SIGCSE Annual Report
July 2020 - June 2021
Submitted by: Adrienne Decker, 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.

1. Health and Viability of the SIG

SIGCSE is a reasonably healthy SIG. Our membership for this annual
report is down slightly from the previous year, mainly due to the
cancellation of the SIGCSE Technical Symposium in 2020, which
coincides with many membership renewals. Attendance at conferences
while slightly lower than pre-pandemic levels has held steady for this
year. We have had large responses to our special projects awards
program. We have created two new steering committees during this
annual reporting period. One for ICER and one for the SIGCSE Technical
Symposium. We were able to recruit and fill the positions for both
steering committees with ease, so we feel that we have a fairly strong
base of volunteers. We have charged the steering committees for all of
our conferences to work on plans for growing our volunteer base for
running our events to ensure that we have newer members being
recruited and trained to take on larger responsibilities for the SIG.

2. Efforts related to Diversity, Equity and Inclusion

The newly-established 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 second conference (CompEd 2021) was scheduled to be
held in Hyderabad, India in December 2021, but has been postponed due
to the Covid-19 pandemic. The organizers and steering committee feel
that this event, drawing people from communities not normally served
by a SIGCSE conference should be held as an in-person event and are
going to do so when it is determined feasible. The CompEd steering
committee is actively seeking out venues in South America for the
third CompEd conference.

In June 2020, the SIGCSE Board called for volunteers to form a SIGCSE
Committee on diversity, equity, inclusion, and anti-racism to help
better guide the SIGCSE community in these efforts. Leadership for
this group had been identified and sessions were held with the
community at the SIGCSE Technical Symposium, but as of the filing of
this report, the official charter for a committee had not yet been
filed with the board. The board also met with another group interested
in helping to promote more inclusion of faculty at HBCU institutions
at our events. We are working with them to find organize events and
activities for members of that community.

3. Awards

The 2021 SIGCSE Award for Outstanding Contribution to Computer Science Education was presented to Stephen A. Edwards from Virginia Tech in the United States. His work focuses on development of automatic grading tools, particularly Web-CAT, which is an automatic grading tool for computer programs that has been used by over 90 institutions worldwide. He has a 2004 SIGCSE Technical Symposium paper that was given the honor of one of the Top 10 Symposium Papers of all Time in 2019. He is an ACM Distinguished Educator and has chaired the SIGCSE Technical Symposium in 2017.

The 2021 SIGCSE Award for Lifetime Service to the Computer Science Education Community was given to Cary Laxer from Rose-Hulman Institute of Technology in the United States. Cary's contribution to the community has been one of service to the conferences of SIGCSE. He was program co-chair of the SIGCSE Technical Symposium in 1993 and general co-chair in 1995. He has been the long-standing face behind the registration desk of the SIGCSE Technical Symposium since 1996. He also has been registrar and treasurer of the ITiCSE conference. He has also worked with ABET, becoming Commissioner Chair in 2020-2021.

The 2021 SIGCSE Test of Time award was awarded to was "The Incredible Shrinking Pipeline," authored by Tracy Camp. The paper was originally printed in Communications of the ACM in 1997. This paper was the first article devoted to exploring and analyzing data related to women's participation in computing and revealed just how many women the field of computing had lost from 1980 to 1994. It is the most cited paper about gender issues in undergraduate computing.

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

The 2020 ACM International Computing Education Research Conference (ICER 2020) had two best paper awards, and an honorable mention. The Best Reviewed Paper Award was given to two papers who had the maximum possible overall score from reviewers and strong positive recommendations from their meta-reviewers. The papers were: "Exploring Student Behavior Using the TIPP&SEE Learning Strategy", authored by Diana Franklin, Jean Salac, Zachary Crenshaw, Saranya Turimella, Zipporah Klain, Marco Anaya (University of Chicago), Cathy Thomas (Texas State University) and "What Do We Think We Think We Are Doing?: Metacognition and Self-Regulation in Programming", authored by James Prather (Abilene Christian University), Brett A. Becker (University College Dublin), Michelle Craig (University of Toronto), Paul Denny (University of Auckland), Dastyni Loksa (University of Washington), Lauren Margulieux (Georgia State University). Special mention was given to: "Exploring the Enacted Computing Curriculum in K-12 Schools in South Asia: Bangladesh, Nepal, Pakistan, and Sri Lanka", authored

by Tehreem Anwar, Arturo Jimenez, Arsalan Bin Najeeb, Bishakha Upadhyaya (Knox College), Monica M. McGill (Knox College & CSEdResearch.org)for its call to action on the scope of international research.

The John Henry Award is selected by the conference attendees and was presented to "Hedy: A Gradual Language for Programming Education", authored by Felienne Hermans (Leiden University)

In 2021 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: "How a Remote Video Game Coding Camp Improved Autistic College Students' Self-Efficacy in Communication" by Andrew Begel, Microsoft Research; James Dominic, Clemson University; Conner Phillis, KeyMark, Inc.; Thomas Beeson, Clemson University; Paige Rodeghero, Clemson University. The Second Best paper was "Inside the Mind of a CS Undergraduate TA: A Firsthand Account of Undergraduate Peer Tutoring in Computer Labs" by Julia M. Markel, UC San Diego; Philip J. Guo, UC San Diego. The Third Best paper was "Understanding Immersive Research Experiences that Build Community, Equity, and Inclusion" by Audrey Rorrer, UNC Charlotte; Breauna Spencer, University of California, Irvine; Sloan Davis, Google; Sepi Hejazi Moghadam, Google; Deborah Holmes, UNC Charlotte; Cori Grainger, Google.

In the Position Papers and Curricula Initiatives category the Best paper was "Creating a Multifarious Cyber Science Major" by Raymond W. Blaine, U.S. Military Academy; Jean R. S. Blair, U.S. Military Academy; Christa M. Chewar, U.S. Military Academy; Rob Harrison, U.S. Military Academy; James J. Raftery, U.S. Military Academy; Edward Sobiesk, U.S. Military Academy. The Second Best paper was "Confronting Inequities in Computer Science Education:A Case for Critical Theory by Aleata Hubbard Cheuoua, WestEd. The Third Best paper was "Developing an Interdisciplinary Data Science Program" by Mariam Salloum, University of California, Riverside; Daniel Jeske, University of California, Riverside; Wenxiu Ma, University of California, Riverside; Vagelis Papalexakis, University of California, Riverside; Christian Shelton, University of California, Riverside; Vassilis Tsotras, University of California, Riverside; Shuheng Zhou, University of California, Riverside.

In CS Education Research category the best paper was "Real Talk: Saturated Sites of Violence in CS Education" by Yolanda A. Rankin, Florida State University; Jakita O. Thomas, Auburn University; Sheena Erete, DePaul University. The Second Best paper was "Investigating the Impact of the COVID-19 Pandemic on Computing Students' Sense of Belonging" by Catherine Mooney, University College Dublin; Brett A. Becker, University College Dublin. The Third Best paper was "Superficial Code-guise: Investigating the Impact of Surface Feature Changes on Students' Programming Question Scores" by Max Fowler,

University of Illinois at Urbana-Champaign; Craig Zilles, University of Illinois at Urbana-Champaign.

The Best Paper of ITiCSE 2021 was " `It's a bit weird, but it's ok'? How female Computer Science students navigate being a minority" by Emily Winter, Lisa Thomas and Lynne Blair, with Honorable Mention given to: "Teaching testing with modern technology stacks in undergraduate software engineering courses" by Scott Chow, Tanay Komarlu and Phillip Conrad.

5.   Describe conference activity

SIGCSE Sponsored 3 conferences in this reporting year:
ICER 2020, held virtually, was originally scheduled in Dunedin, New Zealand. August 8-13, 2020. Attendance: 319

SIGCSE Technical Symposium 2021, held virtually, was originally scheduled in Toronto, Canada. March 13-20, 2021. Attendance: 1756.

ITiCSE 2021, held virtually, was originally scheduled in Paderborn, Germany. June 26-27, 2021 (working groups), Main conference June 28-July 1, 2021. Attendance numbers are not final, but there were over 250 attendees registered for the event.

6. Comment on special projects and non-conference programs that provided service 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 2020 call resulted in 30 applications of which three were funded for an acceptance rate of 10%. Sue Sentance and Hayley Leonard from the Raspberry Pi Foundation, Cambridge, UK were awarded $5,000 for a project titled "Developing criteria for K-12 learning resources in computer science that challenge stereotypes and promote diversity." Michael Lodi, Marco Sbaraglia and Simone Martini from Alma Mater Studiorum - Università di Bologna, Bologna, Italy were awarded $4,800 for a project titled "Big Ideas of Cryptography." Rita Garcia from University of Adelaide, Adelaide, Australia was awarded $3,006 for a project titled "Student communication during group projects: Reporting on gender bias language."

The May 2021 call resulted in 37 applications of which four were funded for an acceptance rate of 11%. Monica McGill from CSEdResearch.org and Michelle Friend from University of Nebraska Omaha, USA, were awarded $4,500 for a project titled "Solve this! Problems of practice teachers face in K-12 CS Education." Francisco Castro, Earl W. Huff Jr., Gayithri Jayathirtha, Yerika Jimenez, Minji Kong, Natalie Araujo Melo, Amber Solomon, and Jennifer Tsan from University of Massachusetts Amherst, USA were awarded $4,098 for a project titled "Telling Our Narratives: Expanding Equity Within Computing Education." Nasser Giacaman, University of Auckland, New

Zealand was awarded $4,960 for a project titled "Git Utilities for Instructors and Education Researchers." Evelyn Zayas from Rasmussen University, Melbourne, Florida, USA was awarded $3,360 for a project titled "Develop Kahoot Interactive Lessons for AP CS Principles."

ITiCSE 2021 had five working groups on the following topics: (1) Post-COVID Educational Landscapes, (2) Towards a Curricula Framework to Support the Design of eSports Courses in Higher Education, (3) Chronicling the Evidence for Broadening Participation, (4) Exploring and Assessing Practical Computing Competencies, (5) Planning a Conceptual Framework Approach for Teaching Cloud Fundamentals. 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 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 March 12 and March 13 for 3 hours each day as an event held before the 2021 Technical Symposium. The workshop was organized by Ran Libeskind-Hadas (Harvey Mudd College) and Cynthia Lester (Georgia State University).

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 Providence, Rhode Island, USA in February 2022.

SIGCSE has a Travel Grant Program for faculty and teachers who have never attended the SIGCSE Technical Symposium. Due to the online nature of the Technical Symposium in 2021, the board suspended this program. Those awarded travel grants in 2020 and not able to use them will be allowed to use them in 2022. The program is expected to resume in 2022.

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

A doctoral consortium ran virtually just prior to the 2020 The International Computing Education Research Conference (ICER). The students presented their work to the discussants and engaged in discussion about various topics with regard to graduate school, research, and careers. The doctoral consortium was attended by 18 graduate students in computer science education. 11 of the participants were women, 5 were men, and 2 participants did not disclose their gender. 8 participants were from the United States, 2 from Canada, 4 from Europe, 1 from Africa, 2 from New Zealand, and 1 from Australia. SIGCSE typically provides travel grants to the students and partial funding for lodging during the workshop and also during ICER 2020. However, since the conference was virtual, travel support was not needed. Students instead only received free

registration for the conferences. The SIGCSE Board will continue to fund up to twenty Doctoral Consortium grants for participants of the ICER conference in 2021.

There was also a doctoral consortium virtually associated with ITiCSE 2021. 11 students attended the event, which was supported ACM Europe. The doctoral consortium was organized by Neena Thota, (University of Massachusetts Amherst, USA) and Andreas Mühling, (Christian-Albrechts-Universität zu Kiel, Germany)and focused on nurturing students' research and orienting them in the ITiCSE community.

7. Key Issues for the Next 2-3 Years

The main challenge is the adaptation of conferences from strictly in-person events to hybrid or fully online events. For 2021, all of our conferences were scheduled to be online only events. The challenge for these events is to make them as valuable to the community in terms of engagement as in-person events. These types of events also present an opportunity to engage those who were previously unable to attend in-person events for various reasons with the community. For 2022, we polled the SIGCSE community and the overwhelming response was that the community wanted to return to in-person events while still allowing those unable to travel to participate. As such, we have asked all conferences for 2022 to develop a plan to allow forms of virtual participation together with the in-person event. Each conference will develop their own plan for "hybrid" and we look forward to piloting new ideas. However, the challenges of the logistics of hybrid events still exist and will continue to exist for years to come. However, as of the end of this year, all four of SIGCSE's conference have steering committees to help guide and shape the direction of the conferences.