SIGCSE Annual Report

July 2017 - July 2018
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 Tim Bell for his significant and lasting impact on computing education internationally through the development of innovative resources and activities, such as “CS Unplugged,” that inspire and engage students and teachers at all educational levels.

The SIGCSE Award for Lifetime Service to Computer Science Education was given to Eric Roberts for outstanding service to computing education, making significant contributions to computing curricula and pedagogy, and generously sharing his knowledge and wisdom through mentoring and guidance to others in the computing education community.

Significant papers on new areas that were published in proceedings

ICER 2017 had two best paper awards.

The Chair's Award is selected by the organizing committee and was presented to Holger Danielsiek, Laura Toma, and Jan Vahrenhold for their paper "An Instrument to Assess Self-Efficacy in Introductory Algorithms Courses".

The ICER 2017 John Henry Award is selected by the conference attendees and was presented to Kathryn M. Rich, Carla Strickland, T. Andrew Binkowski, Cheryl Moran, and Diana Franklin for their paper "K-8 Learning Trajectories Derived from Research Literature: Sequence, Repetition, Conditionals".

In 2018 the SIGCSE Symposium gave three best paper awards.

The Best Experience Report Paper was awarded to Fredrik Heintz and Linda Mannila for “Computational Thinking for All: An Experience Report on Scaling up Teaching Computational Thinking to All Students in a Major City in Sweden.”

The Best New Curricula, Programs, Degrees, and Position Paper was presented to Sathya Narayanan, Kathryn Cunningham, Sonia Arteaga, Joe Welch, Leslie Maxwell, Zechariah Chawinga, and Bude Su for “Upward Mobility for Underrepresented Students: A Model for a Cohort-based Bachelor’s Degree in Computer Science”.

The Best CS Education Research Paper was awarded to Christine Alvarado, Gustavo Umbelino, and Mia Minnes for “The Persistent Effect of Pre-College Computing Experience on College CS Course Grades.”

There was a single Best Paper Award given at ITiCSE 2018. It was awarded to Ali Erkan for “The Educational Insights and Opportunities Afforded by the Nuances of Prim's and Kruskal's MST Algorithms.” The ACM Europe Council sponsored the award and presented the winner with a certificate and a 1000 Euro cheque.

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 2017 call funded three projects. $4,800 was awarded to Michael Morgan, Matthew Butler, and Chris Gonsalvez from Monash University and Jane Sinclair from Warwick University for a project entitled “An Analysis and Interpretation Framework for Student Engagement Benchmarking Data.” The project will provide a framework for analyzing benchmark data to improve student engagement in computer science, as there is currently no widely used systematic process to evaluate and interpret student engagement data. $4,000 was awarded to Jaime Spacco from Knox College for a project entitled “CQDR: Clicker Question Data Repository.” The project will expand and improve an online repository of clicker questions that have been used in courses using peer instruction which will be publicly available. $4,850 was awarded to Andrew Luxton-Reilly and Ewan Tempero from the University of Auckland for a project entitled “How Do We Teach Debugging?” The project will address the difficulties of teaching and learning debugging by undertaking a detailed study of existing resources, and a repository and literature review will result from the project.

The May 2018 call funded three projects. $3,078 was awarded to Amanpreet Kapoor and Christine Gardner-McCune from the University of Florida to support a project entitled “CS Identity Development Interview Project”. The project focuses on the development of identity in computer science students, and the results of the study will include profiles of successful students and recommendations for faculty. $5,000 was awarded to Devorah Kletenik from Brooklyn College and Deborah Sturm from College of Staten Island for a project entitled “Developing a Serious Game to Reinforce Introductory Programming Concepts.” The project will result in a game to introduce programming concepts to undergraduate students and will be released under a free software license. $4,440 was awarded to David Touretzky of Carnegie Mellon University for a project entitled “Developing and Testing Activities Introducing Elementary School Students to Artificial Intelligence.” The project will result in hands-on activities to introduce elementary school children to artificial intelligence concepts, and the resulting materials will be cataloged in a resource directory.

ITiCSE 2018 had nine working groups on the following topics: (1) Contrasting CS student and academic perspectives and experiences of student engagement, (2) Global Perspectives on Cybersecurity Education, (3) A Review of Novice Programming Research 2003 – 2017, (4) An International Investigation into Student Concerns regarding Transition into Higher Education, (5) Cloud Computing: Developing Contemporary Computer Science Curriculum for a Cloud-first Future, (6) Modeling Global Competencies for Computing Education, (7) Taxonomizing features and methods for identifying at-risk students in

computing courses, (8) The Internet of Things in CS Education: Updating Curricula and Exploring Pedagogy, and (9) Promoting the adoption of educational innovations. 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 New Educator's Workshop where graduate students and new academics are provided with career information and mentorship. The New Educators Workshop took place on February 21, 2018 as a pre-symposium event before the 2018 Symposium. The workshop was organized by Andrea Danyluk (Williams College) and Zachary Dodds (Harvey Mudd College). Forty one new educators attended the workshop. There were nine speakers, including the two organizers. Additionally, there were guests from the NSF and NCWIT. SIGCSE provided travel grants of $500 to each of nine attendees, six graduate students, one postdoc, one adjunct community-college professor, and one participant who could not attend in 2016 for funding reasons. Most of the remaining attendees were new faculty.

On alternate years the SIGCSE Board runs a workshop for chairs of computing departments. The next Department Chairs Roundtable will be held in Minneapolis, Minnesota in February 2019.

The 2018 SIGCSE Symposium held thirty two three-hour workshops for professional development. In addition, the SIGCSE Symposium provided meeting space for thirteen events: Jumpstart Teaching Cybersecurity: C5 Instructional Modules Secure Scripting and Cybersecurity and Society, Computer Science Principles Providers and Teachers Forum, Integrating Cloud Computing into the Computer Science Curriculum, POSSE Roundup – Getting Started in an HFOSS Project, RESPECT'18: Research on Equity and Sustained Participation in Engineering, Computing, and Technology Conference, CS Education Infrastructure for All: Interoperability for Tools and Data Analytics, Professional Development Workshop for Teaching-Track Faculty, Strategies for Integrating the Updated ACM Code of Ethics into the Computing Curriculum, Machine Learning in the Classroom, Microsoft's Mixed Reality 250 Workshop, RPPforCS for Community Meeting, and NVIDIA Deep Learning Education Workshop.

A Doctoral Consortium ran in Tacoma, Washington, USA just prior to the 2017 The International Computing Education Research Conference (ICER) which was attended by nineteen graduate students in computer science education. 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 2017. The SIGCSE Board will continue to fund up to twenty Doctoral Consortium grants in 2018.

SIGCSE has a Travel Grant Program for faculty and teachers who have never attended the SIGCSE Technical Symposium. Nine awards were given for the 2018 Symposium, including a high school teacher and one recipient from Chile.

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 2018 one grant was made to support Michelle Craig of the University of Toronto to present at the Western Canadian Conference on Computing Education (WCCCE).

SIGCSE's 50th anniversary took place in 2018, and in celebration of the event one of the members of the SIGCSE Board wrote weekly history blog posts discussing the events that took place each year. These blog posts were sent out to the membership via the SIGCSE mailing list and were also posted on the

sigcse.org site. In addition, the 50th anniversary of the SIGCSE Technical Symposium will take place in 2019. The SIGCSE Board is sponsoring 50 travel grants for attendees of the conference and providing additional funding for special activities celebrating the anniversary.

Key Issues for the Next Few Years

SIGCSE will establish a new conference in 2019. SIGCSE Global will be offered initially once every two years and will be hosted in countries that are not currently served by any existing SIGCSE conference. The first SIGCSE Global will be held in Chengdu, China in May 2019. A steering committee for the conference has been created, and the steering committee will work in the next year both to support the organizers of the 2019 conference and to shape the direction that the conference will take in the next six years.

Two of the 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, and 1735 in 2018. ICER had attendance of 79 in 2015, 119 in 2015, 105 in 2016, and 157 in 2017. 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 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 polices for existing volunteers. The Board continues to be active in developing documented approaches to term limits and leadership management for all SIGCSE conferences. The SIGCSE Board is also in the process of creating a volunteer historian position.

SIGCSE is in the process of creating new awards to recognize excellence in computing education research in the community. The proposed ACM SIGCSE Test of Time Award will recognize outstanding previously published work. Because the 2019 SIGCSE Technical Symposium in Minneapolis is the 50th annual event, SIGCSE proposes to create a one-time award to be presented in February 2019 at the SIGCSE Technical Symposium, followed by an annual award commencing in 2020 that can be presented at any SIGCSE event. Additionally, there will also be a Top Five ITiCSE Papers ranking and award, in conjunction with the 25th annual ITiCSE conference in 2020, and this award will be announced at the 2019 (24th annual) ITiCSE conference. The award proposal has been submitted to the SIG Governing Board Executive Committee for review.

Interest in computing education at the K-12 level continues to grow worldwide. The SIGCSE Board is exploring the possibility of offering joint membership with the Computer Science Teacher's Association to better reach this population in the computing education community.

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.