-sponsored by ACM SIGDA and SIGBED)
* EMSOFT (Sponsored by ACM SIGBED)

Plus additional Symposia

**Program Chairs:**

* Tulika Mitra, National University of Singapore, SG
* Akash Kumar, Technical University of Dresden, DE

Overall, the ESWEEK program in 2018 was spread across 6 days and included 3 conferences, plus 3 plenary keynotes, multiple other symposia, tutorials, workshops and embedded panels.

**Keynote Speakers**

* "The First-Order Logic of Signals", Thomas A. Henzinger, IST Austria
* "Hitchhiker's Guide to the IoT Galaxy full of Security & Privacy Challenges (An Attempt)", Ahmad-Reza Sadeghi, TU Darmstadt
* "Outside-In Autonomous Systems", Jie Liu, Microsoft Research

**Computing Frontiers 2019:** April 30 - May 2, 2019

http://www.computingfrontiers.org/2019

Computing Frontiers (CF) was held this year in Alghero, Sardinia, Italy. Maintaining the conference's high standard of quality, the Program Committee accepted only a small number of full papers, with additional authors invited to submit short papers. The conference registrants had a total of 90 registrants, continuing its recovery and returning a significant surplus. There were 2 keynotes and 3 workshops offered. Student travel scholarships were provided by SIGMICRO. As in prior years, SIGMICRO approved funds for student travel grants.

There were three workshops held in conjunction with CF 2019.

* 5th Workshop on Design of Low Power EMbedded Systems (LP-EMS '19),
* Malicious Software and Hardware in the Internet of Things (MAL-IoT '19)

**Location:**

Alghero, Sardinia, Italy.

**General Co-Chairs:**

* Francesca Palumbo, Università degli Studi di Sassari, IT
* Michela Becchi, NC State University, USA

**Program Co-Chairs:**

* Martin Schulz, Technical University of Munich, DE
* Kento Sato, RIKEN R-CCS,

**Keynotes:**

* Keynote 1: Catherine Graves
High performance, power efficient hardware accelerators: emerging devices, circuits and architecture co-design
* Keynote 2: Danilo Pau
Artificial Intelligent Sensors at the core of Cyber-Physical-Systems: From theory to practical applications

The **Best Paper Award 2019,** dedicated to Stamatis Vassiliadis, was awarded to the paper:

A case for superconducting accelerators, Swamit Tannu, Poulami Das, Mike Lewis, Bob Krick, Douglas Carmean and Moinuddin K. Qureshi

The **Best Poster Award 2019** was awarded to:

Fixed Point Exploitation via Compiler Analyses and Transformations, Daniele Cattaneo, Antonio Di Bello, Michele Chiari, Stefano Cherubin and Giovanni Agosta

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**SIGMICRO FUTURE PLANS**

We continue to improve the value of SIGMICRO to its members, resulting in significant membership growth over the past two years:

* Begun in 2008, SIGMICRO has been expanding the Micro Hall of Fame: <http://newsletter.sigmicro.org/micro-hof.txt/view>. The Micro Hall recognizes those authors with 8 or more papers since the conference inception in 1967. Since 2010, SIGMICRO has presented plaques at the conference to recipients.
* We have found other ways to add value:
	+ Increasing the allocation of surplus funds to provide for more student travel grants in SIGMICRO-sponsored conferences. The current executive committee has made a concerted effort to increase the level of student grants support for sponsored conferences.
	+ Providing funded sponsorship of worthy forums that promote the participation of women and minorities in research areas of relevance to SIGMICRO. **For example, SIGMICRO has been a sponsor of the CRA-W workshop in multiple recent years, and it also supported the Career Workshop for Minorities and Women in Computer Architecture since 2014.**
	+ Providing a simplified mechanism for ACM and SIGMICRO membership when registering for our flagship MICRO Conference.
	+ Encouraging qualified members of SIGMICRO to become Senior and Distinguished ACM Members.
	+ Minimizing conflicts between conference dates.
	+ Encouraging and developing SIGMICRO members to become ACM Distinguished Lecturers.
	+ SIGMICRO joined SIGARCH in sponsoring CARES, Committee to Aid REporting on discrimination and harassment policy violations. <https://www.sigarch.org/benefit/cares/>

**LEADERSHIP:**

**Chair**

Michael Gschwind

Chief Architect and VP, AI

Huawei

**Vice Chair**

Natalie Enright Jerger

Percy Edward Hart Professor of Electrical and Computer Engineering

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Professor of Electronics and Information Systems

Ghent University

**Past Chair**

Pradip Bose

Research Staff Member & Manager

IBM Thomas J. Watson Research Center

**Hall of Fame Director**

Erik Altman

Program Director – Computing as a Service, Chief-of-Staff to Giovanni Pacifici

IBM Thomas J. Watson Research Center

**Information Director**

Elvira Teran

Research Scientist

Intel Labs

**Membership Outreach Director**

Valentina Salapura

Master Inventor; Cloud Computing

IBM Thomas J. Watson Research Center

**Social Media Director**

Luwa Matthews

Postdoctoral Research Fellow

University of Michigan

**Web Director**

Yakun Sophia Shao

Research Scientist

NVIDIA

ACM Special Interest Group on Symbolic and Algebraic Computation SIGSAM July 2018 – June 2019   Christopher W. Brown, SIGSAM Chair

SIGSAM Mission statement:  SIGSAM provides members with a forum in which to exchange ideas about the practical and theoretical aspects of algebraic and symbolic mathematical computation. Its scope of interests includes design, analysis and application of algorithms, data structures, system and languages.

Communication: SIGSAM facilitates communication amongst not only its members, but also the wider symbolic computation research community.  The primary vehicles for this are the SIGSAM website ([www.sigsam.org](http://www.sigsam.org)) and the SIGSAM and ISSAC mailing lists.  The wider SIGSAM-friends mailing list has an audience of 2,000+.  These mailing lists are used to announce a wide range of events and items of interest to the larger research community.  The website provides a wide range of information to the community, including SIGSAM activities & info (e.g. awards, elections, bylaws, committees).  The SIGSAM website also hosts the East Coast Computer Algebra Day (ECCAD) workshop series website and the International Workshop on Parallel Symbolic Computation (PASCO) workshop series website.  All of this is managed by the excellent work of SIGSAM Information Director Matthew England (U.K.).  We are currently in the process of transferring the domain name management and website-hosting for the flagship conference series in our area, the International Symposium on Symbolic and Algebraic Computation (ISSAC) from its current ad hoc arrangement to ACM/SIGSAM control. Related to the SIGSAM website is its social media presence via Twitter at @acm\_sigsam, managed by Alexander Konovalov (U.K.).

Communications in Computer Algebra: The ACM Communications in Computer Algebra (CCA) is a quarterly publication of the ACM sponsored by SIGSAM.  The CCA has been published since 1965, though previously as the SIGSAM Bulletin and the SIGSAM Bulletin.  It includes formally reviewed articles, timely communications and announcements, as well as traditionally publishing the abstracts of ISSAC posters and software demos.  It is published quarterly in the ACM Digital Library, and twice a year double-issues are published in print for members.  The current Editor is Dr. Wen-shin Lee from the University of Antwerp in Belgium, who continues to do an outstanding job.  Associate Editors are  Massimo Caboara (Italy), Shaoshi Chen (China), Jean-Guillaume Dumas (France), Laureano Gonzalez-Vega (Spain), Kosaku Nagasaka (Japan) and Michael Wester (USA).

Conferences and Events: The International Symposium on Symbolic and Algebraic Computation (ISSAC) is typically either sponsored by ACM and SIGSAM or put on “in cooperation”.  ISSAC Proceedings have always appeared in the ACM Digital Library.  ISSAC 2018, which was hosted July 16-19, 2018 at the CUNY Graduate Center and Courant Institute/NYU, in New York City, was sponsored by ACM / SIGSAM.  ISSAC 2019, which will be held July 15-18 at Beihang University, Beijing, China, will be sponsored by ACM and SIGSAM.

Awards: The primary SIGSAM awards are the Jenks Memorial Prize, ISSAC Distinguished Paper award, and ISSAC Distinguished Student Author award.  The Jenks Memorial Prize is a biannual award recognizing “outstanding software engineering contributions in the field of computer algebra.”

The Awards panel for the 2019 ACM SIGSAM Richard Dimick Jenks Memorial Prize has been selected and convened (Chaired by Michael Monagan, Simon Frasier University), and will make a selection by November 2019. Note that the 2017 award was presented to Stephen Wolfram for Wolfram|Alpha and Mathematica personally at the ISSAC 2018 banquet.

2018 ISSAC Distinguished Paper Award: awarded to Giles Villard for On Computing the Resultant of Generic Bivariate Polynomials

2018 ISSAC Distinguished Student Author Award: awarded to Joseph Haraldson (with Mark Giesbrecht and George Labahn) for Computing Nearby Non-trivial Smith Forms

Some Impacts of SIGSAM Activities: The Fall 2018 SIG Governing Board meeting included a breakout brainstorming session on providing services for students and young researchers.  SIGs were encouraged to try to find ways to do more for students and young researchers in the coming year.  SIGSAM has responded to this by sponsoring a special session "Introduction to the Scientific Refereeing Process" to run at ISSAC 2019 on July 15th.  The session will be given by Manuel Kauers, from Johannes Kepler University, Austria.  From the session announcement: "Peer review is a crucial part of our scientific community, and understanding what is expected of a reviewer and what makes a good referee report is a crucial part of being a contributing member of that community.  The goal of this session is to help students and young researchers gain that understanding, though there is sure to be a lot there even for experienced scientists."

Key Issues for SIGSAM and its Membership: One of the key issues for SIGSAM is making the case for SIGSAM membership to the wider symbolic computation community, given that most of the services we provide are for members and non-members alike.