



## Contents

SIGCSE Board .....	1
SIGCSE News in Brief .....	1
Upcoming Dates and Deadlines .....	2
SIGCSE Organizational Updates .....	2
SIGCSE 2020 Recap .....	4
ACM Data Science Task Force Calls for Curricula Feedback and Example Courses .....	8
SIGCSE Special Projects Grants Awards: November 2019 Round .....	9
ICER 2020 Preview .....	10
Member Spotlight .....	11

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## SIGCSE Board

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## SIGCSE News in Brief

Welcome to the April 2020 issue of the Bulletin.

The recent COVID-19 pandemic has altered so many aspects of the world we once knew, and the effects on SIGCSE are no exception. We have all enjoyed attending live conferences, working and teaching classes in person, visiting with extended family any time we wanted, and participating in countless activities with kids and friends. We now are mostly working remotely, attending virtual meetings and conferences, seeing our extended family on computer screens, and creating our own activities at home. Have our lives changed? Definitely. Will we ever return to the lives we once knew? Not exactly.

Instead of looking to the past and longing for the comfort of the world we used to know, we must now look to the future and design the world we want. Engineers have always been problem *finders*, but we are also problem *solvers*. This pandemic is not a setback but is rather a setup for

an opportunity to rethink what we want the new *status quo* to be. We are encouraged and excited to see how the academic, professional, and personal activities are changed when (not if) the pandemic is over.

This issue contains an article from the SIGCSE Board about the ramifications of COVID-19, followed by an article by the SIGCSE 2020 conference chairs. There is also an article from the ACM Data Science Task Force, the SIGCSE Special Projects Grants Awards from November 2019, and a preview of ICER 2020. In our member spotlight, we interviewed the SIGCSE

Historian, Briana Morrison of the University of Nebraska Omaha.

Take a look at the Upcoming Dates and Deadlines section to see if there is a conference coming up you want to attend or where you can submit a paper. And as you are looking forward to meeting your SIGCSE colleagues in person at a future conference, remember the song “A Million Dreams” from “The Greatest Showman” that said, “I think of what the world could be, a vision of the one I see ...We can live in a world that we design.” We hope you enjoy the *Bulletin*!

### Upcoming Dates and Deadlines

Conference	Location	Dates	Full Paper Submission Deadline
<a href="#">ITiCSE 2020</a>	Trondheim, Norway	June 17-19, 2020	Already passed
<a href="#">ICER 2020</a>	Dunedin, New Zealand	August 10-12, 2020	Already passed
SIGCSE 2021	Toronto, Ontario, Canada	March 17-21, 2021	Not posted yet

Other conferences operate in cooperation with SIGCSE and are posted on the SIGCSE web site at <https://sigcse.org/sigcse/events/incoop.html>.

### SIGCSE Organizational Updates

By Adrienne Decker, SIGCSE Chair

On behalf of the SIGCSE Board, I hope that everyone is adjusting to these unprecedented times. From emergency remote teaching, to isolating in our homes, to taking care of ourselves and families, and adjusting to this new existence, the current world situation has touched all of us in numerous ways. As a SIGCSE community, there has been much discussion of how these changes will impact our courses and students on the SIGCSE-members listserv. If you are not already a member of this wonderful community resource, feel free to see this page (<https://sigcse.org/sigcse/membership/mailling-lists.html>) for information for how to join us in that discussion.

The upcoming months usually finds our organization getting ready for two conferences, ITiCSE and ICER. This year, ITiCSE was scheduled to be held in Trondheim, Norway in June, and ICER was scheduled to be held in Dunedin, New Zealand in August. The ITiCSE conference organizers with support of the ITiCSE Steering Committee and SIGCSE Board made the decision to create an online experience for attendees this June. The ICER conference organizers, with support of the SIGCSE Board, were able to make this decision before the conference submission deadline and have been working to make a virtual experience for the community in August. This is truly unprecedented and the timeline in which this change needed to occur is short. The leadership of both ITiCSE and ICER has been working hard

on this transition and has accelerated our timeline of looking at virtual conference participation options, which was already on the agenda for this board's term. We are excited to see what is in store for both events and encourage our membership to keep updated on planning, schedules and events (<https://iticse.acm.org/> and <http://icer.acm.org/>).

As most of our community is aware, the annual SIGCSE Technical Symposium was scheduled at a critical moment in the history of the COVID-19 global pandemic and was not able to continue as an in-person experience this year. When the conference and SIGCSE leadership was leaving Portland in March, we were facing conference bills and penalties approaching \$1 million USD. After the work of ACM staff and our tireless conference planners at dLPlan, we were able to reduce the amount owed by SIGCSE to just under \$400,000 for conference-related expenses and a total of about \$450,000 after including required ACM overhead fees. The SIGCSE organization's fund balance at the end of FY2019 was \$1.08M. We are required to keep approximately \$550K as a fund balance to be considered a viable SIG for ACM. In short, the financial situation of the organization is critical, and the final situation will become clear in the coming weeks. The board will be looking at long-term financial planning goals within the coming months as we better understand the financial impact of the cancellation.

As someone who was invited into the discussions in the days leading up to the symposium, there are simply no words to express the tireless level of dedication, effort, and energy displayed by this year's conference leadership team: Jian Zhang, Mark Sherriff, Sarah Heckman, Alvaro Monge, and Pam Cutter. They simply left no stone unturned in collecting information, devising creative solutions, communicating with the conference attendees, and executing on their plans. They worked for over a year to bring this year's symposium together, fielded a record number of

submissions, and likely would have floored a record number of attendees (based on registration number trends before March 1). And within 24 hours, they had recreated a conference program for those intending to be on the ground in Portland that would have provided a fulfilling experience for the community. At the end of our time in Portland, I was honored to be able to thank them in person, but it was truly heartbreaking not to see their vision come to life this year.

However, less than a week later, I was back (virtually) with this amazing group of individuals listening to their plans for an online experience to help bring as much of the content of the symposium to attendees as was possible given the short timeframe. They took over a year to organize the first conference and less than two months to organize the second. It is an amazing feat and the absolute reason being part of this community has been so important to me for the better part of two decades. Announcements about the availability of this content will be forthcoming to all registered conference attendees.

Planning is underway (and has been for quite some time) for the SIGCSE Technical Symposium 2021 in Toronto, Ontario, Canada. While it is not clear what our world will look like in March 2021, the conference leadership team and SIGCSE Board are looking into multiple contingencies for that event. As plans are finalized, they will be announced to the community (<http://sigcse2021.sigcse.org/>). There will be a Technical Symposium in 2021, and we are looking forward to that event and bringing our community together, in whatever form that takes.

The SIGCSE Board is looking to the community to support our volunteers in their endeavors to create experiences this calendar year that will engage our community and move our field forward. SIGCSE and its activities (including our conference organization and program

committees) are run by volunteers. The names and faces you see on the website and on the ground are members of our SIGCSE community and we are grateful for their time and dedication to making these events successful. To all of our community: be safe, be well, and we hope to see you soon.



### **SIGCSE 2020 Recap**

By Jian Zhang and Mark Sherriff, SIGCSE 2020 Symposium Co-Chairs

When the leadership team met in Minneapolis after SIGCSE 2019 to discuss what we wanted from SIGCSE 2020, we spoke at length about our desire that SIGCSE 2020 would be a conference everyone would remember for a long time.

Well ... we suppose, in a sense, we succeeded.

First and foremost, we hope that everyone in our community is well and that your conversion to “emergency remote instruction” has been as smooth as possible. We know that COVID-19 has touched us all in many ways, perhaps even more acutely in the classroom as we have helped students with their own struggles - from the transition to being home, to family members and friends getting sick, to even themselves falling ill.

Second, we again want to express our immense gratitude to the thousands of people in the community that contributed in some part to

SIGCSE 2020! The outstanding program and organizing committees, our support team from the SIGCSE Board, our keynote speakers that were willing to convert to being remote on a moment’s notice, our student volunteers, everyone that submitted their work, everyone that reviewed or meta-reviewed, our awesome sponsors and exhibitors, our literally tireless event planning company staff, and, especially everyone that registered - you all had a hand in putting together what would have been an AMAZING conference!

And just because we didn’t get to celebrate that work when we usually do doesn’t mean we will not get to celebrate it in the future! Everyone in the community should be proud of the work that they put into SIGCSE 2020 and we, as a leadership team, could not be more thankful for each and every one of you.

We would like to take a moment to recognize all the submissions and the best papers from SIGCSE 2020. The SIGCSE Symposium promotes high-quality scholarship and community engagement around computer science education. We continued the practice of reviewer discussions, an expanded associate program committee, and three paper submissions tracks, recognizing the differences in scope and review criteria between (1) CS education research, (2) experience reports and tools, and (3) curriculum initiatives. Over 850 reviewers provided each paper with at least 3 reviews; and all other submissions with at least 2 reviews. Reviewers, along with 75 Associate Program Chairs and 14 Track Chairs, discussed submissions to come to a consensus. Program Chairs made final selections based on recommendations, importance, novelty, and timeliness. Table 1 shows the number of submissions reviewed and accepted in each category.

Track	# Submitted	# Accepted	Acceptance Rate
Papers (CS Education Research, Experience Reports and Tools, Curriculum Initiatives)	544	171	31%
Panels	54	26	48%
Special Sessions	33	12	36%
Workshops	64	30	47%
ACM Student Research Competition	44	26	59%
Birds of a Feather	85	30	35%
Demos	30	10	33%
Lightning Talks	41	20	49%
Nifty Assignments	30	6	20%
Posters	184	115	63%

Table 1 – SIGCSE 2020 Submission and Acceptance Statistics

This year the Program Chairs selected three best papers from each of the paper tracks for their accomplishment of high quality, exemplifying the expectations of the track, and novelty and broad appeal to reviewers. All best papers received at least one nomination from reviewers, high ratings, and excellent comments from reviewers. The top three papers in each track are shown below.

#### Best Papers for CS Education Research

1. **Competitive Enrollment Policies in Computing Departments Negatively Predict First-Year Students' Sense of Belonging, Self-Efficacy, and Perception of Department** by An Nguyen, *Harvey Mudd College*; Colleen M. Lewis, *Harvey Mudd College*
2. **Dual-Modality Instruction and Learning: A Case Study in CS1** by Jeremiah Blanchard, *University of Florida*; Christina Gardner-McCune, *University of Florida*; Lisa Anthony, *University of Florida*

3. **What Are Cybersecurity Education Papers About? A Systematic Literature Review of SIGCSE and ITiCSE Conferences** by Valdemar Švábenský, *Masaryk University*; Jan Vykopal, *Masaryk University*; Pavel Čeleda, *Masaryk University*

#### Best Papers for Experience Reports and Tools

1. **Applying NCWIT Protocol to Broaden Participation in Computing: A Case Study of CS@Mines** by Tracy Camp, *Colorado School of Mines*; Christine Liebe, *Colorado School of Mines*; Michelle Slattery, *Peak Research, NCWIT ES Consultant*
2. **A Comparison of Two Pair Programming Configurations for Upper Elementary Students** by Jennifer Tsan, *North Carolina State University*; Jessica Vandenberg, *North Carolina State University*; Zarifa Zakaria, *North Carolina State University*; Joseph B. Wiggins, *University of Florida*; Alexander R.

Webber, *University of Florida*; Amanda Bradbury, *North Carolina State University*; Collin Lynch, *North Carolina State University*; Eric N. Wiebe, *North Carolina State University*; Kristy Elizabeth Boyer, *University of Florida*

3. **Reviewing CS1 Materials through a Collaborative Software Engineering Exercise: An Experience Report** by Jessica Young Schmidt, *North Carolina State University*

#### Best Papers for Curriculum Initiatives

1. **Design Principles behind *Beauty and Joy of Computing*** by Paul Goldenberg, *Education Development Center*; June Mark, *Education Development Center*; Brian Harvey, *University of California, Berkeley*; Al Cuoco, *Education Development Center*; Mary Fries, *Education Development Center*
2. **Teaching Autonomous Systems at 1/10th-scale: Design of the F1/10 Racecar, Simulators and Curriculum** by Abhijeet Agnihotri, *Oregon State University*; Matthew O'Kelly, *University of Pennsylvania*; Houssam Abbas, *Oregon State University*; Rahul Mangharam, *University of Pennsylvania*
3. **Creating a Balanced Data Science Program** by Joel C. Adams, *Calvin University*

The SIGCSE 2020 leadership team does have some plans in the works for what we can do for online SIGCSE 2020 presentations. First, all authors should have received an invitation from us to upload a video and supplemental materials to the program chairs. We hope to have materials available to the community via the SIGCSE 2020 Technical Symposium website by May 4, 2020, and we will be communicating to all our attendees and the broader community about how to access the submissions. This new part of the SIGCSE 2020 website will contain the logo and link to all supporters, a link to the PDF program with all supporter and exhibitor ads and will have a link for virtual supporter

trade show booths available to attendees in addition to any content you provide. So be on the lookout for that!

In the meantime, the SIGCSE 2021 leadership team is gearing up for the Technical Symposium on March 17-20 in Toronto. We are considering options to incorporate some SIGCSE 2020 presentations into SIGCSE 2021 and will follow up as we know more. Also, with our sibling conferences ITiCSE and ICER going virtual, we will work with those leadership teams to see what virtual options we can offer for SIGCSE 2021, regardless of the world situation next March. We recognize that this is something our community is interested in and we are working on some ideas.

Through all of this, our sponsors and exhibitors have been incredibly supportive, and we cannot thank them enough for their continued support of the Technical Symposium, the SIGCSE community, and everything that many of them are doing to aid us during “emergency remote instruction.” SIGCSE 2020’s supporters included: Platinum: GitHub Education, Google, Intel, and Microsoft; Gold: Gradescope by Turnitin, Codio, NSF, Rephactor, Turing’s Craft, and zyBooks; Silver: ABET, AWS Educate, and IBM; and Bronze: AnitaB.org.

Thanks to everyone again for all the time and effort you put into SIGCSE 2020. It certainly wasn’t the conference we were expecting, but the submission and registration numbers show that our community is strong, is growing, and is still incredibly passionate about CS education! We miss all of you so much and can’t wait to get back together as one big SIGCSE family in Toronto!

Jian Zhang and Mark Sherriff  
SIGCSE 2020 Symposium Co-Chairs

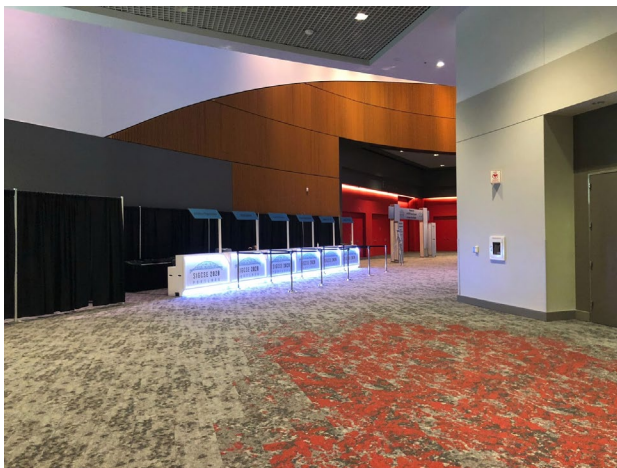
Sarah Heckman, Pam Cutter, and Alvaro Monge  
SIGCSE 2020 Program Co-Chairs



Mark Sherriff and Larry Merkle  
SIGCSE 2021 Symposium Co-Chairs

Pam Cutter, Alvaro Monge, and Judy Sheard  
SIGCSE 2021 Program Co-Chairs

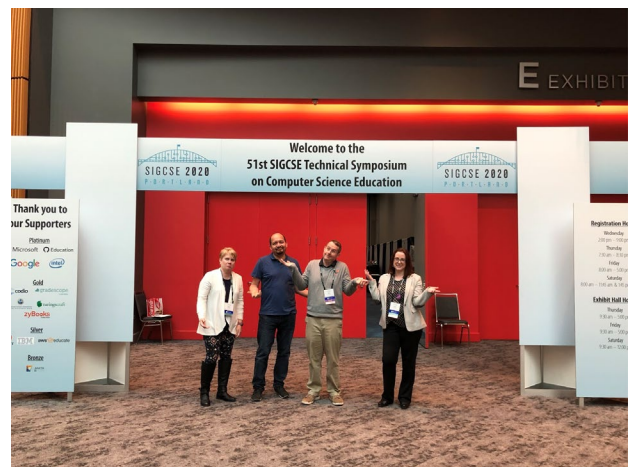
P.S. Voting on the 2021 logo still occurred online! Here's the logo for next year!



SIGCSE 2020 registration ready to go on Tuesday!  
Photo credit: Mark Sherriff



Sarah Heckman checking in with Cary Laxer  
Photo credit: Mark Sherriff



Pam Cutter, Alvaro Monge, Mark Sherriff, and Sarah Heckman outside the exhibit hall in Portland after the conference was canceled.  
Photo credit: Zach Butler

## ACM Data Science Task Force Calls for Curricula Feedback and Example Courses

By Andrea Danyluk and Paul Leidig

At the August 2017 ACM Education Council meeting, a task force was formed to add to the *broad, interdisciplinary conversation* on data science, with an articulation of the role of *computing discipline-specific contributions* to this emerging field. As an inherently interdisciplinary area, data science both draws from and generates interest within many fields, including computer science.

The ACM Data Science Task Force recently released Draft 2 of *Computing Competencies for Undergraduate Data Science Curricula* available at: <http://dstf.acm.org/DSReportDraft2Full.pdf>. As the ACM Education Board Co-Chairs note in their introduction to the document, this work represents an effort to put our own (i.e., computing) data science house in order. It is not an effort to claim ownership or even primacy in data science. Instead, the hope is that this work will represent a productive step in recommending computing-based competencies for undergraduate data science programs and in expressing our enthusiasm for more expansive and inclusive conversations in the future.

In developing the current draft of *Computing Competencies for Undergraduate Data Science Curricula*, the Task Force looked to other ACM curricular volumes for inspiration. Accordingly, the report identifies computing Knowledge Areas relevant to data science and, within each, articulates competencies – knowledge, skills, and dispositions – for graduates of such programs. The draft also includes Tier attributions (Core T1, Core T2, and Elective) for competencies.

At this time, the Task Force welcomes participation from the SIGCSE community and, more broadly, educators with an interest in

undergraduate Data Science curricula. How can you help?

**Provide feedback** on the Draft 2 report. Feedback can be submitted at <https://tinyurl.com/DSTF-feedback>.

**Submit an example course** from your undergraduate Data Science program. Following the model adopted for Computer Science Curricula 2013 (a joint project of ACM and IEEE Computer Society), the Task Force will include examples of fielded courses in the next draft. The purpose is to provide the community with material for inspiration and use in their own Data Science programs. For more, see <http://dstf.acm.org/callForExamples.html>.

**Spread the word.** The Task Force has presented their work at SIGCSE, the Joint Statistical Meetings, and other venues. **The Task Force welcomes discussion with and feedback from all data science constituencies.** Please share this with your data science colleagues. All of the information here, as well as much more, is published online at <http://dstf.acm.org>.

**In summary, the ACM Data Science Task Force welcomes your input.** The Task Force also welcomes feedback by email to the Co-Chairs:

- Andrea Danyluk  
([andrea@cs.williams.edu](mailto:andrea@cs.williams.edu))
- Paul Leidig ([leidigp@gvsu.edu](mailto:leidigp@gvsu.edu))



## **SIGCSE Special Projects Grants Awards: November 2019 Round**

By Laurie Murphy, SIGCSE Board Member

Special Project Grants of up to \$5,000 USD are available to SIGCSE members to support projects that will bring some clear benefit to the computing education community in the form of new knowledge, a resource, or good practice in learning, teaching, or assessment.

The SIGCSE Board is pleased to announce SIGCSE Special Projects grant awards from the November 2019 round. For this round 38 applications were received. Five projects were chosen for funding. This gave an overall acceptance rate of 13%. The following projects have been funded:

### **The Firsts: Exploring the Intersectional Experiences of Black Women in Computing Who Were First to be Conferred Ph.D.s in Computing/Computer Science at Colleges/Universities**

Applicants: Jakita O. Thomas, Auburn University, Auburn, Alabama, USA,  
Yolanda A. Rankin, Florida State University, Tallahassee, Florida, USA

This project will explore the intersectional experiences of Black Women in Computing who were the first to complete a Ph.D. in Computing/Computer Science (C/CS) from their respective institutions (1980's – present).

### **Mastery Learning in Programming Courses**

Applicant: Matthias Hauswirth, Università della Svizzera italiana (USI), Lugano, Switzerland

This project will plant the seeds for a community of practice on Mastery Learning for Programming Courses by making our lessons learned and resources available in an easily adoptable way.

### **An Online Tool for Easy-to-set-up and Auto-gradable Full Tracing Exercises**

Applicant: Wei Jin, Georgia Gwinnett College, Lawrenceville, Georgia, USA

This project will create a web-based system that allows instructors to set up auto-gradable full tracing exercises easily using pythontutor.com, a popular open-source code visualization tool, as the underlying system.

### **The Crossroads of Computer Science: Stories of 'Sideways' and 'Hidden' Computer Scientists**

Applicant: Brett Becker, University College Dublin, Belfield, Ireland

This project aims to promote diversity and inclusion in CS by curating stories of computer scientists who either came into CS 'sideways'—that is, not with a traditional academic background, or are now 'hidden' computer scientists—those who were trained in CS but have gone on to pursue positions that are not in the traditional confines of CS graduates.

### **Developing Coding Instruction Videos for K12 Hearing Impaired Students Using American Sign Language**

Applicant: Daniela Marghitu, Auburn University, Auburn, Alabama, USA

A number of ambitious projects such as ASLCORE 6 and ASLClear 7 are working on creating American Sign Language (ASL) signs for STEM disciplines. For example, in the computer science domain, ASLCORE has produced signs for concepts such as “Recursion,” “Debugger,” “Linked List,” and “Variable.” This project aims to make computer science concepts, using block-based coding, a more inclusive experience for hearing impaired students.

Over 100 projects have been funded since the program started in 2003. See the complete [List of Previous Projects](#) for an idea of the range of

projects that have been supported. Submissions are typically considered twice per year and projects to be funded are announced to the community in the SIGCSE *Bulletin* and on the SIGCSE website and SIGCSE-announce forum. Due to the financial impact of the cancellation of the 2020 Technical Symposium on the SIGCSE organization, there will only be one round of submissions this year. The next deadline for submissions will be **November 15, 2020**. Please note the specific requirements for the [SIGCSE Special Projects Grant Application Process](#), including that the applicant must be a SIGCSE member to be eligible. Questions are welcome and should be sent to [apply@sigcse.org](mailto:apply@sigcse.org).

### ICER 2020 Preview

By Adon Moskal, Anthony Robins, Renee McCauley, Amy Ko

You are warmly invited to the sixteenth annual ACM International Computing Education Research (ICER) conference, which will be held ... in your living room! The dates (North American) remain 10-12 August 2020, but a later end date is under consideration (please see the website for updates).

We had hoped to welcome you all to Dunedin, New Zealand this year, but because of the COVID-19 pandemic the excitement of ICER is now happening online! We are filled with mixed emotions: sad that we can't all enjoy the freezing August rains together in person but thrilled to be able to experiment with this new format!

ICER is a highly regarded forum for presenting and publishing high-quality research in computing education. With a strong emphasis on discussion and feedback, ICER affords a convivial and supportive environment for established and emerging researchers alike. The Call for Participation has closed, but there are so many reasons to attend the conference this year:

- The inaugural 'virtual ICER!' Whether this

ends up being a one-off occurrence, or the first in a new age of online or blended conferences, you want to be able to say in years to come: "I was there!"

- A lower registration rate! (like ... a lot lower!)
- This year, research papers will have a 10-page limit excluding references. Yes, you read that correctly – ten ... full pages ... of mouthwatering ICER content per paper!
- There is something for everyone in the eclectic range of topics on offer at an ICER conference, making for an interesting and thought-provoking event for all in attendance!
- ICER also hosts posters and lightning talks (3-minute presentations) which are used to articulate an idea for a research study, provide an update on current research, or invite collaborators!
- The Work in Progress Workshop held prior to the conference provides participants with an opportunity to gain critical and in-depth feedback on their research ideas or projects!
- A staple for doctoral students, ICER also plays host to the SIGCSE Doctoral Consortium, held the day before the main conference! Participants will also present their work at the conference in a dedicated poster session!
- Some truly amazing conference food! (depending, of course, on what's left in your fridge...)

So, get those webcams ready because we look forward to 'seeing' you @ ICER2020 in August!

For full details, please see the ICER website: <https://icer.acm.org/>

## Member Spotlight

In this feature of the Bulletin, we highlight members of the SIGCSE community. In this issue, *Bulletin* co-editor Jeffrey Miller interviewed Briana Morrison.



Briana Morrison

photo credit: Joshua Preston

Briana Morrison is an Assistant Professor at the University of Nebraska Omaha. Prior to joining the college of IS&T, Briana worked for IBM for 8 years as a software developer and then transitioned to academia. She was an Assistant Professor at Southern Polytechnic State University (now Kennesaw State University) for 20 years in the Computer Science department. She was the Undergraduate Coordinator for the Computer Science and Software Engineering programs, helped to found the Computer Game Design and Development degree program, and served as the lead for 2 successful ABET accreditation visits. She has a bachelor's degree in Computer Engineering from Tulane University, a master's in computer science, and a Ph.D. in Human-Centered Computing from the Georgia Institute of Technology. Her research area is Computer Science Education where she explores cognitive load theory within programming, broadening participation in computing and expanding and preparing computing high school teachers.

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

That's a bit of a long story - but I guess you could say the light switch flipped when I signed up for the NSF Funded Bootstrapping workshops. I

graduated from Tulane University with a Computer Engineering degree (A's in computer science classes, C's in electrical engineering classes) and knew I wanted to work in software development. I took a developer job with IBM in Atlanta in 1987 and worked on a project from requirements gathering to maintenance - the entire software development lifecycle. When I was a support Team Lead, and out on maternity leave with my first child, I found out that IBM was moving my entire product group from Atlanta to Charlotte. I took a golden parachute (got paid to leave the company) and went to finish my master's in computer science at Southern Polytechnic State University. In my last quarter there, the department chair asked if I would be willing to teach an introductory programming class (I had been a TA during my undergrad days and did object-oriented programming education while at IBM). That led to an adjunct position that resulted in a full-time lecturer position in 1996. I ended up at SPSU for 20 years. I was supposed to attend my first SIGCSE conference in 1998 in Atlanta. But my second child was born the week before the conference, so I delayed until 1999 in New Orleans - thanks to that same department chair, Mike Murphy, encouraging me to go. I had the most wonderful time, met fabulous people, learned so much to help my teaching, and totally fan-girled over all the textbook authors. I immediately joined the organization and the listserv.

Through the listserv, I found out about the "Bootstrapping Research in CS Education" project and applied. While initially rejected, there turned out to be an opening, and I was invited to participate in the two-year project to get CS Education off the ground in the US. That project was the turning point in my life where I was introduced to research that I liked, found interesting, and thought I could make a difference. I've been involved with the SIGCSE community and CS Education research ever since.

**Could you describe some of the ways you've been involved in developing and enhancing computer science education?**

I've been involved with some really interesting projects through the years. First the Bootstrapping project: bringing CS educators, trained only in computer science, together to teach them about education research - really interdisciplinary research. I was part of the Disciplinary Commons for Computing Educators (DCCE) to explore creating communities of practice for high school computing teachers. I've worked on ABET accreditation efforts and tools to support that work. When I decided to go back and do a PhD focusing on CS Education research, I explored how educational psychology principles could be applied to the computer science education realm - things like cognitive load, worked examples, and dual modality. Probably my most successful research has been in incorporating subgoal labels into introductory computer science education - it was my first NSF funded grant. So far, together with colleagues Adrienne Decker from the University at Buffalo and Lauren Margulieux from Georgia State University, we have developed subgoal labels for the common topics in an introductory programming course in Java. In pilot data we found that the subgoal labels help students perform better in the short term (on quizzes) and more importantly help those most likely to withdraw or fail the course to persist and succeed. We are currently finishing up incorporating the subgoal labels into worked examples with videos and practice problems and assessments into an eBook for release in August. We plan to write another grant proposal to do the same for Python and scale up the research on the effectiveness.

**Can you explain how you became interested in SIGCSE history?**

That was kind of by accident. I was an At Large member of the SIGCSE Board when we were planning for the 50<sup>th</sup> celebration of the SIGCSE

organization which occurred in 2018. The Board was bouncing around ideas on how to celebrate the organization and someone had the idea of documenting the history. I had been the social media position for a couple of conferences and thought it would be a fun idea to post one blurb about each of the 50 years during the celebration year. Fifty posts in 52 weeks - it sounded like something that people might be interested in and, at the time, didn't sound like it would be very difficult. So I dug in and started researching. I found it fascinating searching for trivial facts and information about how the organization had been founded. And I owe a huge debt of gratitude for the many wonderful SIGCSE members that provided me with information, stories, pictures, and friendship during the project. The further into the project I progressed, the more I started recognizing names and places and it brought back such wonderful memories.

I'm now excited to be the SIGCSE historian to continue to document the ongoing important occurrences in our organization. This summer I'll be working on a project to document the history of all the SIGCSE conferences - gathering all the information and pictures for the conferences into a single website that the organization will own. Seeing how much information was lost to time from the early years of the organization motivates me to ensure that we don't lose any more.

**What challenges are there in maintaining an accurate history of a group?**

The first challenge is simply missing information. If there were records kept of the registration numbers of early conferences or a list of attendees, it seems to be lost now. Things that in the moment don't seem particularly important can be of significant historical value later on. I would love to have the names of all the original signatures on the petition to ACM to create the Special Interest Group on Computer Science Education - but all I have is a very fuzzy

photocopy with fairly illegible signatures. Deciding what will be important for historical reasons is something I've had to learn - and I thank the Charles Babbage Institute, the ACM History subcommittee, and the UNO archivists for helping me to continue to learn.

**What are the biggest challenges you see for computer science education today?**

I think there are several, so I'll list them in no particular order.

First is the need for more researchers trained in computer science education. We need more people who understand computer science, the learning sciences, and education theory to help us develop curricula, measure effectiveness, and improve how we educate.

Second is the need to incorporate computing into more disciplines in the K-12 (primary) space. I originally thought that all pre-university students needed a computing class - not for career training but to be an educated citizen in the 21<sup>st</sup> century with ubiquitous computing in nearly everything we touch. I realize now, that in the US, it will take too long to get that many teachers trained to be that kind of specialist and there just aren't the funds or will from administrators to do that. So now I think that we need to incorporate computing into all the other disciplines - math, science, art, music, language arts, social studies, even foreign languages. Teaching pre-service teachers about computing and how it can help their students learn about a subject will allow much more "computing as a tool" knowledge into the K-12 space.

Third is the need for more ethics and human-centeredness education to be incorporated into the computing undergraduate and graduate degree programs. We are producing more and more computing professionals at the undergraduate and graduate level who have minimal understanding of the impacts of computing on society. Just because you can

develop an algorithm to make a video of someone long since dead give a speech, should you? To what end? Does the potential harm from this tool outweigh the entertainment or perceived historical value? Requiring software developers to consider the potential ways that the software could be used in nefarious ways before publication or release, along with education on how to speculate on those uses, is desperately needed.

**What do you enjoy doing when you are not working?**

I have two grown children now that I adore and I love to be able to do things for them - shopping, cooking, decorating, etc. I used to be an avid scrapbooker and I hope to get back to that (maybe after tenure!) I love to travel and see new places and experience new things. During quarantine I've found watching bald eagles' nests - from eggs to hatchlings to nestlings - has been fascinating. And I've done a ton of cooking and playing games on my iPad.