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SIGCSE News in Brief

We'd like to wish everyone a Happy New Year. This year we are all excited about the 50th SIGCSE Symposium occurring in February in Minneapolis, MN, USA. Please see our SIGCSE 2019 Preview article for more details. We also offer an article on a special group of awards to be given at the symposium for the Top Ten Symposium Papers of All Time.

This is also an election year for the SIGCSE Board and we feature an article with the SIGCSE members running for board positions.

For our Member Spotlight interview, we spoke with the winner of the 2019 SIGCSE Award for Outstanding Contribution to Computer Science Education, Mark Guzdial. In our interview, we discuss Mark's work with Media Computation, his efforts with computing education in K-12, and future directions for Computing Education Research. Look to his interview to learn more.

Also in this issue, we look at the upcoming ICER 2019 conference and corresponding submission deadlines and we discuss SIGCSE's commitment to the CSforAll effort.

We hope to see many of you at the symposium next month!

Newsletter Credits

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SIGCSE 2019 Preview

By Elizabeth K. Hawthorne, Manuel A. Pérez-Quiñones, SIGCSE 2019 General Co-Chairs

The SIGCSE 2019 Organizing and Program Committees are thrilled to invite you to join us in Minneapolis, Minnesota from February 28 to March 2, 2019, for the Celebration of the 50th SIGCSE Technical Symposium! Our program celebrates successes and growth over the past 50 years while setting a vision of computing education for the future.

The four keynotes reflect on the impact that computing has had on society. In the opening keynote, Dr. Freeman A. Hraboswki, III will provide a 50-year perspective on American society with a particular focus on technology, student success and inclusion in computing. Dr. Gloria Townsend, recipient of the 2019 SIGCSE Lifetime Service Award, will talk about effective strategies that produced a graduating class of 47% female students in computer science at her institution. Dr. Mark Guzdial, recipient of the 2019 SIGCSE Outstanding Contribution Award, will talk about universal computational literacy and what we must do as a field to teach computing at all levels. In the closing keynote, Dr. Blair Taylor will share her experiences building cybersecurity and secure coding curricula to increase the pipeline of qualified students and build the nation's cyber workforce.

We had a record number of 526 papers submitted to SIGCSE 2019, an increase of 17% over SIGCSE 2018! With the help of reviewers and Associate Program Chairs, we accepted 169 papers; a 32% acceptance rate. We also have special sessions, panels, BOFs, posters, Lightning Talks, demos and other sessions (Nifty Assignments!) that have made this conference the largest gathering of computing educators in the world.

This year, we have an entire program track dedicated to celebrating the 50th symposium. This track will include peer-reviewed papers, panels, and special sessions that focus on some key aspects of SIGCSE's history. The format for the paper sessions will be different than the standard paper session with paper presentations followed by audience participation discussing the issues brought up by the paper and the theme of the session. There will be a panel discussing the changes in CS Education over the past 50 years and another looking forward towards the future goals of computing education research. We have sessions on broadening participation, CS0, CS1, and focusing on the history of the symposium itself.

Finally, we would like to thank the computing education community for their contributions to this year's program. We are grateful to the time that authors, reviewers, APCs, and track chairs put into making this program a reality.

See you at SIGCSE 2019!

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ICER 2019 Call for Participation

By Robert McCartney and Andrew Petersen
ICER 2019 Conference Co-chairs

The fifteenth annual ACM International Computing Education Research (ICER) Conference aims to gather high-quality contributions to the computing education research discipline. ICER will take place in Toronto, Canada, August 11-14, 2019. We invite submissions across a variety of categories for research investigating how people of all ages come to understand computational processes and devices, and empirical evaluation of approaches to improve that understanding in formal and informal learning environments.

Research areas of particular interest include:

- discipline based education research (DBER) in computer science (CS), information sciences (IS), and related disciplines
- design-based research, learner-centered design, and evaluation of educational technology supporting computing knowledge or skills development
- pedagogical environments fostering computational thinking
- learning sciences work in the computing content domain
- psychology of programming
- learning analytics and educational data mining in CS/IS content areas
- learnability/usability of programming languages
- informal learning experiences related to programming and software development (all ages), ranging from after-school programs for children, to end-user development communities, to workplace training of computing professionals
- measurement instrument development and validation (e.g., concept inventories, attitudes scales, etc.) for use in computing disciplines
- research on CS/computing teacher thinking and professional development models at all levels
- rigorous replication of empirical work to compare with or extend previous empirical research results
- systematic literature review on some topic related to computer science education

In addition to standard research paper contributions, we continue our longstanding commitment to fostering discussion and exploring new research areas by offering several ways to engage. These include:

- Just prior to the conference: a doctoral consortium for graduate students and a work-in-progress workshop for researchers
- Following each paper presentation: time for discussion among the attendees in preparation for feedback to the paper presenters
- At other times during the conference: lightning talks and posters

Submission Categories

ICER provides multiple options for participation, with various levels of discussion and interaction between the presenter and audience. These sessions also support work at various levels, ranging from formative work to polished, complete research results.

Research Papers

Papers are limited to 8 pages, excluding references, double-blind peer reviewed and published in the ACM digital library as part of the conference proceedings. Accepted papers are allotted time for presentation and discussion at the conference.

Doctoral Consortium

2 page extended abstract submission required and published in ACM digital library as part of the conference proceedings. Students will present their work to distinguished faculty mentors during an all-day workshop and during the conference in a dedicated poster session.

Lightning Talks and Posters
Lightning talks are 2-3 minute presentations to all attendees regarding novel, not yet fully explored or tested work. Posters present work (in a standard poster-session format) at any phase from early ideas to complete but unpublished research. Both submission types should present scholarly work consistent with the overall goals of ICER.

Work in Progress Workshop
This one-day workshop is a venue to get sustained engagement with and feedback about early work in computing education. White paper submission is required, but white papers are not included in the proceedings.

Co-located Workshops
Proposals for pre/post conference workshops of interest to the ICER community (i.e., those that aim to advance computer science education research) are welcomed and encouraged. ICER local arrangements personnel will be available to assist with workshop logistics where possible. If interested, contact the workshop chair, Jennifer Campbell (campbell@cs.toronto.edu).

For more details about preparation and submission to ICER 2019, see the conference website: http://www.icer-conference.org

Conference Co-Chairs
Robert McCartney,
University of Connecticut, USA
Anthony Robins,
University of Otago, New Zealand
Andrew Petersen,
University of Toronto Mississauga, Canada
Adon Moskal,
Otago Polytechnic, New Zealand

AUTHORS TAKE NOTE: The official publication date is the date the proceedings are made available in the ACM Digital Library. This date will be up to two weeks prior to the first day of the conference. The official publication date affects the deadline for any patent filings related to published work.

Member Spotlight

In this feature of the Bulletin, we highlight members of the SIGCSE community. In this issue, Bulletin co-editor Leo Porter interviewed Mark Guzdial. Mark Guzdial is a Professor of Electrical Engineering and Computer Science at the University of Michigan and an ACM Fellow. He was awarded the 2019 SIGCSE Award for Outstanding Contribution to Computer Science Education. He will receive the award and offer a keynote address at the upcoming SIGCSE symposium.

Photo by Andrew Lichtenstein/Cornell Tech

LP: First, I'd like to thank you for your extensive service to the CSE community and your many contributions to Computing Education Research. Second, congratulations on being awarded the 2019 SIGCSE Award for Outstanding Contribution to Computer Science Education. Thank you for agreeing to talk with us today.

MG: Leo, I'm thrilled and honored. SIGCSE has been my home community for many years. To receive this award from my colleagues means a great deal to me.

LP: How did you first get involved with the CS education community?

MG: I was a computing teacher first, and discovered a community later. I started teaching when I was 17 years old and still in high school. I was invited to teach a community education class on "Bits, Bytes, and BASIC" in 1980. I continued to teach through undergraduate and graduate degrees to many

different student groups, from junior high school students in after school classes, to 8 year olds making music with Logo, to high school equivalency (GED) classes, to robotics students in community college. Before I started my PhD, I already had hundreds of hours in a lot of classes.

In 1982, I was a summer intern at Bell Labs when I read Alan Kay and Adele Goldberg's "Personal Dynamic Media." Alan (a 1993 SIGCSE Outstanding Contribution to CS Education award winner) and Adele were introducing the world to Smalltalk, and the Dynabook as human's first meta-medium. This idea of enabling people to use programming as a tool to think with has continued to inspire me for over three decades.

Alan and Adele's article led me to learn Logo and read Seymour Papert. I taught Logo at the University of Michigan in Saturday morning classes in 1984 and 1985. That's when I discovered that there was a community of educators and researchers who cared about computing. My first conference paper was on an object-oriented Logo implementation at the 1984 International Logo Conference. I still have my acceptance letter from Hal Abelson, a 2012 SIGCSE award winner.

I learned about SIGCSE when I became a professor at Georgia Tech in 1993. I joined the College of Computing because Jim Foley and Janet Kolodner wanted to grow educational technology. I was so fortunate to gain colleagues John Stasko, Rich LeBlanc, Kurt Eiselt, and Mike McCracken — SIGCSE long-timers who helped me learn about and publish in the community. My first SIGCSE publication was in 1995, about student tendencies to build one-class-only object-oriented systems and how to get them past their centralized mindset.

LP: You've been a leader in computing education research (CER) in a variety of ways for the community. What do you think are the biggest research challenges for us going forward?

MG: Computing education is in a tough spot. What we have to offer is economically important and enormously popular, but we are so new and don't have a large research base on how to teach well. We are challenged to meet the demand effectively and efficiently.

I have taught a class on computing education research three times at Georgia Tech and am teaching it now at the University of Michigan. Each time I offer it, I ask the class to identify important and interesting open research questions. Every time, we fill the whiteboards in the room. There's just so much that we don't know yet.

Here are some of my current favorite big research questions:

- How do people think about how their programs are executed (called the "notional machine")? How can we diagnose mistakes in students' understanding of the notional machine, and correct them?
- How can we use programming as a notation, like mathematics, to facilitate learning in other subjects?
- We mostly teach computing by just having students write programs. What are more efficient and effective methods for teaching computing?
- Many of our choices in software development methods and technologies were made to support professional software development, but there are more purposes for programming than just use by professionals. That's like teaching English only to support novelists. As a wider range of people engage in programming, we may re-think many of our earlier decisions. For example, software engineers have mostly given up on visual program notations, but Scratch and other block-based languages are powerful and popular with younger audiences. What will future programming

technologies change to serve this broader audience?

LP: Many of us in CER read your blog consistently. I know keeping up a blog is a lot of effort and we appreciate your work. What caused you to start the blog and are you happy with where it has gone?

MG: I enjoy writing. I was interested in starting a blog a dozen years ago, but initially couldn't figure out how to reach an audience that would be interested in what I was writing. Then I discovered Amazon's blogs for authors. My posts there would appear alongside my books. That made sense to me — if someone was interested in one of my books, they might be interested in my blog. I started there. When Amazon shut down author blogs, I moved to Wordpress, which was ten years ago this year.

I write the blog like it's a personal journal, which I happen to be making public. It's about things that interest me, and the public nature makes me think a little harder about how to communicate these ideas. It's a little overwhelming to think about how many people are now reading it, so I honestly avoid thinking about that. As I write each post, I have some readers in mind as my audience. I'm honored and pleased that others find it useful, too.

LP: You have worked with education public policymakers in "Georgia Computes!" and Expanding Computing Education Pathways (ECEP) over the last dozen years. What's your biggest worry as US states start institutionalizing CS education?

MG: I have two. The first is that the efforts to standardize CS education are making the bar too low. When the K-12 CS Ed Framework was being developed, decisions were being made based on how current teachers might respond. "Teachers don't like binary, so let's not include that" is one argument I heard. I realize now that that's exactly the wrong idea. Standards should drive progress and set goals. Defining standards in terms of what's currently attainable is going to limit what we teach for years. Computing education research is all about making it possible to teach more, more easily and more effectively. I worry about setting standards based on our limited research base, not on what we hope to achieve.

The second is that most of our decisions are being made around the assumption of standalone CS classes and having teachers with a lot of CS education. I just don't see that happening at scale in the US. Even in the states with lots of CS teachers in lots of schools, a small percentage of students take those classes. This limits who sees computer science. To make CS education accessible for all, we have to be able to explore alternative models, like integrating computing education in other subjects without CS-specific teachers. If we only count success in CS education as having standalone CS classes, we are incentivizing only one model. I worry about building our policy to disadvantage schools that want to explore integrated models, or have to integrate because of the cost of standalone CS classes.

LP: We've worked together on disseminating evidence-based teaching practices to computing faculty through the New Computer Science Education Teaching Workshop. We also know achieving change with faculty can be difficult. How do you see the CS education community moving forward to successful inspire faculty adoption of best practices?

It's a matter of inspiring CS teachers. Other fields have made change in their educational practices by convincing teachers of the value of change. Inspiring leaders like Carl Wieman and Eric Mazur convinced Physics teachers to adopt new practices like Peer Instruction. We need inspiring leadership to change CS education.

LP: We adopted Media Computation at UC San Diego many years ago, and I know of many

schools throughout the country using Media Computation as well. How did the Media Computation project with you and Barbara Ericson start and where do you see that project heading in the future?

MG: Media Computation was born out of need. Georgia Tech had a requirement for all students to take computer science (explicitly requiring programming), but our Liberal Arts, Architecture/Design, and Business students were not succeeding in the introductory course we had invented to teach everyone. Only about 50% of those students were passing the course each year. We created Media Computation to present computing in the context of digital media manipulation and creation in order to solve our retention problem. It worked. Media Computation at Georgia Tech has had around an 85% success rate since we started in 2003.

I was grateful when Barb joined me in working on Media Computation. Barb has a lot more technical depth than me. She improved the libraries underlying our approach, created the Turtle implementation that we use, and made sure the books got the computer science right.

Barb and I talk a lot about Media Computation for a new generation. I have been working on making Media Computation work in more programming languages, like the block-based language GP. Barb has been asking the research question, "What is the right medium for learning a dynamic subject like computer science?" She is making Media Computation work in new media, like the Runestone ebooks we have for AP CSP and AP CS Level A.

LP: CER has struggled to find a home department at many institutions. Some believe the CER belongs in education departments, others believe it belongs in CS. Where do you see the home of CER going forward and how do you suggest faculty in CER navigate the situation in the meantime?

MG: To have sustainable and systemic computing education in schools, we need education faculty who study and teach computer science. We have to be able to teach computer science to future teachers, and that's the job of education departments and schools. But that's a future goal. All discipline-based education research (DBER) fields start in the discipline. Mathematics and science education started with mathematics and science faculty. We need to grow CER within CS, with a goal of growing it in Education.

LP: What do you do when you are not working?

MG: I have just moved to Ann Arbor, Michigan, so we're still in the process of establishing a home there. We still spend weekends emptying boxes, reorganizing our house, and buying furniture. We're enjoying the wonderful opportunities of living in Ann Arbor, from biking to kayaking.

I enjoy music and carry a ukulele on almost all my trips. I love when we get a bunch of people together at a conference to play music and sing. I've had some fun singing and playing sessions with Jason Ravitz, Leigh Ann DeLyser, and Shuchi Grover.

I am so fortunate that some of my favorite things to do are also part of my work: Reading, writing, and exploring ideas with code. I am a lucky guy.

SIGCSE Board 2019-2022 Election Slate

By Susan Rodger, SIGCSE Past Chair

The term of the current SIGCSE Board will be ending at the end of June. An election for a new SIGCSE Board will be held in April 2019. The election is run by ACM.

The SIGCSE Nominating Committee solicited names in September and October for SIGCSE members interested in running for the next SIGCSE Board. We received a large number of names. It is great to see so much interest in running for the SIGCSE Board. The SIGCSE Nominating Committee is composed of Susan Rodger of Duke University, U.S., Chair of SIGCSE Nominating Committee, and Immediate Past Chair of SIGCSE; Amber Settle of DePaul University, U.S., and SIGCSE Chair; Renée McCauley of College of Charleston, U.S. and a past SIGCSE Chair; Guido Rößling of Technische Universität Darmstadt, Germany; and J.D. Dougherty, Haverford College, U.S.

If someone would still like to run for a position, they must be a member of ACM and a member of SIGCSE. They must inform ACM Headquarters, the SIG Viability Advisor, and the Secretary of the SIG of their intention by 15th March. They will need to get signatures from at least 1% of SIGCSE Members. ACM will include instructions when it sends out the slate to SIGCSE members.

Here is the slate for the next SIGCSE Board, in alphabetical order by position. All people listed are professional members of ACM and SIGCSE members. ACM will provide statements from all of them in the election.

Chair (select one)

Tiffany Barnes
Adrienne Decker
Judy Sheard

Vice-Chair (select one)

Dennis Bouvier
Dan Garcia
Briana Morrison

Secretary (select one)

Steve Cooper
Tyler Menezes
Leo Porter

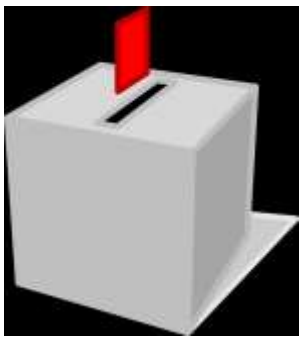
Treasurer (select one)

Andrew Luxton-Reilly
Bruce Scharlau
Mark Zarb

Member At-large (select three)

Steven Bradley
Kevin Buffardi
MaryAnne Egan
Amardeep Kahlon
Viraj Kumar
Laurie Murphy
Manuel Pérez Quiñones
Jennifer Roscoe
Ben Stephenson

The current SIGCSE Board Chair, Amber Settle, will continue on the SIGCSE Board as the Immediate Past Chair.



SIGCSE Top Ten Symposium Papers of All Time Award

By Adrienne Decker and Mark Allen Weiss
SIGCSE Board Members

Following approval by the ACM SIG Governing Board and then the ACM Awards Committee, the SIGCSE Board is pleased to announce the creation of an ACM approved SIG award to commemorate the 50th SIGCSE Technical Symposium to be held in Minneapolis, MN February 27-March 1, 2019.

The ACM SIGCSE Top Ten Symposium Papers of All Time Award recognizes the outstanding papers published in the first 49 Proceedings of the Annual ACM Technical Symposium.

The actual award process is comprised of a number of steps:

- Nominations for papers were solicited from the SIGCSE community via announcements to the SIGCSE listservs. Members could nominate any paper from the first 49 symposia for consideration.
- Members of the SIGCSE community were asked to volunteer for the award committee to help determine from the nominations and through their own discussion a slate of 20 candidate papers.
- Candidate papers were recently announced on the SIGCSE listservs, social media, and SIGCSE website. You can vote through the link below until January 31, 2019: https://goo.gl/forms/VL4Hg4XZsI7SgbgA3
- The final top 10 ranking will be announced at SIGCSE 2019 in Minneapolis. The coauthors of the top ranked paper will receive a plaque, free conference registration for one co-author to accept the award and up to a total of $2,000 that can be used toward travel for all authors of the top ranked paper.

We are looking forward to recognizing the outstanding work showcased in the SIGCSE Technical Symposium over the past 50 years!

SIGCSE's Commitment to CSforAll

By Briana B. Morrison
SIGCSE Board Member

SIGCSE's mission 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. Underlying this statement is a philosophy that all students should have access and the ability to learn computing.
Because we support computing at all education levels, we are proud to be a CSforAll consortium member. CSforALL is a United States organization that serves as hub for the national Computer Science for All movement, which works to enable all students in grades K-12 to achieve computer science literacy as an integral part of their educational experience. On October 9th at the CSforALL Summit in Detroit, we announced a pledge to support CS education:

The ACM Special Interest Group on Computer Science Education (SIGCSE) will provide 50 travel grants to their 2019 Technical Symposium for first-time attendees and K-12 educators and will provide discount registrations for all of their conferences for K-12 educators.

SIGCSE recognizes that K-12 educators are part of the community helping to develop, teach, and broaden participation in computing. We also know that the K-12 educators are likely to have less support to attend conferences where they can learn about new research, curriculum, and tools that may have a direct impact in their classroom. So our initial commitment is to provide support in the form of travel grants and discounted registration fees.

For more information about CSforAll please go to https://www.csforall.org/. And if you have additional ideas on how SIGCSE can support CSforAll or other similar global organizations, please talk to a current Board Member and share!

Open Access to Past SIGCSE Proceedings

By Adrienne Decker, SIGCSE Treasurer

The SIGCSE 2019 50th celebration committee is pleased to announce that we have secured permission from ACM to make **all** papers from **all** SIGCSE Technical Symposium proceedings freely available from the ACM Digital Library: https://dl.acm.org/. Yep, all 49 years' worth of technical symposium papers are free and available for download from now until 1 week after SIGCSE 2019 concludes (8 weeks of open access)! SIGCSE 2019 proceedings will be available as we get closer to the conference – stay tuned for details.

Deadlines and Upcoming Dates!

Feb 27-Mar 2	The 50th ACM SIGCSE Technical Symposium on Computer Science Minneapolis, MN, USA
Mar 17	ITiCSE 2019 Panel; Poster; Tips, Techniques, and Courseware; and Doctoral Consortium submissions are due
Mar 29	ICER 2019 Abstracts for papers are due
Apr 5	ICER 2019 Full paper submissions are due
May 1	ICER 2019 Doctoral Consortium submissions are due
Jun 7	ICER 2019 Lightning talks, poster proposals, Work in Progress workshop applications are due
Jul 15-17	ITiCSE 2019 Aberdeen, Scotland, UK
Aug 12-14	ICER 2019 Toronto, CN