SIGARCH Annual Report

July 2019 – June 2020

OVERVIEW

Our annual reports from the previous EC discussed the launching of several new initiatives to address each of the three components of our mission statement – technical exchange, talent development and recognition, and outreach. These three components have a strong emphasis on diversity and inclusion with initiatives that have impacted communities across ACM and beyond. Over the last year, we solidified many of these initiatives and started new ones, thanks to volunteers from the broader community. In the coming year, besides solidifying existing initiatives, we plan to focus on specific ones that help improve the health of our conferences, our community, as well as the publication and conference organization processes. Like diversity and inclusion, we hope that these initiatives transcend beyond SIGARCH and help improve other SIGs and the broader computing community.

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 downtown Phoenix in June 2019 as part of FCRC. The conference featured 15 workshops, 14 tutorials, three plenary FCRC talks of which one was given by James E. Smith, a computer architect and the 1999 Eckert-Mauchly Award winner, 18 technical paper sessions (with both record submissions of 365 papers and 62 accepted papers) and a conference panel. The credit for the success of ISCA 2019 goes to the record 821 attendees who came from all over the world to present and exchange research ideas, and to an equally passionate group of organizers and sponsors that resulted in over $225K in industrial sponsorship funds for the conference. With additional funding from SIGARCH, TCCA, and NSF, ISCA'19 provided an unprecedented amount of student travel grant support to a record 170 students.

ASPLOS'19 was held in Providence RI in March 2019. The conference featured a strong technical program with a record 74 papers and a record 351 paper submissions. The program included two keynotes, 12 workshops and tutorials with 380 attendees.

(2) Annual SIGARCH visioning workshops: The visioning workshop program, created 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. Video recordings of the talks are professionally edited and are part of the ACM Digital Library and inaugurated the SIGARCH YouTube! channel. The 2019 edition of the workshop was co-held with ISCA'19 titled Agile and Open Hardware for Next-Generation Computing. The next workshop on Bio-inspired computing was scheduled for 2020 and may be postponed due to the pandemic.

(3) ISCA industrial track: To boost participation from industry, there was a proposal at the ISCA'19 business meeting to create an industry track for product papers which was well received. A recent CAT blog post studied 2000+ ISCA papers from 1973-2018 concluding a decline in participation from industry. While industrial product papers are of great value to our community, the guidelines for

reviewing and evaluating such papers have to be revisited because they are fundamentally different from research papers with models or prototypes of proposed architectures that allow for flexibility in exploration. Many see great value in papers about working hardware that combine novel ideas that must work well together to help us understand the difficulty, cost, and performance of the ideas and the overall system. With TCCA, we accepted a proposal from David Patterson to put together an industry track for ISCA'20 with clear reviewing guidelines for product papers.

(4) **Climate change & virtual conferences:** We have committed to provide statistics and analysis for our conferences as part of the SIGPLAN climate change initiative. This initiative by SIGPLAN has also culminated into a virtual conferences task force at the ACM level with a guidelines document that SIGARCH contributed to. These guidelines are now disseminated widely among all SIGs for the coming years. ASPLOS'20 was also among the first set of ACM sponsored conferences that went online with organizers writing a CACM blog about their experience.

TALENT DEVELOPMENT & 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 the design and evaluation of memory systems and parallel computers."

(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, Kunle Olukotun.

(4) **ASPLOS influential paper award:** This award recognizes an ASPLOS paper from 10 or more years ago. The 2019 recipient was "Hoard: a scalable memory allocator for multithreaded applications" by Emery D. Berger, Kathryn S. McKinley, Robert D. Blumofe, and Paul Wilson-from ASPLOS 2000.

(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 to Margaret.

(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 recipient was Yu-Hsin Chen from MIT (co-advised by Vivienne Sze and Joel Emer), for his dissertation entitled "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." The honorable mention went to Alexandros Daglis from EPFL (co-advised by Babak Falsafi and Edouard Bugnion) with the dissertation entitled "Network-Compute Co-Design for

Distributed In-Memory Computing" and the award citation "For contributions to network-centric server architecture for in-memory datacenter services."

(7) CACM Research Highlights: SIGARCH has a standing committee of four persons to select papers to nominate as CACM Research Highlights. The papers are solicited through a survey of conference attendees as well as nominations by Program Chairs of the most prestigious conferences sponsored by SIGARCH. These candidates are then forwarded to the CACM Editorial Board to make the final decision. The nominated papers are also listed on the [SIGARCH website](#) to reflect the high prestige of the papers being selected. The were two papers nominated to the CACM Editorial Board in 2019: "Boosted Race Trees for Low Energy Classification" by Georgios Tzimpragos, Advait Madhavan, Dilip Vasudevan, Dmitri Strukov, Timothy Sherwood from ASPLOS 2019, and "Cryogenic Computer Architecture Modeling with Memory-Side Case Studies" by Gyu-hyeon Lee, Dongmoon Min, Ilkwon Byun, Jangwoo Kim from ISCA 2019.

(8) Honoring retirees: Jointly with TCCA, we launched a program in 2017 to honor at ISCA the contributions of members of our community who are retiring or have recently retired. In 2019, we honored the retirement of David Wood, Professor Emeritus from the University of Wisconsin, past SIGARCH chair from 2011 to 2015, and vice chair from 2007 to 2011.

(9) Remembering recently departed members: With TCCA, we also launched a program at ISCA in 2017 to remember members of our community who have passed away. We mourned the passing of Sudhakar Yalamanchili, Professor of Electrical and Computer Engineering at Georgia Tech. Hyesoon Kim and Moin Qureshi, colleagues of Sudha at Georgia Tech provided a tribute at ISCA'19.

(10) Student mentoring: We continued our "Meet a Senior Architect" mentoring program at ISCA'19 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 over 100 mentors and 182 students. The program has been growing in size and has moved on to virtual platforms for the 2020 virtual conferences. We are expanding the mentoring program to other conferences together with a student-led initiative to extend the mandate of mentoring to include guidance through the PhD program.

(10) Women In Computer Architecture (WICArch): WICArch was created in 2018 as part of SIGARCH to build a community of female architects, celebrate their accomplishments and boost talent development for women in architecture. Natalie Enright Jerger (the current SIGARCH vice chair) chairs the WICArch subcommittee. WICArch has launched a number of initiatives including a webpage showcasing female architects and their profiles, a flyer widely publicizing women in computer architecture (and systems) for the academic recruiting season, a strong Slack community of over 232 participants and a monthly webinar series. In 2019, WICArch also supported diversity and inclusion initiatives including financial support for the CRA-W Grad Cohort for Women Workshop which had 973 applicants with 418 attending. The CRA initiative is broadening its charter and name to the Grad Cohort for Widening Participation in 2020 to include workshops for underrepresented minorities and persons with disabilities.

OUTREACH

(1) Computer Architecture Podcasts: Boris Grot, our Communication's Team chair launched the Computer Architecture Podcasts in 2019 with Suvinay Subramanian and Lisa Hsu as the editors to interview leading figures in the architecture community about cutting-edge topics in architecture, their vision and career experiences. The podcasts are available in standard formats and are hosted at comparchpodcast.podbean.com. The first interview was with Kim Hazelwood from Facebook about emerging systems for machine learning.

(2) Computer Architecture Today (CAT): CAT has emerged as a successful platform for our community members and those in related fields to discuss diverse topics of interest, thanks to the dedicated efforts of the blog editor Alvin Lebeck with the help of the associate blog editor, Vijay Reddi. As of July 2019, the incoming CAT blog editor is Rajeev Balasubramonian together with Vijay Reddi remaining as the associate editor. This year the blog featured 44 articles with over 110,000 views.

(3) Communication Team: We have a new Communication Team with Boris Grot as the chair, Samira Khan as the content editor (for the website, announcements and the newsletter), and Jayneel Ghandi as the video editor in charge of the SIGARCH YouTube! Channel. Adrian Sampson remains as the social media editor. The YouTube! Channel which was originally created to host the visioning workshop talks is now a platform to host all recordings for the virtual conferences starting with ASPLOS'20. Boris Grot also helped ASPLOS'20 organizers to replicate the iscaconf.org efforts and create the asplos-conference.org to host the ASPLOS websites. We will be moving prior ASPLOS websites to this central platform.

GRANTS & SUPPORT PROGRAMS

(1) Talent development grants: We have launched financial support for initiatives aimed at developing talent, improving well-being, and advancing diversity and inclusion for the computer architecture community. The Undergrad Architecture Mentoring Workshop (Uarch) was inaugurated at ISCA'19 and targeted boosting participation from undergrads in parts of the world and institutions with lower average participation at computer architecture conferences. The workshop raised $56K to host 49 students from 26 colleges and universities from around the world. These programs will be expanded in 2020 to include workshops for early-career academics and student mentoring.

(2) Student travel grants: Student travel grants for conferences is our flagship benefit for student members. All conferences where SIGARCH co-sponsors at a level greater than 33% are eligible for student travel grant support at levels of $5K-$20K. Survey results in 2016 indicated that 39% of the respondents said they would come to ISCA only if they received some travel grant and 5% of the students used personal funds to cover the difference between actual costs and these travel grants. In 2019, we continued supporting our student members through the travel grants at sponsored conferences.

(3) Companion assistance and childcare grants: SIGARCH was a pioneer in supporting travel grants for companions for childcare or disability support for those attending professional meetings while traveling. These have expanded to supporting on-site childcare. We are pleased to continue seeing an increase in applications for these grants as well as to see IEEE TCCA supporting its own similar program.

VIOLATIONS OF CODE OF ETHICS & PUBLICATION PROCEDURES

In June 2019, a University of Florida student and an ISCA'19 author Huixiang Chen died by suicide. In connection with this tragedy, and elsewhere in the broad computing community, there have been

disturbing allegations of multiple violations of code of ethics and review processes in multiple conferences in computer architecture and across computing. These allegations ranged from the student author's suicide note alleging that he was coerced by his advisor to hide flaws in a paper that was accepted to appear in ISCA'19 and culminated in revelations that the reviewer identities of the paper in question and their online discussions were compromised together with the entire set of submitted papers from ISCA'19 and HPCA'19 (an IEEE-sponsored conference) were downloaded into the student's laptop. These allegations breach the trust and confidence our members place on the integrity of our review processes and our individual members to follow our code of ethics. There have been multiple calls to cancel conferences in light of these allegations in 2019 and 2020.

We have been working together with ACM in accordance with their policies. These policies call for the utmost confidentiality of the process, preclude transparency, require those bringing forward allegations to identify themselves and do not lend themselves well to a rapid response. We have been making the case to ACM to launch an investigation with independent investigators and more resources, which eventually led to ACM announcing an independent investigation with IEEE, impaneling the Joint Investigative Committee (JIC) with an external legal counsel and an external investigator.

We believe that ACM has strong policies for publication ethics, but there is room for improvement in the processes pertaining to reporting, investigation, and enforcement of sanctions for violations of these policies. We have been working to convey to ACM leadership the need to improve these processes in a way that empowers whistleblowers and deters violators. This is an issue not just for SIGARCH but for all computing research communities. These process improvements are taking longer than we would like, but we in SIGARCH are committed to working with ACM to start bringing change in 2020.

(1) Extending CARES' mandate: SIGARCH formed CARES, a committee to aid reporting of sexual harassment at SIGARCH and SIGMICRO events in consultation with ACM. The program has since been emulated by other communities and has now led to the creation of the ACM diversity and inclusion council. The CARES movement was also recognized by CRA with the Distinguished Service Awards in 2020. In 2019, SIGARCH worked together with ACM to extend CARES' mandate to include violations of publication policies and code of ethics with an updated statement on the website.

(2) Ethics guidelines and best practices: Both ASPLOS and ISCA this year announced clear ethics guidelines to all program committee members, external reviewers, and authors, and they avoided the use of bidding in the paper assignment process. Boris Grot and José Martínez on the EC are working together IEEE TCCA EC members to update and enhance published best practices for conference organizers on our website for SIGARCH sponsored conferences that will provide explicit guidelines for conference organizers with regards to code of ethics and review integrity.

(3) Stronger HotCRP security and conflict detection: In 2019, Margaret Martonosi (a pastCARES co-chair) contacted Eddie Kohler the author of HotCRP to turn on logging for our conferences to track all downloads, a feature that was previously disabled to reduce storage overhead but can provide concrete evidence to ACM in reporting violations. HotCRP also now offers two-factor authentication for enhanced security. We are currently working on conflict resolution software for authors to help program chairs with paper assignment.

SUMMARY

SIGARCH remains a financially healthy and vibrant organization (thanks in part to our Treasurer, Karin Strauss and our EC members overseeing the conference budget approvals, Martha Kim and José Martínez) with a broad and enthusiastic membership and committed leadership. We restructured the SIGARCH EC under the leadership of Sarita Adve, the past chair, and the enthusiastic support of the broader community to delegate initiatives to EC members and let them lead them to fruition. We are continuing with this new structure to launch and implement new programs for SIGARCH. We also gratefully acknowledge the ACM staff, notably our past liaison Ashley Cozzi, and our new liaison J. C. Peeples, for their support and for graciously handling the increased workload.

Respectfully submitted,

Babak Falsafi, Chair

On behalf of the SIGARCH Executive Committee
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