

SIGCSE Annual Report

July 2016 - June 2017

Submitted by: Amber Settle, SIGCSE 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 SIGCSE Award for Outstanding Contribution to Computer Science Education was presented to Gail Chapman for her long-term impact on computer science education through the creation of curriculum, teacher professional development, and fierce advocacy for social equity in all computing classrooms.

The SIGCSE Award for Lifetime Service to Computer Science Education was given to Mats Daniels for more than two decades of dedicated service to computing education research, building and supporting the international network of computing educators.

Significant papers on new areas that were published in proceedings

At ICER 2016 two paper awards were presented.

The Chair's Award is selected by the organizing committee and was presented to Alex Lishinski, Aman Yadav, Jon Good, and Richard Enbody (Michigan State University) for their paper "Learning to Program: Gender Differences and Interactive Effects of Motivation, Goals, and Self-Efficacy on Student Performance".

The ICER 2016 John Henry Award is selected by the conference attendees and was presented to Elizabeth Patitsas, Jesse Berlin, Michelle Craig and Steve Easterbrook (University of Toronto) for their paper "Evidence that Computer Science Grades are not Bimodal".

In 2017 the SIGCSE Symposium gave three best paper awards.

The Best Experience Report Paper was awarded to Erik Brunvand and Nina McCurdy (University of Utah) for "Making Noise: Using Sound-Art to Explore Technological Fluency".

The Best New Program Paper was presented to Kathleen Timmerman and Travis Doom (Wright State University) for "Infrastructure for Continuous Assessment of Retained Relevant Knowledge".

The Best CS Education Research Paper was awarded to Austin Cory Bart, Ryan Whitcomb, Dennis Kafura, Clifford A. Shaffer, and Eli Tilevich (Virginia Tech) for "Computing with CORGIS: Diverse, Real-world Datasets for Introductory Computing".

There was a single Best Paper Award given at ITiCSE 2017. It was awarded to Allison Scott, Alexis Martin, Frieda McAlear, and Sonia Koshy for "Broadening Participation in Computing: Examining Experiences of Girls of Color".

Innovative programs which provide service or broadened participation to some part of your technical community

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 2016 call funded two projects. An award of \$3,800 was given to Yasmine N. El-Glaly and Daniel E. Krutz at Rochester Institute of Technology for their project "Inclusive Apps: Supporting Mobile Accessibility Standards through Educational Exercises". Drs. El-Glaly and Krutz will create a publicly accessible oracle of mobile applications which will define problems relating to the accessibility of mobile applications for individuals with disabilities. A second award of \$4,700 was given to Brett A. Becker at University College Dublin for his project "What Exactly Are We Expecting Our Novice Programming Students to Achieve?" To answer this question Dr. Brett Becker will collect, categorize and analyze the learning outcome statements of CS1 courses across a large, diverse set of institutions.

The May 2017 call funded three projects. An award of \$5,000 was given to Vicki Almstrum and Barbara Boucher Owens for their project "Computing Educators Oral History Project (CEOHP) Growth: Awardee Interviews and Website Update". Drs. Almstrum and Owens plan to extend the collection of oral interviews documenting the history of computing educators. In addition, the project will entail a significant reworking of the CEOHP website which serves as a repository for the oral interviews. A second award of \$1,060 was given to Amber Wagner for her project "Understanding Movement". Dr. Wagner will develop a project-based course for novice computer science students intended to demonstrate the relevance of computing. Inspired by ESPN's Sport Science, students will combine physiology with computer science to build wearable devices to measure the force or speed of various movements. A third award of \$5,000 was given to Brandon Myers for his project "Active Learning Materials for Computer Architecture and Organization". Dr. Myers will develop eight Process-Oriented Guided Inquiry Learning (POGIL) activities for use in Computer Organization and Architecture classes. Exercises will be based on the learning outcomes defined in the 2013 ACM/IEEE Computer Science Curriculum Guidelines.

ITiCSE 2017 has nine working groups on the following topics: (1) Understanding international benchmarks on student engagement – awareness, research alignment and response from a computer science perspective, (2) Game development for computer science education, (3) Integrating international students into computer science programs: challenges and strategies for success, (4) Developing assessments to determine mastery of programming fundamentals, (5) "I know it when I see it" -- perceptions of code quality, (6) Developing a holistic understanding of systems and algorithms through research papers, (7) Understanding the effects of lecturer Intervention on computer science student behaviour, (8) The internet of things in CS education: current challenges and future potential,

and (9) Searching for early developmental activities leading to computational thinking skills. The participants in the working groups develop a research project that culminates in a peer-reviewed paper. The projects foster international research collaborations.

Every other year the SIGCSE Board sponsors a Department Chairs Roundtable where challenges and opportunities for people serving as departmental chairs are discussed and addressed. On March 8, 2017 the Department Chairs Roundtable was held in Seattle, Washington. The event was organized by Mary Lou Maher, and thirteen people attended. SIGCSE provided funds for meals at the event, which was partially offset by a nominal charge for attendance.

On alternate years the SIGCSE Board runs a workshop for graduate students and new faculty. The next New Educator's Workshop will be held in Baltimore, Maryland in February 2018.

The 2017 SIGCSE Symposium held twenty four three-hour workshops for professional development. In addition, the SIGCSE Symposium provided meeting space for eleven events namely POGIL in CS, Managing the Early Academic Career for Women Faculty and Women Graduate Students, Strategies for Integrating Driverless Cars into the Computing Curricula, Aligning to the ACM Cybersecurity-infused Computer Science Transfer Curriculum, Making K-12 Computer Science Accessible, POSSE Roundup – Student Participation in Humanitarian Open Source Software, NSF UP CS Ed Research Event for Emerging CS Education Researchers at SIGCSE, ACM Joint Task Force for Cybersecurity Education, CSforAll Consortium Networking Reception at SIGCSE, Breakfast with BlueJ and Greenfoot, and CRA Teaching Track Faculty Lunch.

A Doctoral Consortium was run by Anthony Robins and Ben Shapiro on Thursday, September 8, 2016 in Melbourne, Australia just prior to ICER 2016. The workshop was attended by nineteen graduate students in computer science education and five discussants. 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 2016.

SIGCSE has a Travel Grant Program for faculty and teachers who have never attended the SIGCSE Symposium. Six awards were given for the 2017 Symposium, including two high school teachers and one recipient from Puerto Rico.

The SIGCSE Speaker's Fund supports the dissemination of outstanding SIGCSE Symposium, ITiCSE conference, or ICER workshop presentations to non-ACM conferences that are in-cooperation with SIGCSE. In 2017 Bill Manaris was funded to present "Making Music With Computers" at the Twenty-Third Annual Conference of the Central Plains region of the Consortium for Computing Sciences in Colleges (CCSC-CP 2017), USA.

Key Issues for the Next Few Years

We have been successful in growing our computing education research conference, ICER. In 2015 the conference was held in Omaha, Nebraska and had 118 attendees and 20 participants in the Doctoral Consortium. In 2016 the conference was held in Melbourne, Australia and had 84 attendees – the largest Australasian attendance and second largest ICER attendance ever. Paper submissions in 2016 grew by 6% over 2015, while the acceptance rate remained around 25%. An NSF funded workshop was held immediately prior to ICER 2016 with 10 participants. The Doctoral Consortium remained strong

with 20 applications and 18 participants. In addition to the research papers, 8 lightning talks and 6 posters were presented.

There was a record number of papers submissions for the conference in 2017, with 108 complete submissions, a 6% growth over 2016. The acceptance rate was 27%. With 29 papers accepted for 2017, to maintain the single track unique format, the conference has expanded to three days. The continued growth in paper submissions has also necessitated a change in reviewing procedures. The conference organizers have now moved to a model in which the leadership of the conference is chosen from nominations taken from the community at large. Managing the growth in a way that maintains the character of the conference will be important moving forward.

The SIGCSE Board continues to work to find ways to nurture leadership among conference and other volunteers. Crucial for this is the volunteer development process discussed below, but equally important are robust term limits and rotation policies for existing volunteers. The Board has been active in developing documented approaches to term limits and leadership management for the three SIGCSE conferences.

SIGCSE Volunteer Development Process

SIGCSE's volunteers are recruited at conferences, on the SIGCSE listserv, and through annual articles in the SIGCSE Bulletin. Board members all attend the annual SIGCSE Symposium and encourage attendees to consider volunteering in some way. At sigcse.org there is a volunteer signup page with a list of possible SIGCSE positions, and whenever possible new volunteers are chosen from this list. Volunteers for a particular role are trained by the person previously in that role. Many of our positions are overlapping rotating positions such as for the SIGCSE Bulletin where two people work together, one experienced and one new. The SIGCSE Board is also piloting a repository for keeping important documents for organizational memory.