Inspire the next generation of technologists with open and accessible CS education for all

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Meet the people behind the CS education tools, funding and programs at Google. Visit us in Booth 102 for information on CS education resources.

Inspire passion for CS
Make CS accessible

Be a part of the discussion:

Holistic Development of Underrepresented Students through Academic – Industry Partnerships
Thursday, March 9 from 1:45 - 3:00pm in Room 607

New Tools and Solutions to Address the CS Capacity Crunch
Thursday, March 9 from 3:45 - 5:00pm in Room 618-619

Improving Effectiveness of CS Teacher Professional Development
Thursday, March 9 from 6:30 - 7:20pm in Room 205

Curriculum and Interview Recommendations for Software Engineering Preparedness
Friday, March 10 from 10:45am - 12:00pm in Room 618-619

Diversity Barriers in K-12 Computer Science Education: Structural and Social
Friday, March 10 from 3:45 - 5:00pm in Room 612
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“The best ed tool to come by in the last 5 years. I ask myself how I ever did without it.”

- DAN GARCIA UC Berkeley

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Welcome to Seattle and SIGCSE 2017! Seattle is a vibrant, forward-thinking city that offers the perfect backdrop for SIGCSE. We are sure that together, the Symposium and Seattle’s many attractions, such the Space Needle and Pike Place Market, will engage your mind and your sense of adventure.

The SIGCSE 2017 conference theme—Inspire, Innovate, Improve!—highlights our aim to inspire computing educators to innovate new teaching strategies, and to improve those strategies by engaging in the self-reflection and evaluation necessary to deliver the best possible learning outcomes for all. Our program showcases computer science education efforts in K-12, lower- and upper-level undergraduate courses, open-source software, outreach, and education research. A variety of sessions are sure to help you find what you are looking for, from Papers on experience reports, new curricula, and research studies, to Panels, Special Sessions, Workshops, Posters, Demonstrations, Birds of a Feather and the ACM SIGCSE Student Research Competition. We encourage you to visit our exciting Exhibits showcasing the latest in hardware, software tools, textbooks, educational programs, and educational research.

On Thursday, Jeannette M. Wing, Corporate Vice President for Microsoft Research, will deliver our opening plenary address. Jeannette will challenge us to embrace uncertainty in computing, which abounds in the real world where data drives discovery, as she helps us understand what implications this has for undergraduate computer science curricula. During our Saturday lunch, Mitchel Resnick, Professor of Learning Research at the MIT Media Lab, will discuss strategies for fulfilling Seymour Papert’s dream of using programming as a new way for all children to explore, experiment, and express themselves. This year’s recipient of the SIGCSE Award for Lifetime Service to the Computer Science Education Community, Mats Daniels (Associate Professor and director of undergraduate studies at the Department of Information Technology, Uppsala University, Sweden), will speak at the First Timers’ Lunch on Friday and Gail Chapman (Director of Outreach for Exploring Computer Science), recipient of the SIGCSE Award for Outstanding Contributions to Computer Science Education, will give the Friday morning plenary address. We look forward to hearing the keynotes by these valued members of the SIGCSE community.

The SIGCSE Symposium strives to promote high-quality scholarship and community engagement around computer science education. 916 volunteers provided each Paper, Panel, Special Session, and Workshop with at least 5 reviews, and each Poster, Birds of a Feather, Demonstration, Lightning Talk, and ACM Student Research Competition submission with at least 3 reviews. These reviewers, along with 50 Associate Program Chairs (APC) and 8 Track Chairs, discussed the papers to come to consensus and resolve misunderstandings. The Program Chairs made final selections based on Track Chair and APC recommendations as well as importance to the SIGCSE community, novelty, and timeliness. The table at right shows the number of submissions received and accepted in each submission category.

This year we recognize a new category of the top 25% of accepted papers as “Exemplary papers”, highlighted by the Program Chairs for their accomplishment of high quality, novelty and broad appeal to reviewers. The Program Chairs also selected three best papers, that each received at least 2 of the highest rankings from reviewers. The Best CS Education Research Paper is “Computing with CORGIS: Diverse, Real-world Datasets for Introductory Computing” by Austin Bart, Ryan Whitcomb, Dennis Kafura, Cliff Shaffer and Eli Tilevich. The Best New Program Paper is “Infrastructure for Continuous Assessment of Retained Relevant Knowledge” by Kathleen Timmerman and Travis Doom. The Best Experience Report Paper is “Making Noise: Using Sound-Art to Explore Technological Fluency” by Erik Brunvand and Nina McCurdy.

The 2017 Pre-symposium Events include: POGIL in CS: Small Steps & Giant Leaps (Clif Kussmaul, et al); Managing the Early Academic Career for Women Graduate Students Pursuing Faculty Positions in Undergraduate Computing Programs (CRA-W); Managing the Early Academic Career for Women Faculty in Undergraduate Computing Programs (CRA-W); Strategies for Integrating Driverless Cars into the Computing Curricula (SIGCAS); Aligning to the ACM Cybersecurity-infused CS Transfer Curriculum (CCECC); Making K-12 CS Accessible (Access10K); POSSE Roundup—Student Participation in Humanitarian Open Source Software (Gregory Hislop, et al); NSF UP CS Ed Research Event for Emerging CS Education Researchers at SIGCSE (Eileen Kraemer, et al); Seeking Global, Industry and Training Provider Perspectives to Inform the ACM Joint Task Force for Cybersecurity Education (ACM JTF for Cybersecurity Education); and the Department Chairs Roundtable (SIGCSE).
A symposium as large as SIGCSE 2017 involves the efforts of many people and we wish to thank all of them for their help in making the event a success. Our program committee members (Ruth Anderson, Bo Brinkman, Alison Clear, Tom Cortina, Michelle Craig, Lynn Degler, Paul Denny, Brian Dorn, Phil East, Charles Hardnett, Rachelle Kristof Hippler, Sarah Heckman, Matt Jadud, Cary Laxer, Sara Melnick, Brad Miller, Larry Merkle, Christine Moore, David Musicant, Jill Pieritz, S. Monisha Pulimood, Ann Sobel, Leenkhat Soh, Leigh Ann Sudol-DeLyser, Valerie Henderson Summet, Paul Tymann, Steven Wolfman, and Jian Zhang) have worked tirelessly on many details.

This year the Associate Program Chairs and Track Chairs served as discussion leaders to help reviewers resolve differences in individual perspectives to create a more comprehensive review process (Eric Aaron, Liz Adams, Joel Adams, Rajeev Agrawal, Carl Alphonse, Christine Alvarado, Ruth Anderson, Marie Bienkowski, Don Blaheta, Kristy Elizabeth Boyer, Bo Brinkman, Alistair Campbell, Lilian Cassel, Michael Clancy, Steve Cooper, Adrienne Decker, Leigh Ann Sudol-DeLyser, John Dougherty, Kathi Fisler, Judith Gal-Ezer, Don Goelman, Elizabeth Hawthorne, Sarah Heckman, Cecily Heiner, Sharon Hsiao, Daniel Joyce, Andrew Ko, Michael Kölling, David Levine, Colleen Lewis, Lester McCann, Robert McCartney, Kris Nagel, Jody Paul, Manuel Pérez-Quíones, S. Monisha Pulimood, Samuel Rebelsky, Brad Richards, Judy Sheard, Mark Sherriff, Beth Simon, Jaime Spacco, Luther Tychonievich, Paul Tymann, Jan Vahrenhold, Tammy Vandegrift, Henry Walker, Ellen Walker, Steven Wolfman, Ursula Wolz, and Jian Zhang).

The International Liaison Committee (Craig Anslow, Karen Bradshaw, Paul Denny, Daniel Fokum, Mehdi Jazayeri, Carsten Kleiner, Tsunenori Mine, Kazushi Ohya, Marco Silva, Ben Stephenson, Claudia Szabo, Gary Wong, and Ming Zhang) ensures that attendees from all over the world find SIGCSE 2017 a welcoming and rewarding experience.

The many student volunteers, led this year by Sarah Heckman, are the engine that makes the Symposium go, by preparing conference bags, checking registration badges, distributing t-shirts, and counting attendance at sessions.

Our supporters, vendors, exhibitors and in-kind donors make the Symposium possible. We especially wish to thank our platinum supporters: Google, IBM, Intel, Microsoft, and Vocareum; our gold supporters: Oracle Academy and ZyBooks; our silver supporters: ABET, Codio, GitHub, Gradescope, LEGO Education and Terradata University Network; and our bronze supporter: NVIDIA.

Your experience at SIGCSE 2017 is influenced in countless ways by the planners at Executivevents: Cara Candler, Elizabeth Taggart, Brooke Daley, Roxane Rose, and Shannon Cunningham. Your experience has been further enhanced by the SIGCSE 2017 Puzzle Challenge by Zach Butler (Rochester Institute of Technology) and the CONNECT networking app by Tracy Camp and her CONNECT Team (Colorado School of Mines).

A debt of gratitude is owed to Amber Settle (President) and the entire SIGCSE Board. Additional thanks go to Bob Beck and Scott Grissom (SIGCSE Symposium Site Coordinators), April Mosqus and Donna Cappo (ACM staff), Lisa Tolles (Sheridan Publishing), Bill Guckert (WRG Design), Sun Kim (Washington State Convention Center), Emily Elkind and Meaghan Fox (Sheraton Seattle), and Kelly Amig (Grand Hyatt). We’d also like to extend a special thank you to Aaron Davis of Visit Seattle, who went above and beyond to help support the conference committee and representatives of all the organizations involved. These outstanding individuals have contributed a myriad of details that go into the planning of a successful conference and we are grateful to each and every one of them.

Our home institutions (Aarhus University, NC State University, UC Berkeley, and Virginia Tech) have generously supported our service to the SIGCSE community as Symposium organizers.

We are inspired and humbled by the engagement and support of the SIGCSE community and volunteers. We thank you for your contributions, and we are excited to welcome you to SIGCSE 2017, where we hope you will connect with friends and colleagues old and new, and Inspire, Innovate, and Improve computer science education.
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Ursula Wolz, Riversound Solutions
Jian Zhang, Texas Woman’s University
### WiFi Network:
**SIGCSE2017**

**Access Code:**
**seattle2017**

### SIGCSE 2017 Symposium At-A-Glance

#### Wednesday · March 8

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<td>Registration</td>
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<td>Registration</td>
<td>Atrium Lobby, Exhibit Hall</td>
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<tr>
<td>8:30 am - 10:00 am</td>
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<tr>
<td>10:00 am - 10:45 am</td>
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<tr>
<td>10:00 am - 11:30 am</td>
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<td>10:45 am - 12:00 pm</td>
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<td>First Timer's Lunch &amp; Lifetime Service</td>
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<tr>
<td>12:00 pm - 1:45 pm</td>
<td>Lunch Break</td>
<td>On your own</td>
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<tr>
<td>1:45 pm - 3:00 pm</td>
<td>Technical Sessions</td>
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<tr>
<td>1:45 pm - 5:00 pm</td>
<td>Student Research Posters</td>
<td>Exhibit Hall</td>
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<tr>
<td>3:00 pm - 3:45 pm</td>
<td>Break, Exhibits &amp; Demos</td>
<td>Exhibit Hall</td>
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<tr>
<td>3:00 pm - 4:30 pm</td>
<td>NSF Showcase #2</td>
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<tr>
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<tr>
<td>8:00 am - 5:00 pm</td>
<td>Registration</td>
<td>Atrium Lobby, Exhibit Hall</td>
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<tr>
<td>8:30 am – 10:00 am</td>
<td>Outstanding Contributor Awardee Keynote: Gail Chapman</td>
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<tr>
<td>10:00 am - 10:45 am</td>
<td>Break, Exhibits &amp; Demos</td>
<td>Exhibit Hall</td>
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<tr>
<td>10:00 am - 11:30 am</td>
<td>NSF Showcase #3</td>
<td>Exhibit Hall</td>
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<tr>
<td>10:00 am - 12:00 pm</td>
<td>Poster Session #1</td>
<td>Exhibit Hall</td>
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<tr>
<td>10:45 am - 12:00 pm</td>
<td>Technical Sessions</td>
<td>See pages 21-22</td>
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<td>12:00 pm – 1:45 pm</td>
<td>Lunch Break</td>
<td>On your own</td>
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<td>12:00 pm – 1:45 pm</td>
<td>CRA Faculty Lunch</td>
<td>Room 6B</td>
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<td>12:00 pm – 1:45 pm</td>
<td>International Lunch</td>
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<tr>
<td>1:45 pm – 3:00 pm</td>
<td>Technical Sessions</td>
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<td>3:00 pm – 3:45 pm</td>
<td>Break, Exhibits &amp; Demos</td>
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<tr>
<td>3:00 pm – 4:30 pm</td>
<td>NSF Showcase #4</td>
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<td>3:00 pm – 5:00 pm</td>
<td>Poster Session #2</td>
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<td>5:10 pm – 6:00 pm</td>
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<td>NCWIT Reception</td>
<td>Sheraton, Cirrus Ballroom</td>
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<tr>
<td>6:10 pm – 7:00 pm</td>
<td>CCSC Business Meeting</td>
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<td>7:00 pm – 8:00 pm</td>
<td>Community College Reception</td>
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<td>7:00 pm – 10:00 pm</td>
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<tr>
<td>8:30 am – 11:45 am</td>
<td>Registration</td>
<td>Atrium Lobby, Exhibit Hall</td>
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<tr>
<td>8:45 am – 10:00 am</td>
<td>Undergraduate ACM SRC Semifinalists</td>
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<tr>
<td>8:45 am – 10:00 am</td>
<td>Graduate ACM SRC Semifinalists</td>
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<td>Technical Sessions</td>
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<td>10:00 am – 10:45 am</td>
<td>Break, Exhibits &amp; Demos</td>
<td>Exhibit Hall</td>
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<tr>
<td>10:00 am – 11:30 am</td>
<td>NSF Showcase #5</td>
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<tr>
<td>10:45 am – 12:00 pm</td>
<td>Technical Sessions</td>
<td>See pages 28-29</td>
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<td>10:45 am – 12:00 pm</td>
<td>Lightning Talks</td>
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<td>12:00 pm – 2:00 pm</td>
<td>Luncheon &amp; Closing Keynote Mitchel Resnick</td>
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http://sigcse2017.sigcse.org
Thursday, March 9 - Opening Keynote
8:30 am - 10:00 am
Room: 6E

Embracing Uncertainty
Jeannette M. Wing, Corporate Vice President, Microsoft Research
Sources of uncertainty abound. Noisy sensor data. Machine learning methods. Hardware and software failures. The physical world. Human behavior. In the past, computer science handled uncertainty by abstracting it away or avoiding it. In the future, instead, computer science needs to embrace uncertainty as a first-class entity. How do we represent uncertainty in our computational models? Probabilities. Thus, we need to make sure that every computer science student learns probability and statistics.

Data science, where data drives discovery and decision-making in all fields of study, underscores the importance of having a command of probability and statistics. At the heart of data science is data analytics whose methods such as machine learning rely on probabilistic and statistical reasoning. And since data serve as the currency of any data analytics workflow, explicit representation of probability distributions can help us calculate the degrees of uncertainty throughout a flow. Programming and software engineering courses will need to elevate the status of such data flows to that given to algorithms, data structures, and modular design.

In this talk I will discuss the implications of embracing uncertainty on undergraduate computer science curricula.

Thursday, March 9 - First Timer’s Lunch Keynote & 2017 SIGCSE Award for Lifetime Service to the Computer Science Education Community
12:00 pm - 1:45 pm
Room: 6B

The Educator Identity and its Impact
Mats Daniels, Associate Professor, Department of Information Technology
Uppsala University, Uppsala, Sweden
I’m going to address the educator identity from two perspectives. The first is my own perspective, where I will present what my educator identity means to me and what this has led me to devote time and energy on. My vision is that I want to be part of creating learning environments that benefit both the learner as an individual and society in general from many dimensions and purposes. As an educator I want to support our students on a route to become able and conscious graduates who will have a positive impact and be seen as truly professionally competent wherever their career takes them. This sounds hunky-dory, but how can it be achieved? I don’t think there are any silver bullets that will lead to such a setting, but I do believe that knowing more is a way forward. Having no clear way forward was frustrating and this is where involvement in educator communities, like the SIGCSE community, became essential. Giving time and effort to such communities is, in my opinion, rewarding it self manyfold, not least, in my case, for aiding to understand the issues and opportunities involved in pursuing my vision. Developing my identity as educator through being part of the SIGCSE community, with its abundance of role models, has been invaluable for me. I hope my work will be an inspiration for others.

Computing and engineering education research is the other big part in my strive for fulfilling my educator dreams. Or should I say pipe dreams as in the title of my thesis “Developing and Assessing Professional Competencies: a Pipe Dream? Experiences from an Open-Ended Group Project Learning Environment”, which I defended on the day thirty years after I enrolled as a PhD student? No, I don’t see it as a pipe dream even though there are much more to look into and understand regarding education in our field. This research area is the second perspective I want to bring up regarding educator identity, and I will use the research lens to look at the impact we as educators have on our students. My focus will be on the influence educators have on students learning with regard to aspects beyond pure computing skills. I will in the presentation build on work in our research group (UpCERG), which lately has included studying issues related to identity, both students and educators. I especially want to draw attention to the potential impact we as educators have on the “gap” between graduating truly professionally competent persons and merely technically competent persons.
Keynote Presentations

Friday, March 10 - Morning Keynote & 2017 SIGCSE Award for Outstanding Contributions to Computer Science Education
8:30 am - 10:00 am
Room: 6E

Inspire, Innovate, Improve! What does this mean for CS for All?
Gail Chapman, Director of Outreach, Exploring Computer Science

In January 2016, President Obama unveiled the CS for All initiative. With all the attention and publicity surrounding CS for All and increased support from a variety of corners over the ensuing year, it is easy to become complacent and start believing that we have “arrived”.

During her 2016 SIGCSE keynote, Jan Cuny talked about catching the wave and using it to our advantage. This talk will focus on where we go from here. We caught the wave; now what do we do to ensure that we don’t get swallowed by it? What lessons can be learned from an election that featured the likes of fake news, Wiki leaks, rogue email servers, runaway tweets and showed in stark relief the divides that exist in our country.

Computer science represents one of those divides. Given this and the fact that addressing the educational inequities prevalent in computer science was front and center in the CS for All announcement, what better time is there to renew our commitment to broadening participation in computing?

As educators we have a powerful opportunity and responsibility in the wake of the blowback from the election - to educate, to listen, to remind ourselves constantly that we live in a very diverse country. We have no shortage of innovation in computer science, but who are we inspiring, what impact are those innovations having, and what can we do to learn from the lessons of the past to improve CS education? And above all, how do we respond to the challenges before us with empathy for those who are impacted by the decisions we make?

Saturday, March 11 - Luncheon & Closing Keynote
12:00 pm - 2:00 pm
Room: 6B-6C

Fulfilling Papert’s Dream: Computational Fluency for All
Mitchel Resnick, Professor of Learning Research, MIT Media Lab

Fifty years ago, Seymour Papert and colleagues developed Logo as the first programming language for children. Today, millions of children are participating in learn-to-code initiatives, but Papert’s dream remains unfulfilled. Papert (who passed away last summer) saw programming not as a set of technical skills but as a new form of fluency — a new way for all children to explore, experiment, and express themselves. In this presentation, I will examine strategies for fulfilling Papert’s dream. Drawing on examples from our Scratch online coding community, I will discuss how we can design programming environments and activities to help all children, from all backgrounds, to develop their thinking, develop their voices, and develop their identities.
**SIGCSE 2017 Schedule of Events**

**Wednesday, March 8**

### Pre-Symposium Events

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
</table>
| 8:30 am - 5:00 pm | Department Chairs Roundtable  
Mary Lou Maher, University of North Carolina at Charlotte                                             | Room 616-617 |
| 8:30 am - 5:00 pm | Making K-12 Computer Science Accessible  
Richard Ladner, University of Washington; Andreas Stefik, University of Nevada Las Vegas; Brianna Blaser, University of Washington | Room 604   |
| 8:30 am - 5:00 pm | Managing the Early Academic Career for Women Faculty in Undergraduate Computing Programs  
Sheila Castaneda, Clarke University; Susan Rodger, Duke University | Room 606   |
| 8:30 am - 5:00 pm | Managing the Early Academic Career for Women Graduate Students Pursuing Faculty Positions in Undergraduate Computing Programs  
Sheila Castaneda, Clarke University; Susan Rodger, Duke University | Room 607   |
| 8:30 am - 5:00 pm | POGIL in CS: Small Steps & Giant Leaps  
Clifton Kussmaul, Muhlenberg College; Helen Hu, Westminster College; Chris Mayfield, James Madison University | Room 602   |
| 8:30 am - 5:30 pm | POSSE Roundup – Student Participation in Humanitarian Open Source Software  
Gregory Hislop, Drexel University | Room 613-614 |
| 8:30 am - 5:00 pm | Seeking Global, Industry and Training Provider Perspectives to Inform the ACM Joint Task Force for Cybersecurity Education  
Diana Burley, The George Washington University; Matt Bishop, University of California, Davis; Siddharth Kaza, Towson University; Elizabeth Hawthorne, Union County College; David Gibson, United States Air Force Academy; Scott Buck, Intel Corp. | Room 618-619 |
| 1:00 pm - 5:00 pm | Strategies for Integrating Driverless Cars into the Computing Curricula  
Michael Goldweber, Xavier University; Karla Carter, Bellevue University; Shannon Conley, Michael Kirkpatrick, Dee Weikle, Emily York, James Madison University; Michael Quinn, Seattle University | Room 603   |
| 1:30 pm - 5:00 pm | Aligning to the ACM Cybersecurity-infused Computer Science Transfer Curriculum  
Elizabeth Hawthorne, Union County College; Cara Tang, Portland Community College; Cindy Tucker, Bluegrass Community and Technical College; Christian Servin, El Paso Community College | Room 612   |
| 1:30 pm - 5:00 pm | NSF UP CS Ed Research Event for Emerging CS Education Researchers at SIGCSE  
Eileen Kraemer, Russ Marion, Murali Sitaraman, Clemson University | Room 611   |
| 6:00 pm - 8:00 pm | AWS-CSforAll Consortium Reception  
Space is limited and you must register in advance for this event. For information and registration, log onto: [bit.ly/aws_reception](http://bit.ly/aws_reception) and use password: csforall |           |

### Wednesday Workshops  7:00 pm - 10:00 pm

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Title</th>
<th>Room</th>
</tr>
</thead>
</table>
| Workshop 101 | GP: A General Purpose Blocks-Based Language  
John Maloney, Michael Nagle, Jens Mönig, Human Advancement Research Community; Mark Guzdial, Georgia Institute of Technology | Room 618-619 |
| Workshop 102 | Designing Empirical Education Research Studies (DEERS): Creating an Answerable Research Question  
Sarah Heckman, North Carolina State University; Jeffrey Carver, University of Alabama; Mark Sherriff, University of Virginia | Room 616-617 |
| Workshop 103 | A Web-Based IDE for Teaching with Any Language  
David Malan, Harvard University; Nikolai Onken, Amazon, Dan Armendariz, Harvard University | Room 613-614 |
### Wednesday, March 8

#### Schedule of Events

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Title</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshop 104</td>
<td>Increasing Student Interest in Data Structures Courses with Real-World Data and Visualizations Using BRIDGES</td>
<td>Room 606</td>
</tr>
<tr>
<td></td>
<td>Kalpathi Subramanian, The University of North Carolina at Charlotte; Jamie Payton, Temple University</td>
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<tr>
<td>Workshop 105</td>
<td>Using AppVis to Build Data-rich Apps with MIT App Inventor</td>
<td>Room 611</td>
</tr>
<tr>
<td></td>
<td>Fred Martin, University of Massachusetts Lowell; Samantha Michalka, Olin College; Harry Zhu, University of Massachusetts Lowell; Jere Boudell, Clayton State University</td>
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<tr>
<td>Workshop 106</td>
<td>An Introduction to the Weka Data Mining System</td>
<td>Room 607</td>
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<tr>
<td></td>
<td>Ingrid Russell, University of Hartford; Zdravko Markov, Central Connecticut State University</td>
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<tr>
<td>Workshop 107</td>
<td>What’s New in BlueJ 4: Git, Stride and More</td>
<td>Room 612</td>
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<tr>
<td></td>
<td>Neil Brown, Amjad Altadmri, University of Kent</td>
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</tr>
<tr>
<td>Workshop 108</td>
<td>Micro Projects: Putting Light and Magic into Learning Computer Systems Concepts</td>
<td>Room 603</td>
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<td></td>
<td>Frank Barry, Appalachian State University</td>
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<tr>
<td>Workshop 109</td>
<td>Teaching Distributed Computing with WorkQueue</td>
<td>Room 604</td>
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<tr>
<td></td>
<td>Aaron Dingler, Seattle Pacific University; Peter Bui, University of Notre Dame</td>
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<tr>
<td>Workshop 110</td>
<td>Peer Instruction in Practice</td>
<td>Room 602</td>
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<tr>
<td></td>
<td>Cynthia Taylor, Joe Hummel, University of Illinois-Chicago; David Hovemeyer, York College; David Bunde, John Dooley, Jaime Spacco, Knox College</td>
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</tr>
</tbody>
</table>

For a full list of workshops and descriptions visit: [http://sigcse2017.sigcse.org/attendees/workshops.html](http://sigcse2017.sigcse.org/attendees/workshops.html)
### Keynote Session

**8:30 am - 10:00 am**  
**Welcome:** Michael E. Caspersen, Symposium Co-Chair, Aarhus University,  
Stephen H. Edwards, Symposium Co-Chair, Virginia Tech  
Plenary Session: Embracing Uncertainty  
Jeannette M. Wing, Microsoft Research  

**Room 6E**

### Thursday Sessions 10:45 am - 12:00 pm

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
</table>
| 10:45 AM              | Assessing Children’s Understanding of the Work of Computer Scientists: The Draw-a-Computer-Scientist Test  
Alexandria K. Hansen, University of California at Santa Barbara; Hilary Dwyer, CU Boulder; Ashley Iveland, Mia Talesfore, Lacy Wright, University of California, Santa Barbara; Danielle Harlow, University of California at Santa Barbara; Diana Franklin, UC Santa Barbara  |
| 11:10 AM              | Assessing Computational Thinking in CS Unplugged Activities  
Brandon Rodriguez, Stephen Kennicutt, Cyndi Rader, Tracy Camp, Colorado School of Mines  |
| 11:35 AM              | Recommendations for Designing CS Resource Sharing Sites for All Teachers  
Mackenzie Leake, Stanford University; Colleen M. Lewis, Harvey Mudd College  |

**Computation Thinking**  
Chair: Marie Bienkowski, SRI International  
Room 611

**Robots & Wearables**  
Chair: Kathi Fisler, WPI  
Room 612

**Novice Learners**  
Chair: Luther Tychonievich, University of Virginia  
Room 613-614

Sessions Themes are Grouped by the Following Color Codes:

- K-12/Novice Learners
- CS1
- Diversity
- Advance Topics
- Learning/Instructional Styles
- TOCE Sessions
- Supporter Sessions
- Workshops, Special Sessions, Panels

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**Additional Sessions**

- **Demo Session #1:** Sarah Heckman, Chair  
Thomas Ball, Microsoft Research; Judith Bishop, University of Stellenbosch; Jonathan De Halleux, Microsoft Research  
Elegit: Git Learning Tool for Students  
Eric Walker, Julia Connelly, David Musicant, Carleton College  

- **NSF Showcase #1** (See page 41 for a complete listing of NSF Showcases)  
Room 6E

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**Schedule of Events**

**Thursday, March 9**

---

**Welcome:** Michael E. Caspersen, Symposium Co-Chair, Aarhus University,  
Stephen H. Edwards, Symposium Co-Chair, Virginia Tech  
Plenary Session: Embracing Uncertainty  
Jeannette M. Wing, Microsoft Research  

**Room 6E**

**Break, Exhibits & Demos**  
Exhibit Hall

**Demo Session #1:** Sarah Heckman, Chair  
Thomas Ball, Microsoft Research; Judith Bishop, University of Stellenbosch; Jonathan De Halleux, Microsoft Research  
Elegit: Git Learning Tool for Students  
Eric Walker, Julia Connelly, David Musicant, Carleton College  

**NSF Showcase #1** (See page 41 for a complete listing of NSF Showcases)  
Exhibit Hall
## Thursday Sessions 10:45 am - 12:00 pm

### Paper Sessions 10:45 AM

**Data**

- Chair: Sharon Hsiao, Arizona State University
- Room 608
  - Teaching Big Data and Cloud Computing with a Physical Cluster
    - Jesse Eickholt, Sharad Shrestha, Central Michigan University
  - Using Programming Process Data to Detect Differences in Students’ Patterns of Programming
    - Adam Carter, Humboldt State University; Christopher Hundhausen, Washington State University
  - Introducing Data Science to School Kids
    - Shashank Srikant, Varun Aggarwal, Aspiring Minds

**Analytics**

- Chair: David Levine, Saint Bonaventure University
- Room 609
  - Exemplary Paper
    - Deconstructing the Discussion Forum: Student Questions and Computer Science Learning
      - Mickey Vellukunnel, University of Florida; Philip Buffum, North Carolina State University; Kristy Elizabeth Boyer, University of Florida; Jeffrey Forbes, Duke University; Sarah Heckman, North Carolina State University; Ketan Mayer-Patel, University of North Carolina
  - Exposed! CS Faculty Caught Lecturing in Public: A Survey of Instructional Practices
    - Scott Grissom, Grand Valley State University; Sue Fitzgerald, Metropolitan State University; Renée McCauley, College of Charleston; Laurie Murphy, Pacific Lutheran University
  - Investigating Student Plagiarism Patterns and Correlations to Grades
    - Jonathan Pierce, Craig Zilles, University of Illinois at Urbana-Champaign

**Transactions on Computing Education 1**

- Chair: Christopher Hundhausen, Washington State University
- Room 615
  - Security Injections@Towson: Integrating Secure Coding into Introductory Computer Science Courses
    - Blair Taylor, Siddharth Kaza, Towson University
  - Heuristic Evaluation for Novice Programming Systems
    - Michael Kölling, Fraser McKay, University of Kent
  - Novice Java Programming Mistakes: Large-Scale Data vs. Educator Beliefs
    - Neil C.C. Brown, Amjad Altadmri, University of Kent

## Special Sessions, Panels, Supporter Sessions 10:45 am - 12:00 pm

<table>
<thead>
<tr>
<th>Panel Session</th>
<th>The Role of CS Departments in The US President’s “CS for All” Initiative</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Mark Guzdial, Barbara Ericson, Georgia Institute of Technology; W. Richards Adrion, U. Mass Amherst; Meagan Garvin, U. Maryland, Baltimore County/CSEE Dept</td>
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<td>Room 6E</td>
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<table>
<thead>
<tr>
<th>Panel Session</th>
<th>Community Engagement with Free and Open Source Software</th>
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<tbody>
<tr>
<td></td>
<td>Christian Murphy, University of Pennsylvania; Kevin Buffardi, California State University, Chico; Josh Dehlinger, Towson University; Lynn Lambert, Christopher Newport University; Nanette Veuilleux, Simmons College</td>
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<td>Room 606</td>
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<table>
<thead>
<tr>
<th>Special Session</th>
<th>CS 1: Beyond Programming</th>
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<tbody>
<tr>
<td></td>
<td>Douglas Baldwin, SUNY Geneseo; Valerie Barr, Union College; Amy Briggs, Middlebury College; Jessen Havill, Denison University; Bruce Maxwell, Colby College; Henry M. Walker, Grinnell College</td>
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<td>Room 602-604</td>
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<thead>
<tr>
<th>Special Session</th>
<th>CS Education Research Knowledge Forum</th>
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<tbody>
<tr>
<td></td>
<td>Kelsey Finkel, CSNYC; Kenneth Graves, Columbia University; Leigh Ann DeLyser, NYC Foundation for CS Education</td>
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<td>Room 607</td>
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<thead>
<tr>
<th>Vocareum Supporter Session</th>
<th>Assessment Strategies For Large CS Classes (See page 31 for abstract)</th>
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<tbody>
<tr>
<td></td>
<td>Christine Alvarado, University of California, San Diego; Sanjay Srivastava, Vocareum</td>
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<td>Room 616-617</td>
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<thead>
<tr>
<th>Intel Supporter Session</th>
<th>Learn How Intel Can Help Your Students Gain Expertise in Parallel Programming (See page 31 for abstract)</th>
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<tbody>
<tr>
<td></td>
<td>James Reinders, HPC Enthusiast</td>
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<td></td>
<td>Room 618-619</td>
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<tr>
<td>Time</td>
<td>Event</td>
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<tr>
<td>12:00 pm - 1:45 pm</td>
<td>First Timer's Lunch: The Educator Identity and Its Impact</td>
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<tr>
<td>12:00 pm - 1:45 pm</td>
<td>Lunch Break</td>
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<tr>
<td>1:45 pm - 5:00 pm</td>
<td>ACM Student Research Competition Poster Session (See page 42)</td>
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**Thursday Sessions 1:45 pm - 3:00 pm**

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<tr>
<th>Paper Sessions</th>
<th>1:45 pm</th>
<th>2:10 pm</th>
<th>2:35 pm</th>
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</thead>
<tbody>
<tr>
<td><strong>K-12 Professional Development</strong></td>
<td>Reflecting on Three Offerings of a Community-Centric MOOC for K-6 Computer Science Teachers</td>
<td>Exemplary Paper: Preparing STEM Teachers to offer New Mexico Computer Science for All</td>
<td>A Comparative Analysis of Online and Face-to-Face Professional Development Models for CS Education</td>
</tr>
<tr>
<td>Chair: Colleen Lewis, Harvey Mudd College</td>
<td>Katrina Falkner, Rebecca Vivian, Nick Falkner, The University of Adelaide; Sally-Ann Williams, Google Australia</td>
<td>Irene Lee, Massachusetts Institute of Technology; Maureen Psaila Dombrowski, Los Alamos National Laboratory; Ed Angel, University of New Mexico</td>
<td>David Webb, Hilarie Nickerson, Jeffrey Bush, University of Colorado Boulder</td>
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<td>Room 611</td>
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<tr>
<td><strong>Making</strong></td>
<td>Toward Computational Making with Madeup</td>
<td>Understanding High School Students' Reading, Remixing, and Writing Codeable Circuits for Electronic Textiles</td>
<td>Creating Cool Stuff - Pupils’ Experience of the BBC micro:bit</td>
</tr>
<tr>
<td>Chair: Jian Zhang, Texas Woman’s University</td>
<td>Chris Johnson, University of Wisconsin, Eau Claire</td>
<td>Breenne K. Litts, Utah State University; Yasmin B. Kafai, Debora Lui, Justice Walker, Sari Widman, University of Pennsylvania</td>
<td>Sue Sentance, Jane Waite, King’s College London; Steve Hodges, Microsoft Research; Emily MacLeod, Lucy Yeomans, King’s College London</td>
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<tr>
<td>Room 612</td>
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<tr>
<td><strong>Addressing Motivation</strong></td>
<td>Gamifying Course Modules for Entry Level Students</td>
<td>Exemplary Paper: Improving Students’ Learning and Achievement in CS Classrooms through Computational Creativity Exercises that Integrate Computational and Creative Thinking</td>
<td>Getting Students to Earnestly Do Reading, Studying, and Homework in an Introductory Programming Class</td>
</tr>
<tr>
<td>Chair: Jody Paul, Metropolitan State University of Denver</td>
<td>Yin Pan, Sumita Mishra, David Schwartz, Rochester Institute of Technology</td>
<td>Duane Shell, Leen-Kiat Soh, Abraham Flanigan, Markeya Peteranetz, Elizabeth Ingramah, University of Nebraska-Lincoln</td>
<td>Alex Edgcomb, zyBooks/UC Riverside; Frank Vahid, UC Riverside/zyBooks; Roman Lysecky, University of Arizona/ zyBooks; Susan Lysecky, zyBooks</td>
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<tr>
<td>Room 613-614</td>
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<tr>
<td><strong>Architecture</strong></td>
<td>Impact of Prior Exposure to the PLP Instruction Set Architecture in a Computer Architecture Course</td>
<td>A Collaborative Approach to Teaching Software Architecture</td>
<td>MIPSUnit: A Unit Testing Framework for MIPS Assembly</td>
</tr>
<tr>
<td>Chair: S. Monisha Pulimood, The College of New Jersey</td>
<td>Sohum Sohoni, Scotty D. Craig, Shaowen Lu, Arizona State University</td>
<td>Arie van Deursen, Mauricio Aniche, Jooop Aué, Rogier Slag, Michael de Jong, Alex Nederlof, Eric Bouwers, Delft University of Technology</td>
<td>Zachary Kurmas, Grand Valley State University</td>
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<tr>
<td>Room 608</td>
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</tbody>
</table>
## Thursday Sessions 1:45 pm - 3:00 pm

### Paper Sessions

**Performance Analytics**
- **Chair:** Don Blaheta, Longwood University
- **Room 609**
- **1:45 pm**
  - **Using Learning Analytics to Investigate Patterns of Performance and Engagement in Large Classes**
  - Hassan Khosravi, University of British Columbia; Kendra Cooper
- **2:10 pm**
  - **Automatically Classifying Students in Need of Support by Detecting Changes in Programming Behaviour**
  - Anthony Estey, University of Victoria; Hieke Keuning, Open University of the Netherlands; Yvonne Coady, University of Victoria
- **2:35 pm**
  - **Exemplary Paper**
  - **Evaluating Neural Networks as a Method for Identifying Students in Need of Assistance**
  - Karo Castro-Wunsch, University of Toronto Mississauga; Alireza Ahadi, University of Technology Sydney; Andrew Petersen, University of Toronto Mississauga

**Transactions on Computing Education 2**
- **Chair:** Karthik Umapathy, University of North Florida
- **Room 615**
- **1:45 pm**
  - **EarSketch: A STEAM-based Approach for Underrepresented Populations in High School Computer Science Education**
  - Brian Magerko, Jason Freeman, Georgia Institute of Technology; Tom McKlin, Sagefox Consulting Group LLC; Mike Reilly, Lanier High School; Elise Livingston, Microsoft; Scott McCoid, Ableton Inc.; Andrea Crews-Brown, Sagefox Consulting Group LLC
- **2:10 pm**
  - **Undergraduate Students’ Perceptions of the Impact of Pre-college Computing Activities on Choices of Major**
  - Monica McGill, Bradley University; Adrienne Decker, Rochester Institute of Technology; Amber Settle, DePaul University

### Special Sessions, Panels, Supporter Sessions 1:45 pm - 3:00 pm

**Panel Session**
- **Increasing Diversity in the Face of Enrollment Increases**
  - Wendy Dubow, NCWIT; Ignatios Vakalis, Cal Poly, San Luis Obispo; Amber Benton, Michigan State University; Helen Hu, Westminster College, Salt Lake City
- **Room 6E**

**Panel Session**
- **Building CS Teaching Capacity: Comparing Strategies for Achieving Large Scale Impact**
  - Carol Fletcher, UT Austin Center for STEM Ed; Leigh Ann DeLyser, CSNYC; Anthony Owen, Arkansas Department of Education; Kimberly Hughes, Moderator, UTeach, The University of Texas at Austin
- **Room 602-604**

**Special Session**
- **Teaching Accessibility**
  - Richard Ladner, University of Washington; Matt May, Adobe
- **Room 606**

**Special Session**
- **Holistic Development of Underrepresented Students Through Academic – Industry Partnerships**
  - Marlon Mejias, Legand Burge, Howard University; Kamar Galloway, Google; Kinnis Gosha, Morehouse College; Jean Muhammad, Hampton University
- **Room 607**

**IBM Supporter Session**
- **Blockchain in the Enterprise**
  - (See page 31 for abstract)
  - Misty Decker, IBM
- **Room 616-617**

**Intel Supporter Session**
- **A Deep Experience on Parallel Programming Techniques and Industry Best Practices**
  - (See page 31 for abstract)
  - Jennifer Dimateo, Intel Corporation
- **Room 618-619**

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http://sigcse2017.sigcse.org
### Thursday, March 9

#### Schedule of Events

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<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>3:00 pm - 3:45 pm</td>
<td>Break, Exhibits &amp; Demos</td>
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</tr>
<tr>
<td>3:00 pm - 3:45 pm</td>
<td><strong>Demo Session #2:</strong> Sarah Heckman, Chair&lt;br&gt;<strong>BlockPy Interactive Demo:</strong> Dual Text/Block Python Programming Environment for Guided Practice and Data Science&lt;br&gt;<strong>Writing Autograders for Snap! And Integrating them Into Your Course</strong>&lt;br&gt;Adrienne Decker, Rochester Institute of Technology; Monica M. McGill, Bradley University</td>
<td>Exhibit Hall</td>
</tr>
<tr>
<td>3:00 pm - 4:30 pm</td>
<td><strong>NSF Showcase #2</strong> <em>(See page 41 for a complete listing of NSF Showcases)</em></td>
<td>Exhibit Hall</td>
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</tbody>
</table>

### Thursday Sessions: 3:45 pm - 5:00 pm

#### Paper Sessions

<table>
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<tr>
<th>Session</th>
<th>Time</th>
<th>Title</th>
<th>Authors/Institutions</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS for All</td>
<td>3:45 pm</td>
<td>Pre-College Computing Outreach Research: Towards Improving the Practice&lt;br&gt;Visions of Computer Science Education: Unpacking Arguments for and Projected Impacts of CS4All&lt;br&gt;Defining a Discipline or Shaping a Community: Constraints on Broadening Participation in Computing</td>
<td>Adrienne Decker, Rochester Institute of Technology; Monic M. McGill, Bradley University; Sara Vogel, City University of New York; Ralf Santo, Indiana University; Dixie Ching, New York University; Joanna Weidler-Lewis, University of Colorado Boulder; Wendy Dubow, NCWIT; Alexis Kaminsky, Kaminsky Consulting, LLC</td>
</tr>
<tr>
<td>Blocks</td>
<td>3:45 pm</td>
<td>From Blocks to Text and Back: Programming Patterns in a Dual-Modality Environment&lt;br&gt;A Visual Programming Environment for Learning Distributed Programming&lt;br&gt;Using Upper-Elementary Student Performance to Understand Conceptual Sequencing in a Blocks-based Curriculum</td>
<td>David Weintrop, Northwestern University; Nathan Holbert, Teachers College, Columbia University; Brian Broll, Akos Ledeczi, Peter Volgyesi, Janos Sallai, Miklos Maroti, Alexia Carrillo, Stephanie Weeden-Wright, Chris Vanags, Vanderbilt University; Joshua Swartz, Hillsbora High School; Melvin Lu, Vanderbilt University; Diana Franklin, Gabriela Skifstad, Reiny Rolock, Isha Mehrotra, Valerie Ding, University of Chicago; Alexander Hansen, UC Santa Barbara; David Weintrop, University of Chicago; Danielle Harlow, UC Santa Barbara</td>
</tr>
<tr>
<td>Collaborative</td>
<td>3:45 pm</td>
<td>Evaluating Student Learning from Collaborative Group Tests in Introductory Computing&lt;br&gt;In-Lab Programming Tests in a Data Structures Course in C for Non-Specialists&lt;br&gt;Interactions of Individual and Pair Programmers with an Intelligent Tutoring System for Computer Science</td>
<td>Yingjun Cao, Leo Porter, UC San Diego; Edwin Knorr, University of British Columbia; Christopher Thompson, British Columbia Institute of Technology; Rachel Harsley, University of Illinois at Chicago; Davide Fossati, Emory University; Barbara Di Eugenio, Nick Green, University of Illinois at Chicago</td>
</tr>
<tr>
<td>Beginning</td>
<td>3:45 pm</td>
<td>Cybersecurity for Future Presidents: An Interdisciplinary Non-majors Course&lt;br&gt;Scenario-Based Inquiry for Engagement in General Education Computing&lt;br&gt;From Blocks to Text and Back: Programming Patterns in a Dual-Modality Environment&lt;br&gt;A Visual Programming Environment for Learning Distributed Programming&lt;br&gt;Using Upper-Elementary Student Performance to Understand Conceptual Sequencing in a Blocks-based Curriculum</td>
<td>Aparna Das, David Voorhees, Cynthia Choi, Carl Landwehr, Le Moyne College; David Kerven, Kristine Nagel, Stella Smith, Sherly Abraham, Laura Young, Georgia Gwinnett College; David Weintrop, Northwestern University; Nathan Holbert, Teachers College, Columbia University; Brian Broll, Akos Ledeczi, Peter Volgyesi, Janos Sallai, Miklos Maroti, Alexia Carrillo, Stephanie Weeden-Wright, Chris Vanags, Vanderbilt University; Joshua Swartz, Hillsbora High School; Melvin Lu, Vanderbilt University; Diana Franklin, Gabriela Skifstad, Reiny Rolock, Isha Mehrotra, Valerie Ding, University of Chicago; Alexander Hansen, UC Santa Barbara; David Weintrop, University of Chicago; Danielle Harlow, UC Santa Barbara</td>
</tr>
</tbody>
</table>
### Thursday, March 9

#### Thursday Sessions 3:45 pm - 5:00 pm

<table>
<thead>
<tr>
<th>Paper Sessions</th>
<th>3:45 pm</th>
<th>4:10 pm</th>
<th>4:35 pm</th>
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<tbody>
<tr>
<td><strong>Feedback</strong></td>
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<tr>
<td>Room 609</td>
<td>3:45 pm - 5:00 pm</td>
<td>Generating Hints and Feedback for Hilbert-style Axiomatic Proofs</td>
<td>Jennifer Polack, Karen Anewalt, University of Mary Washington</td>
</tr>
<tr>
<td></td>
<td>4:35 pm</td>
<td>A Curriculum Model Featuring Oral Communication Instruction and Practice</td>
<td>Raymond Pettit, John Homer, Roger Gee, Abilene Christian University</td>
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<tr>
<td></td>
<td>5:00 pm</td>
<td>Early Break</td>
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<tr>
<td><strong>Transactions on Computing Education 3</strong></td>
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<tr>
<td>Chair: Brian Magerko, Georgia Institute of Technology</td>
<td></td>
<td>Seeing Myself Through Someone Else’s Eyes: The Value of In-Classroom Coaching for Computer Science Teaching and Learning</td>
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</tr>
<tr>
<td>Room 615</td>
<td>3:45 pm - 5:00 pm</td>
<td>Jane Margolis, UCLA; Joanna Goode, University of Oregon; Jean J. Ryoo, Exploratorium; David Bernier, UCLA</td>
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<tr>
<td></td>
<td>5:00 pm</td>
<td>Early Break</td>
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</tbody>
</table>

#### Special Sessions, Panels, Supporter Sessions 3:45 pm - 5:00 pm

<table>
<thead>
<tr>
<th>Special Session</th>
<th>Broadening Participation in Computer Science: Key Strategies from International Findings</th>
<th>Room 6E</th>
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<tbody>
<tr>
<td></td>
<td>Rebecca Vivian, Katrina Falkner, Claudia Szabo, The University of Adelaide</td>
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<tr>
<td><strong>Panel Session</strong></td>
<td>Teaching the Global Impact of Computing</td>
<td>Room 602-604</td>
</tr>
<tr>
<td></td>
<td>Jeff Gray, University of Alabama; Jennifer Rosato, College of St. Scholastica; Bradley Beth, University of Texas at Austin; Nigamanth Sridhar, Cleveland State University</td>
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</tr>
<tr>
<td><strong>Panel Session</strong></td>
<td>Bringing Undergraduate Research Experience in Non-R1 Institutions</td>
<td>Room 606</td>
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<tr>
<td></td>
<td>Farzana Rahman, James Madison University; Helen Hu, Westminster College; Dennis Brylow, Marquette University; Clif Kussmaul, Muhlenberg College</td>
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<tr>
<td><strong>Special Session</strong></td>
<td>Computing in the Arts: Curricular Innovations and Results</td>
<td>Room 607</td>
</tr>
<tr>
<td></td>
<td>Renee McCauley, College of Charleston; Bill Manaris, College of Charleston; David Heise, Lincoln University; Gare Sheller, Kirkwood Community College; Jennifer Jolley, Alan Zaring, Ohio Wesleyan University</td>
<td></td>
</tr>
<tr>
<td><strong>Google Supporter Session</strong></td>
<td>New Tools and Solutions to Address the CS Capacity Crunch (See page 31 for abstract)</td>
<td>Room 618-619</td>
</tr>
<tr>
<td></td>
<td>Chris Stephenson, Google; Kinga Dobolyi, George Mason University; Jeff Forbes, Duke University; Kristy Boyer, University of Florida; Heather Pon-Barry, Mount Holyoke; Josh Hug, University of California Berkeley</td>
<td></td>
</tr>
<tr>
<td><strong>zyBooks Supporter Session</strong></td>
<td>The Power of Integrated Learning for CS -- Teach Concepts, not Logins (See page 32 for abstract)</td>
<td>Room 616-617</td>
</tr>
<tr>
<td></td>
<td>Smita Bakshi, CEO/Co-Founder, Zybooks; Frank Vahid, Co-Founder, Zybooks and University of California, Riverside; Roman Lysecky, Authoring Co-Lead, Zybooks and University of Arizona; Scott Sirowy, Director of Engineering, Zybooks; Alex Edgcomb, Sr. Software Engineer/Research Specialist, Zybooks and University of California, Riverside</td>
<td></td>
</tr>
</tbody>
</table>

#### 5:30 pm - 6:20 pm

- Birds of a Feather Flock #1
  - (See page 36 for a complete listing of Birds of a Feather Flock #1 presentations and room numbers)

#### 6:30 pm - 7:20 pm

- Birds of a Feather Flock #2
  - (See page 37 for a complete listing of Birds of a Feather Flock #2 presentations and room numbers)

#### 7:30 pm - 9:30 pm

- SIGCSE Reception
  - Sheraton Grand Ballroom
SMART CODE FOR SMARTER RESULTS

Visit Intel at Booth 201

Teach Cutting-Edge Parallel Programming and AI Computing

Intel invites you to our sessions on parallel programming methods and artificial intelligence to learn about ways to get the most out of modern hardware.

SESSIONS

THURSDAY, MARCH 9
10:45 a.m.–noon
Learn How Intel Can Help Your Students Gain Expertise in Parallel Programming
Rooms 618/619

THURSDAY, MARCH 9
1:45–3:00 p.m.
A Deep Experience on Parallel Programming Techniques and Industry Best Practices
Rooms 618/619

FRIDAY, MARCH 10
1:45–3:00 p.m.
Artificial Intelligence on Intel Architecture
Room 615

See Our Demos

Visit our booth for demos of the latest software development tools. We're also offering free educator and student resources, Intel® Xeon Phi™ donations, and curriculum for academia.

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*Other names and brands may be claimed as the property of others.
### Friday, March 10

#### Keynote Session
8:30 am - 10:00 am
Welcome: Michael E. Caspersen, Conference Co-Chair, Aarhus University; Stephen Edwards, Conference Co-Chair, Virginia Tech
Plenary Session: Inspire, Innovate, Improve! What does this mean for CS for All?
Gail Chapman, Exploring Computer Science

#### Breakfast with BlueJ and Greenfoot — Introducing Greenfoot 3, BlueJ 4, and Stride
7:00 am - 8:30 am
Michael Kölling, Amjad Altadmri, Neil Brown, Ian Utting, University of Kent

### Friday Sessions
10:45 am - 12:00 pm

#### Paper Sessions

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:45 am</td>
<td>Evaluating the Effect of Using Physical Manipulatives to Foster Computational Thinking in Elementary School</td>
<td>Room 611</td>
</tr>
<tr>
<td>11:01 am</td>
<td>Arts Coding for Social Good: A Pilot Project for Middle-School Outreach</td>
<td>Room 6E</td>
</tr>
<tr>
<td>11:05 am</td>
<td>A Literature Review through the Lens of Computer Science Learning Goals Theorized and Explored in Research</td>
<td>Room 612</td>
</tr>
<tr>
<td>11:09 am</td>
<td>Just the Numbers: An Investigation of Contextualization of Problems for Novice Programmers</td>
<td>Room 612</td>
</tr>
<tr>
<td>11:13 am</td>
<td>An Empirical Study of Debugging Patterns Among Novice Programmers</td>
<td>Room 612</td>
</tr>
<tr>
<td>11:17 am</td>
<td>POGIL Activities in Data Structures: What Do Students Value?</td>
<td>Room 613-614</td>
</tr>
<tr>
<td>11:21 am</td>
<td>Student Perspectives of Team-Based Learning in a CS Course: Summary of Qualitative Findings</td>
<td>Room 613-614</td>
</tr>
<tr>
<td>11:25 am</td>
<td>POGIL Activities in Data Structures: What Do Students Value?</td>
<td>Room 613-614</td>
</tr>
<tr>
<td>11:35 am</td>
<td>iSnap: Towards Intelligent Tutoring in Novice Programming Environments</td>
<td>Room 613-614</td>
</tr>
<tr>
<td>11:39 am</td>
<td>iSnap: Towards Intelligent Tutoring in Novice Programming Environments</td>
<td>Room 613-614</td>
</tr>
</tbody>
</table>

(continued on next page)
### Friday Sessions 10:45 am - 12:00 pm

<table>
<thead>
<tr>
<th>Paper Sessions</th>
<th>10:45 am</th>
<th>11:10 am</th>
<th>11:35 am</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Software Engineering</strong>&lt;br&gt;Chair: Eric Aaron, Vassar College&lt;br&gt;Room 608</td>
<td>Innovative Pedagogical Approaches to a Capstone Laboratory Course in Cyber Operations&lt;br&gt;Mike O’Leary, Towson University</td>
<td>A Study of the Use of a Reflective Activity to Improve Students’ Software Design Capabilities&lt;br&gt;John Coffey, University of West Florida</td>
<td><strong>Exemplary Paper</strong>&lt;br&gt;Incorporating Human Error Education into Software Engineering Courses via Error-based Inspections&lt;br&gt;Valibh Anu, Gurisharan Walia, North Dakota State University; Gary Bradshaw, Mississippi State University</td>
</tr>
</tbody>
</table>

| Mobile<br>Chair: Jaime Spacco, Knox College<br>Room 609 | SAFE: Smart Authenticated Fast Exams for Student Evaluation in Classrooms<br>Kameswari Chebrolu, Bhaskaran Raman, Vinay Chandra Dommeti, Akshay Veer Boddu, Kurien Zacharia, Arun Babu, Prateek Chandan, IIT Bombay | Choosing Face-to-face or Video-based Instruction in a Mobile App Development Course<br>Matthew Boutell, Rose-Hulman Institute of Technology | Creating Engaging Exercises With Mobile Response System (MRS)<br>Debzani Deb, Mohammad Fuad, Mallek Kanan, Winston-Salem State University |

### Special Sessions, Panels, Supporter Sessions 10:45 am - 12:00 pm

<table>
<thead>
<tr>
<th>Special Session</th>
<th>Converting Your Teaching (or Even Your Whole Department!) to Active Learning via POGIL&lt;br&gt;Helen H. Hu, Westminster College; Chris Mayfield, James Madison University; Janice L. Pearce, Berea College</th>
<th>Room 6E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel Session</td>
<td>Volunteer Best Practices for K12 CS&lt;br&gt;Leigh Ann DeLyser, NYC Foundation for CS Education; Tom O’Connell, Code Interactive; Rebecca Novak, ScriptEd; Kevin Wang, TEALS; Diane Levitt, Cornell Tech</td>
<td>Room 602-604</td>
</tr>
<tr>
<td>Panel Session</td>
<td>Computer Science Topics in First- and Second-Year Seminar Courses&lt;br&gt;Valerie Barr, Union College; Bryan Catron, Furman University; Christopher Healy, Furman University; Kate Lockwood, St. Paul Academy; Anil M. Shende, Roanke College; Andrea Tartaro, Kevin Treu, Furman University</td>
<td>Room 606</td>
</tr>
<tr>
<td>Special Session</td>
<td>Computing Education in Liberal Arts Colleges: A Status Report of the SIGCSE Committee&lt;br&gt;Doug Baldwin, SUNY Geneseo; Grant Braught, Dickinson College; Amanda Holland-Minkley, Washington &amp; Jefferson College</td>
<td>Room 607</td>
</tr>
<tr>
<td>Microsoft Supporter Session</td>
<td>Dos and Don’ts of Partnering Software Professionals and Computer Science Classrooms and Why It Matters To You (See page 32 for abstract)&lt;br&gt;Brett Wortzman, Instruction and Training Manager, Microsoft TEALS; Kasey Champion, Computer Science Curriculum Developer, Microsoft Learning</td>
<td>Room 616-617</td>
</tr>
<tr>
<td>Google Supporter Session</td>
<td>Curriculum and Interview Recommendations for Software Engineering Preparedness (See page 32 for abstract)&lt;br&gt;Pierre St. Juste, Google</td>
<td>Room 618-619</td>
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</tbody>
</table>

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<thead>
<tr>
<th>12:00 pm - 1:45 pm</th>
<th>CRA Teaching Track Faculty Lunch</th>
<th>Room 6B</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00 pm - 1:45 pm</td>
<td>Lunch Break</td>
<td>On Your Own</td>
</tr>
<tr>
<td>12:00 pm - 1:45 pm</td>
<td>International Lunch: contact <a href="mailto:sigcse2017-international@cs.vt.edu">sigcse2017-international@cs.vt.edu</a> for information</td>
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</tbody>
</table>
## Friday Sessions 1:45 pm - 3:00 pm

<table>
<thead>
<tr>
<th>Paper Sessions</th>
<th>1:45 pm</th>
<th>2:10 pm</th>
<th>2:35 pm</th>
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<tbody>
<tr>
<td><strong>AP CSP</strong></td>
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<tr>
<td>Chair: Tammy VanDeGrift, University of Portland</td>
<td><strong>Exemplary Paper</strong></td>
<td>Getting Principled: Reflections on Teaching CS Principles at Two College Board University Pilots</td>
<td></td>
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<tr>
<td>Room 611</td>
<td>From Professional Development to the Classroom: Findings from CS K-12 Teachers</td>
<td>Jeff Gray, University of Alabama; Michele Roberts, IUPUI; Jonathan Corley, University of West Georgia</td>
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<td></td>
<td>Lori Pollock, Chrystella Mouza, Amanda Czik, Alexis Little, Debra Coffey, Joan Buttram, University of Delaware</td>
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<tr>
<td><strong>Computers and Music; Undergraduate TAs</strong></td>
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<tr>
<td>Chair: Bo Brinkman, Miami University</td>
<td><strong>Exemplary Paper</strong></td>
<td>Integrating Computer Science into Music Education</td>
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<tr>
<td>Room 612</td>
<td>Using Undergraduate Teaching Assistants in Small Classes</td>
<td>John Peterson, Greg Haynes, Western State Colorado University; Erik Brunvand, University of Utah</td>
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<td></td>
<td>Paul Dickson, Toby Dragon, Adam Lee, Ithaca College</td>
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<tr>
<td><strong>CS1</strong></td>
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<tr>
<td>Chair: Joel Adams, Calvin College</td>
<td><strong>Exemplary Paper</strong></td>
<td>Comparing Outcomes Across Different Contexts in CS1</td>
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<tr>
<td>Room 613-614</td>
<td>Exam Wrappers: Not a Silver Bullet</td>
<td>Bruce Maxwell, Stephanie Taylor, Colby College</td>
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<td></td>
<td>Ben Stephenson, University of Calgary; Michelle Craig, Daniel Zingaro, Diane Horton, Danny Heap, Elaine Huynh, University of Toronto</td>
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<tr>
<td><strong>Algorithms</strong></td>
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<tr>
<td>Chair: Mark Sherriff, University of Virginia</td>
<td><strong>Exemplary Paper</strong></td>
<td>Assessment of Introducing Algorithms with Video Lectures and Pseudocode Rhymed to a Melody</td>
<td></td>
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<tr>
<td>Room 608</td>
<td>Towards a Concept Inventory for Algorithm Analysis Topics</td>
<td>Ben Schreiber, Swarthmore College; John Dougherty, Haverford College</td>
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<td>Mohammed F. Farghally, Virginia Tech; Kyu Han Koh, California State University Stanislaus; Hossameldin Shahin, Virginia Tech; Clifford A. Shaffer, Virginia Tech</td>
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<tr>
<td><strong>Peers &amp; Large Classes</strong></td>
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<tr>
<td>Chair: Judy Sheard, Monash University</td>
<td><strong>Exemplary Paper</strong></td>
<td>My Digital Hand: A Tool for Scaling Up One-to-One Peer Teaching in Support of Computer Science Learning</td>
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<tr>
<td>Room 609</td>
<td>Impact of Class Size on Student Evaluations for Traditional and Peer Instruction Classrooms</td>
<td>Aaron Smith, University of North Carolina; Kristy Elizabeth Boyer, University of Florida; Jeffrey Forbes, Duke University; Sarah Heckman, North Carolina State University; Ketan Mayer-Patel, University of North Carolina</td>
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<td>Soohyun Nam Liao, William Griswold, Leo Porter, University of California at San Diego</td>
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<td>Micro-Classes: A Structure for Improving Student Experience in Large Classes</td>
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<td>Christine Alvarado, Mia Minnes, Leo Porter, UC San Diego</td>
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</tbody>
</table>
## Special Sessions, Panels, Supporter Sessions

### Special Session
- **The Code of Ethics Quiz Show**
  - Bo Brinkman, Miami University; Keith Miller, University of Missouri, St. Louis
  - Room 602-604

### IBM Supporter Session
- **Addressing the Cybersecurity Skills Gap** (See page 32 for abstract)
  - Heather (H.Y.) Ricciuto, Transformation and Academic Initiatives Leader, PMP®, IBM
  - Room 616-617

### Vocareum Supporter Session
- **The Next Frontier For Large Online Classes** (See page 32 for abstract)
  - Sanjay Srivastava, Vocareum; David Joyner, Georgia Tech
  - Room 618-619

### Intel Supporter Session
- **Artificial Intelligence on Intel Architecture** (See page 33 for abstract)
  - Nagib Hakim, Intel Corporation; Prof. Pedro Domingos, University of Washington
  - Room 615

### Panel Session
- **CSPd Week: A Scalable Model for Preparing Teachers for CS for All**
  - Tracy Camp, Colorado School of the Mines; Emmanuel Schanzer, Bootstrap; Joanna Goode, University of Oregon; Owen Astrachan, Duke University; Ed Campos, Orosi High School
  - Room 6E

- **Beyond Autograding: Advances in Student Feedback Platforms**
  - John Denero, Sumukh Sridhara, UC Berkeley; Manuel Pérez-Quíñones, UNC Charlotte; Aatish Nayak, Carnegie Mellon University; Ben Leong, National University of Singapore
  - Room 606

- **Teaching To Increase Diversity and Equity in STEM**
  - Helen H. Hu, Westminster College; Douglas Blank, Bryn Mawr College; Albert Chan, Fayetteville State University; Travis Doom, Wright State University
  - Room 607

### IBM Supporter Session
- **Addressing the Cybersecurity Skills Gap** (See page 32 for abstract)
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  - Room 618-619

### Intel Supporter Session
- **Artificial Intelligence on Intel Architecture** (See page 33 for abstract)
  - Nagib Hakim, Intel Corporation; Prof. Pedro Domingos, University of Washington
  - Room 615

### 3:00 pm - 3:45 pm
- **Break, Exhibits & Demos**
  - Exhibit Hall

### 3:00 pm - 3:45 pm
- **Demo Session #4: Sarah Heckman, Chair**
  - Interactive Problem Solving Using Mobile Devices in the Classroom
    - Mohammad Fuad, Winston-Salem State University
  - The Quorum Programming Language
    - Andreas Stefik, University of Nevada, Las Vegas; Richard Ladner, University of Washington
  - Exhibit Hall

### 3:00 pm - 4:30 pm
- **NSF Showcase #4** (See page 41 for a complete listing of NSF Showcases)
  - Exhibit Hall

### 3:00 pm - 5:00 pm
- **Poster Session #2: J. Philip East, Chair**
  - (See page 39 for a complete listing of Poster Session #2)
  - Exhibit Hall
### Friday, March 10

#### Schedule of Events

#### Friday Sessions  3:45 pm - 5:00 pm

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<th>Paper Sessions</th>
<th>3:45 pm</th>
<th>4:10 pm</th>
<th>4:35 pm</th>
</tr>
</thead>
</table>
| **K-12 Professional Development**  
Chair: Judith Gal-Ezer, *The Open University of Israel*  
Room 611 | Professional Recognition Matters: Certification for In-service Computer Science Teachers  
Sue Sentance, King’s College London; Andrew Csizmadia, Newman University | **Exemplary Paper**  
Building a Statewide Computer Science Teacher Pipeline  
Helen Hu, Westminster College; Cecily Heiner, Southern Utah University; Thomas Gagne, University of Puget Sound; Carl Lyman, Utah State Office of Education | Teaching CS to CS Teachers: Addressing the Need for Advanced Content in K-12 Professional Development  
Dan Leyzberg, Christopher Moretti, Princeton University |
| **Diversity**  
Chair: Ellen Walker, *Hiram College*  
Room 612 | Diversity Barriers in K-12 Computer Science Education: Structural and Social  
Jennifer Wang, Sepehr Hejazi Moghadam, Google | **Exemplary Paper**  
Folk Pedagogy and the Geek Gene: Geekiness Quotient  
Robert McCartney, University of Connecticut; Jonas Boustedt, Hogskolan i Gavle; Anna Eckerdal, Uppsala University; Kate Sanders, Rhode Island College; Carol Zander, University of Washington Bothell | Examining the Relationship Between Introductory Computing Course Experiences, Self-Efficacy, and Belonging Among First-Generation College Women  
Jennifer Blaney, UCLA; Jane Stout, Computing Research Association |
| **Non-CS Students**  
Chair: Alistair Campbell, *Hamilton College*  
Room 613-614 | Increasing the Capacity of STEM Workforce: Minor in Bioinformatics  
Sami Khuri, Miri Vanhoven, San Jose State University; Natalia Khuri, Stanford University | **Exemplary Paper**  
Evaluation and Impact of a Required Computational Thinking Course for Architecture Students  
Nick Senske, Iowa State University | Examining the Enrollment Growth: Non-CS Majors in CS1 Courses  
Linda J. Sax, Kathleen J. Lehman, Christina Zavala, UCLA |
| **Capstone**  
Chair: Lillian “Boots” Cassel, *Villanova University*  
Room 608 | CORP: Co-operative Remote Practicum Work Experience Model for Software Engineering Education  
Dannie Stanley, Taylor University | **Exemplary Paper**  
Understanding Student Interactions in Capstone Courses to Improve Learning Experiences  
Andres Neyem, Juan Díaz-Mosquera, Jorge Munoz-Gama, Jaime Navon, Pontificia Universidad Catolica de Chile | **Exemplary Paper**  
A Two-Course Sequence of Real Projects for Real Customers  
Christian Murphy, Swapneel Sheth, Sydney Morton, University of Pennsylvania |
| **Online Learning**  
Chair: Daniel Joyce, *Villanova University*  
Room 609 | A Pedagogical Analysis of Online Coding Tutorials  
Ada S. Kim, Andrew J. Ko, University of Washington | **Lessons Learned in the Design and Delivery of an Introductory Programming MOOC**  
J Michael Fitzpatrick, Ákos Lédeczi, Gayathri Narasimham, Vanderbilt University; Lee Lafferty, Réal Labrie, Paul T Mielke, Independent Consultant; Atish Kumar, University of Amsterdam; Katherine A Brady, Vanderbilt University | **Exemplary Paper**  
Employing Retention of Flow to Improve Online Tutorials  
Ashok Basawapatna, SUNY College At Old Westbury; Alexander Repenning, University of Applied Sciences and Arts Northwestern Switzerland |
## Friday, March 10

### Special Sessions, Panels, Supporter Sessions

**3:45 pm - 5:00 pm**

<table>
<thead>
<tr>
<th>Session Type</th>
<th>Title</th>
<th>Speakers</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Panel Session</td>
<td>Social Justice and Equity in CS Education: Inaugural Launch of AP Computer Science Principles</td>
<td>Lien Diaz, College Board; Frances Trees, Rutgers University; Dale Reed, University of Illinois, Chicago; Richard Kick, Newbury Park High School; Andrew Kuemmel, Madison West High School</td>
<td>6E</td>
</tr>
<tr>
<td>Panel Session</td>
<td>The Passion, Beauty, and Joy of Teaching and Learning Cybersecurity</td>
<td>Richard Weiss, The Evergreen State College; Xenia Mourtouvidou, College of Charleston; Jens Mache, Lewis &amp; Clark College; Casey O’Brien, National Cyber League</td>
<td></td>
</tr>
<tr>
<td>Panel Session</td>
<td>Scaling Introductory Courses Using Undergraduate Teaching Assistants</td>
<td>Jeffrey Forbes, Duke University; David Malan, Harvard University; Heather Pon-Berry, Mt. Holyoke College; Stuart Reges, University of Washington; Mehran Sahami, Stanford University</td>
<td>606</td>
</tr>
<tr>
<td>Special Session</td>
<td>ICER UP CS Ed Research Workshop Summary - Essence of Illustrative Projects</td>
<td>Eileen Kraemer, Aubrey Lawson, Murali Sitaraman, Clemson University</td>
<td>607</td>
</tr>
<tr>
<td>Microsoft Supporter Session</td>
<td>Physical and Game-based Computing for CS Education (See page 33 for abstract)</td>
<td>Thomas Ball, Principal Researcher/Research Manager, Microsoft Research; Peli de Halleux, Principal Research Software Engineer, Microsoft Research; Eric Anderson, Senior Software Engineer, Microsoft</td>
<td>616-617</td>
</tr>
<tr>
<td>Oracle Academy Supporter Session</td>
<td>Computer Science Curriculum for K12 and Beyond (See page 33 for abstract)</td>
<td>Tyra Crockett, Sr. Manager, Oracle Academy</td>
<td>618-619</td>
</tr>
</tbody>
</table>

### 5:10 pm - 6:00 pm

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIGCSE Business Meeting</td>
<td>Room 6E</td>
</tr>
</tbody>
</table>

### 6:00 pm - 7:00 pm

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>NCWIT Academic Alliance Reception</td>
<td>Sheraton Cirrus Ballroom</td>
</tr>
<tr>
<td>CCSC Business Meeting</td>
<td>Room 6E</td>
</tr>
</tbody>
</table>

### 6:10 pm - 7:00 pm

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td>Community College Reception</td>
<td>Sheraton Diamond Room</td>
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</tbody>
</table>

### Friday Workshops 7:00 pm - 10:00 pm

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Title</th>
<th>Speakers</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>301</td>
<td>An Iota of IoT</td>
<td>Bill Siever, Washington University; Michael Rogers, Northwest Missouri State University</td>
<td>602-604</td>
</tr>
<tr>
<td>302</td>
<td>How to Collect, Analyze and Act on Learning Data in Computer Science Courses</td>
<td>Ananda Gunawardena, Princeton University; Sarah Heckman, Thomas Price, North Carolina State University</td>
<td>616-617</td>
</tr>
<tr>
<td>303</td>
<td>How to Plan and Running Computing Summer Camps - Logistics</td>
<td>Krishnendu Roy, Valdosta State University; Kristine Nagel, Georgia Gwinnett College; Sarah Dunton, University of Massachusetts Amherst</td>
<td>618-619</td>
</tr>
<tr>
<td>304</td>
<td>Engaging Students with Algorithms</td>
<td>Crystal Furman, The College Board; Sandy Czajka, Riverside Brookfield High School; Adrienne Decker, Rochester Institute of Technology; Dianna Xu, Bryn Mawr College</td>
<td>613-614</td>
</tr>
<tr>
<td>305</td>
<td>Two Birds - Teaching Coding and Math in Primary Schools and Beyond</td>
<td>Victor Winter, Betty Love, University of Nebraska at Omaha</td>
<td>611</td>
</tr>
<tr>
<td>306</td>
<td>Hands-on Cybersecurity Exercises That Are Easy to Access and Assess</td>
<td>Richard Weiss, The Evergreen State College; Jens Mache, Lewis &amp; Clark College; Michael Locasto, SRI International; Franklyn Turbak, Wellesley College</td>
<td>608</td>
</tr>
<tr>
<td>307</td>
<td>Guiding Students to Discover CS Concepts and Develop Process Skills Using POGIL</td>
<td>Clifton Kusmaul, Muhlenberg College; Chris Mayfield, James Madison University; Helen Hu, Westminster College</td>
<td>609</td>
</tr>
</tbody>
</table>

**Canceled**
Friday, March 10

Friday Workshops 7:00 pm - 10:00 pm

<table>
<thead>
<tr>
<th>Workshop 308</th>
<th>Modules for Integrating Cryptography in Introductory CS and Computer Security Courses</th>
<th>Room 607</th>
</tr>
</thead>
</table>
| Workshop 309 | Testing Across the Curriculum  
Zachary Krumas, Grand Valley State University  
Canceled | Room 606 |
| Workshop 310 | Using and Customizing Open-Source Runestone Ebooks for Computer Science Classes  
Brad Miller, Luther College; Paul Resnick, University of Michigan; Barbara Ericson, Georgia Tech | Room 612 |

For a full list of workshops and descriptions visit: http://sigcse2017.sigcse.org/attendees/workshops.html

Saturday, March 11

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
</table>
| 8:45 am - 10:00 am | Undergraduate ACM Student Research Competition Semi-finalist Presentations  
(See page 42 for all ACM SRC Entries) | Room 611 |
| 8:45 am - 10:00 am | Graduate ACM Student Research Competition Semi-finalist Presentations  
(See page 42 for all ACM SRC Entries) | Room 612 |

Special Sessions, Panels, Supporter Sessions 8:45 am - 10:00 am

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Room</th>
</tr>
</thead>
</table>
| Special Session          | Nifty Assignments  
Nick Parlante, Julia Zelenski, Dave Feinberg, Kural Mishra, Josh Hug, Kevin Wayne, Michael Guarnizo, Jackie Chi Kt Cheung, François Pitt | Room 6E   |
| ABET Supporter Session   | Computing and Computer Science Accreditation – What You Should Know  
J.J. Ekstrom, Brigham Young University; Allen Parrish, US Naval Academy; Ed Sobiesk, Army Cyber Institute; Rajendra Raj, Rochester Institute of Technology | Room 616-617 |
| Codio Supporter Session  | An Online Solution to Authoring of Student Code Tests of Any Complexity and IDE Based Tutorial Content  
(FSee page 34 for abstract)  
Freddy May, Founder of Codio | Room 618-619 |
| IBM Supporter Session    | Introduction to Watson Internet of Things - Learn to build your IoT app  
(GSee page 34 for abstract)  
Gayathri Magie, WW Academic Initiatives Lead; IBM | Room 608   |
| Gradescope Supporter Session | Grading Both Written and Programming Assignments on One Platform  
(ISee page 34 for abstract)  
Ibrahim Awwal, Gradescope; Sergey Karayev, Gradescope | Room 609   |
| LEGO Education Supporter Session | Developing Computational Thinking Skills Through Hands-on, Playful Learning  
(ISee page 34 for abstract)  
Mitch Resnick, Professor of Learning Research, MIT Media Lab; Yannick Dupont Educational Content Development Manager, LEGO Education | Room 606   |

10:00 am - 10:45 am  
Break, Exibits & Demos  
10:00 am - 10:45 am  
Demo Session #5: Sarah Heckman, Chair  
App Lab - A Powerful JavaScript IDE for Rapid Prototyping of Small Data-backed Web Applications  
Sarah Filman, Alice Steinglass, Baker Franke, Code.org  
EarSketch, a Web-application to Teach Computer Science through Music  
Jason Freeman, Doug Edwards, Lea Ikkache, Georgia Institute of Technology

10:00 am - 11:30 am  
NSF Showcase #5  
(See page 41 for a complete listing of NSF Showcases)

http://sigcse2017.sigcse.org
<table>
<thead>
<tr>
<th>Paper Sessions</th>
<th>10:45 am</th>
<th>11:10 am</th>
<th>11:35 am</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>K-12, CS forAll</strong> &lt;br&gt; Chair: Christina Gardner-McCune, University of Florida</td>
<td>Interested in Class, but Not in the Hallway: A Latent Class Analysis (LCA) of 2015-16 CS Student Surveys  &lt;br&gt; Kenny Graves, Columbia University; Leigh Ann DeLyser, NYC Foundation for CS Education</td>
<td>Teaching Computer Science in the Victorian Certificate of Education: A Pilot Study  &lt;br&gt; Richard Cox, Monash University; Steven Bird, University of Melbourne; Bernd Meyer, Monash University</td>
<td>Concepts and Practices: Designing and Developing A Modern K-12 CS Framework  &lt;br&gt; Miranda Parker, Georgia Institute of Technology; Leigh Ann DeLyser, CSNYC</td>
</tr>
<tr>
<td><strong>Gender</strong> &lt;br&gt; Chair: Manuel A. Perez Quinones, University of North Carolina at Charlotte</td>
<td>Gender Differences in Students’ Behaviors in CS Classes throughout the CS Major  &lt;br&gt; Christine Alvarado, Yingjun Cao, Mia Minnes, UC San Diego</td>
<td>Exploring Gender Diversity in CS at a Large Public R1 Research University  &lt;br&gt; Monica Babes-Vroman, Isabel Juniewicz, Bruno Lucarelli, Nicole Fox, Thu Nguyen, Andrew Tjang, Georgiana Haldeman, Ashni Mehta, Risham Chokshi, Rutgers University</td>
<td>Eliminating Gender Bias in Computer Science Education Materials  &lt;br&gt; Vahab Pournaghshband, California State University, Northridge; Paola Medel, University of California, Los Angeles</td>
</tr>
<tr>
<td><strong>CS1</strong> &lt;br&gt; Chair: Brad Richards, University of Puget Sound</td>
<td>Successful First-Year Experience for At-Risk Students  &lt;br&gt; Alice Armstrong, Shippensburg University</td>
<td>Evaluating an Alternative CS1 for Students with Prior Programming Experience  &lt;br&gt; Michael Kirkpatrick, Chris Mayfield, James Madison University</td>
<td>Exemplary Paper  &lt;br&gt; Pencil Puzzles for Introductory Computer Science: an Experience-and Gender-Neutral Context  &lt;br&gt; Zack Butler, Ivona Bezakova, Rochester Institute of Technology; Kimberly Fluet, St. John Fisher College</td>
</tr>
<tr>
<td><strong>Advanced Concepts</strong> &lt;br&gt; Chair: Andrew Ko, University of Washington</td>
<td>On the (Mis) Understanding of the “this” Reference  &lt;br&gt; Noa Ragonis, Beit Berl College; Ronit Shmalo, SCE-Shamoon College of Engineering</td>
<td>Assessing and Teaching Scope, Mutation, and Aliasing in Upper-Level Undergraduates  &lt;br&gt; Kathi Fisler, WPI; Shriram Krishnamurthi, Preston Tunnell Wilson, Brown University</td>
<td>Multiple Levels of Abstraction in Algorithmic Problem Solving  &lt;br&gt; David Ginat, Yoav Blau, Tel-Aviv University</td>
</tr>
<tr>
<td><strong>Best Papers</strong> &lt;br&gt; Chairs: Tiffany Barnes, NC State; Dan Garcia, UC Berkeley</td>
<td>Computing with CORGIS: Diverse, Real-world Datasets for Introductory Computing  &lt;br&gt; Austin Bart, Ryan Whitcomb, Eli Tilevich, Dennis Kafura, Cliff Shaffer, Virginia Tech</td>
<td>Making Noise: Using Sound-Art to Explore Technological Fluency  &lt;br&gt; Erik Brunvand, Nina McCurdy, University of Utah</td>
<td>Infrastructure for Continuous Assessment of Retained Relevant Knowledge  &lt;br&gt; Kathleen Timmerman, Travis Doom, Wright State University</td>
</tr>
<tr>
<td><strong>Special Sessions, Panels, Supporter Sessions</strong></td>
<td>10:45 am - 12:00 pm</td>
<td>10:45 am - 12:00 pm</td>
<td></td>
</tr>
<tr>
<td><strong>Panel Session</strong></td>
<td>Technology We Can’t Live Without!, revisited  &lt;br&gt; Ria Galanos, Thomas Jefferson High School for Science and Technology; Whitaker Brand, University of Washington; Sumukh Sridhara, University of California Berkeley; Mike Zamansky, Hunter College; Evelyn Zayas, One Schoolhouse</td>
<td>CC2020: A Vision on Computing Curricula  &lt;br&gt; Alison Clear, EIT; Allen Parrish, United States Naval Academy; Gerrit Van Der Veer, Vrije Universiteit Amsterdam; Ming Zhang, Peking University</td>
<td>Room 602-604</td>
</tr>
<tr>
<td><strong>Panel Session</strong></td>
<td></td>
<td></td>
<td>Room 606</td>
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</tbody>
</table>
## Saturday, March 5

### Schedule of Events

#### Special Sessions, Panels, Supporter Sessions 10:45 am - 12:00 pm

<table>
<thead>
<tr>
<th>Special Session</th>
<th>ACM Joint Task Force on Cybersecurity Education</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Diana Burley, George Washington University; Matt Bishop, University of California, Davis; Scott Buck, Intel Corporation; David Gibson, United States Air Force Academy; Elizabeth Hawthorne, Union County College; Siddharth Kaza, Towson University</td>
</tr>
<tr>
<td>GitHub Supporter Session</td>
<td>How I Implemented GitHub In My Classroom: CS50, Automated Testing and GitHub for Large Courses</td>
</tr>
<tr>
<td></td>
<td>David Malan, Harvard University; Omar Shaikh, San Francisco State University; S. Monisha Pulimood, College of New Jersey; Vanessa Gennarelli, GitHub Education</td>
</tr>
<tr>
<td>Teradata University Network Supporter Session</td>
<td>Exciting Ways To Engage Your Students With the Power of Data</td>
</tr>
<tr>
<td></td>
<td>Susan Baskin, Teradata Corporation; Karen Davis, University of Cincinnati</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:45 am - 12:00 pm</td>
<td>Lightning Talks: Steven Wolfman, Chair</td>
<td>Room 609</td>
</tr>
</tbody>
</table>

### Keynote Session

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:00 pm - 2:00 pm</td>
<td>Fulfiling Papert's Dream: Computational Fluency for All</td>
<td>Room 6B-6C</td>
</tr>
</tbody>
</table>

### Saturday Workshops 3:00 pm - 6:00 pm

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>401</td>
<td>Evidence Based Teaching Practices in CS</td>
</tr>
<tr>
<td></td>
<td>Briana Morrison, University of Nebraska at Omaha; Mark Guzdial, Georgia Institute of Technology; Cynthia Lee, Stanford University; Leo Porter, Beth Simon, University of California, San Diego</td>
</tr>
<tr>
<td>402</td>
<td>Teaching Parallel Computing with OpenMP on the Raspberry Pi</td>
</tr>
<tr>
<td></td>
<td>Suzanne Matthews, United States Military Academy; Joel Adams, Calvin College; Richard Brown, St. Olaf College; Elizabeth Shoop, Macalester College</td>
</tr>
<tr>
<td>403</td>
<td>CS Discoveries: An introductory CS Course For Late Middle and Early High School</td>
</tr>
<tr>
<td></td>
<td>Josh Caldwell, Dani McAvoy, Gt Wrobel, code.org</td>
</tr>
<tr>
<td>404</td>
<td>How to Plan and Run Effective Teacher Professional Development</td>
</tr>
<tr>
<td></td>
<td>Barbara Ericson, Georgia Tech; Rebecca Dovi, Code Virginia; Ria Galanos, Thomas Jefferson High School for Science and Technology</td>
</tr>
<tr>
<td>405</td>
<td>Creating Peer Grading Videos</td>
</tr>
<tr>
<td></td>
<td>Shawn Lupoli, Karan Budhraja, UMBC</td>
</tr>
<tr>
<td></td>
<td>Dominic Amato, Ugochi Acholonu, DePaul University</td>
</tr>
<tr>
<td>407</td>
<td>From Lightbulbs to Logic: Teaching Hardware in Intro to CS</td>
</tr>
<tr>
<td></td>
<td>Sean Hickey, The Blake School</td>
</tr>
<tr>
<td>408</td>
<td>How to Integrate Interactive Learning into Large Classes</td>
</tr>
<tr>
<td></td>
<td>Stephan Krusche, Andreas Seitz, Nadine von Frankenberg, Bernd Bruegge, Technische Universität München</td>
</tr>
<tr>
<td>409</td>
<td>UTeach CS Principles: Broadening Participation Through K–12 Computer Science Education and Teacher Professional Learning and Support</td>
</tr>
<tr>
<td></td>
<td>Bradley Beth, Amy Moreland, UTeach CS, The University of Texas at Austin</td>
</tr>
<tr>
<td>410</td>
<td>C-STEM: Engaging Students in Computing with Robotics</td>
</tr>
<tr>
<td></td>
<td>Tasha Frankie, Duane Wesley, James Gappy, San Diego Mesa College; Harry Cheng, UC Davis</td>
</tr>
</tbody>
</table>

For a full list of workshops and descriptions visit: [http://sigcse2017.sigcse.org/attendees/workshops.html](http://sigcse2017.sigcse.org/attendees/workshops.html)
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Supporter Sessions

THURSDAY, MARCH 9

Presented courtesy of Vocareum

Assessment Strategies for Large CS Classes
▷ 10:45 am - 12:00 pm
Room: 616-617
Speakers: Christine Alvarado, University of California, San Diego; Sanjay Srivastava, Vocareum

As demands for CS education has increased exponentially, often universities have had no choice but to increase the class sizes to meet this demand. Inevitably teachers have looked to technology to help manage these large classes. In this session we will discuss how Vocareum has been deployed to help teachers meet the challenge.

Presented courtesy of Intel

A Deep Experience on Parallel Programming Techniques and Industry Best Practices
▷ 1:45 pm - 3:00 pm
Room: 618-619
Speakers: Jennifer DiMatteo, Intel Corporation

Solving the biggest challenges in science, industry and society requires dramatic increases in computing efficiency. Today’s applications must be parallelized to unlock the potential of current and future hardware. Educating the next generation of programmers and researchers on parallel programming will help gain insights on how to execute their code faster and gain advantage of inherent system architecture.

In this session, you will be able to get an overview of Intel® Parallel Studio XE and a deep dive to Intel® Advisor. Intel® Advisor overview will include what changes with AVX-512 and how Intel® Advisor can help you optimize for both AVX-512 and older instruction sets both with and without access to the latest hardware. See how to get accurate repeatable FLOPS metrics, measure the loop footprint to see if it fits into cache, detect unneeded gather/scatters that reduce performance and much more. We will demonstrate vectorization techniques and a new way to visualize performance optimization tradeoffs on existing code to help you apply this in your classroom.

Presented courtesy of Intel

Learn How Intel Can Help Your Students Gain Expertise in Parallel Programming
▷ 10:45 am - 12:00 pm
Room: 618-619
Speaker: James Reinders, HPC Enthusiast

Solving the biggest challenges in science, industry and society requires dramatic increases in computing efficiency. Today’s applications must be parallelized to unlock the potential of current and future hardware. Educating the next generation of programmers and researchers on parallel programming will help gain insights on how to execute their code faster and gain advantage of inherent system architecture.

In this session, we will be sharing resources including hardware, free software for educators and students, hands-on training materials and more. By attending this session, you will receive real academic curriculum examples that includes hands-on labs experiments.

Presented courtesy of IBM

Blockchain in the Enterprise
▷ 1:45 pm - 3:00 pm
Room: 616-617
Speaker: Misty V. Decker, z Systems Academic Initiative Program Manager, IBM

Blockchain is the technology underneath Bitcoin but now a wide variety of industries are researching ways to use the technology to transform business to business transactions. Come learn what Blockchain is and how you and your students can be a part of innovating the future. We’ll look at real world scenarios in development today such as identifying conflict-free diamonds, determining the safety of fish, tracing property ownership for title searches, and exchanging property or managing contracts without an intermediary.

Presented courtesy of Google

New Tools and Solutions to Address the CS Capacity Crunch
▷ 3:45 pm - 5:00 pm
Room: 618-619
Speakers: Chris Stephenson, Google; Kinga Dobolyi, George Mason University; Jeff Forbes, Duke University; Kristy Boyer, University of Florida; Heather Pon-Barry, Mount Holyoke; Josh Hug, University of California Berkeley

Increasing enrollment in CS programs is prompting the need for a variety of interventions that enable institutions to expand high-quality Computer Science (CS) programs at the undergraduate level while additionally ensuring better engagement of women and underrepresented minority students. This will be a two-part session. It will begin with a panel of faculty from Google’s Computer Science Capacity Awards program sharing the results of their current interventions. The panelists will follow by chairing roundtable discussions focused on specific interventions, including self-paced learning, training for undergraduate peer mentors, course analytics and software for online courses, tools for real-time distance TA support, and student and TA online communications tools.

http://sigcse2017.sigcse.org
The Power of Integrated Learning for CS - Teach Concepts, Not Logins
3:45 pm - 5:00 pm
Room: 616-617
Speakers: Smita Bakshi, CEO/Co-Founder, zyBooks; Frank Vahid, Co-Founder, zyBooks and University of California, Riverside; Roman Lysecky, Authoring Co-Lead, zyBooks and University of Arizona; Scott Sirowy, Director of Engineering, zyBooks; Alex Edgcomb, Sr. Software Engineer/Research Specialist, zyBooks and University of California, Riverside
CS courses often include the additional need to learn a complex set of support tools involving LMS’s, discussion boards, e-book logins, homework systems, program submission systems, clickers, web links, online announcements, OS’es, IDEs, and other items, often involving poorly-designed UI’s and workflows, making today’s CS classes unnecessarily hard and stressful. In this session, we will introduce: (1) zyBooks: Highly-interactive web-native CS learning material for nearly any lower-division CS course, featuring animations of challenging concepts, learning questions for engaged learning, and concise text for lucidity. Instructors can award points for completion, rearrange sections to match their syllabus, and add notes to content; (2) Our challenge activities (“homework”), fully integrated within each zyBook section, many algorithmically-generated, all auto-graded; (3) Our zyLabs system, “The easiest program submission and grading system on the planet”, and seamlessly integratable with a zyBook, or usable standalone; and (4) Our user-experience focus that guides how the content and platform are designed, how we provide support and respond to feedback, and more. We will show how instructors use those items to eliminate non-essential complexity and help focus students on learning concepts and programming, and summarize research showing improved learning outcomes as well as happier, less-stressed students.

Curriculum and Interview Recommendations for Software Engineering Preparedness
10:45 am - 12:00 pm
Room: 618-619
Speaker: Pierre St. Juste, Google
Join Google as we demystify the journey of software engineers from their undergraduate studies to Google. Google Software engineer and former CS professor, Pierre St Juste, will host the discussion and review how faculty can better prepare students for internships and full time roles at companies like Google. Toward the end of the session, we’ll open it up for Q&A and help answer your questions.

Dos and Don'ts of Partnering Software Professionals and Computer Science Classrooms and Why It Matters To You
10:45 am - 12:00 pm
Room: 616-617
Speakers: Brett Wortzman, Instruction and Training Manager, TEALS/Microsoft Philanthropies; Kasey Champion, Computer Science Curriculum Developer, Microsoft Learning
Come hear from professionals with experience in both engineering and education about how to create the most effective partnerships between industry and classrooms. Led by members of Microsoft Philanthropies’ TEALS program (http://www.tealsk12.org) and the Microsoft Learning group (http://www.microsoft.com/learning), we’ll discuss both general philosophies and specific practices that can help avoid common pitfalls when partnering engineers with schools, students, and teachers; and demonstrate how you can take what we’ve learned and apply it at any level.
Since 2010, Microsoft Philanthropies’ TEALS program has recruited, trained, and placed software professionals from over 200 companies in more than 300 high schools across the US. Meanwhile, the Microsoft Learning group has deployed a wide range of computer science curriculum to thousands of students of diverse backgrounds all over the world.
Artificial Intelligence on Intel Architecture

Speaker: Nagib Hakim, Intel Corporation; Prof. Pedro Domingos, University of Washington

Artificial Intelligence (AI) is the next big revolution in computing, contributing to cutting-edge innovations such as precision medicine, injury prediction and autonomous cars. Intel is the partner for AI today and in the future, and is committed to driving this transformation by offering a complete portfolio to deliver end-to-end AI solutions. Intel is democratizing AI innovations by increasing the accessibility of data, tools, training, and intelligent machines, while collaborating with academia to foster the next generation of technology leaders.

In this session, you will learn about Intel’s AI solutions and how computer science faculty and students are utilizing Intel’s AI portfolio for education and research. You will also explore Intel® Deep Learning SDK, a free set of tools to develop, train, and deploy deep learning solutions.

Computer Science Curriculum for K12 and Beyond

Speaker: Tyra Crockett, Sr. Manager, Oracle Academy

Join the Oracle Academy team to learn the many benefits available to teachers through free membership to Oracle Academy. In this session you will learn of the many benefits available through the free Oracle Academy program, learn how to join the Oracle Academy program, and explore and get hands on in mini workshops with free Oracle Academy curriculum designed by educators for educators. We will also present our Short Byte curriculum designed for both younger learners making their first steps into programming, robotics and databases, and we will also present our comprehensive curriculum in Java programming and database development.

Computing and Computer Science Accreditation – What You Should Know

Speaker: J.J. Ekstrom, Brigham Young University; Allen Parrish, U.S. Naval Academy; Ed Sobiesk, Army Cyber Institute; Rajendra Raj, Rochester Institute of Technology

This session will provide an introduction to ABET as the leading organization in the world that provides accreditation of undergraduate computing programs. ABET accredits programs in computer science, information systems, and information technology, and provides a flexible infrastructure for accrediting programs in emerging computing disciplines. The session will discuss ABET’s contributions to these academic computing disciplines and to the standardization of computing education. The session will also articulate the benefits of obtaining program accreditation in the computing field.

ABET continues to evolve its computing accreditation criteria as the computing disciplines evolve. During 2016, ABET provided initial approval to new computing accreditation criteria, that—in final form—will be rolled out over the next several years for both new accreditations and re-accreditations. These criteria, which are currently undergoing public review, include revisions to the general computing criteria and to program criteria for computer science, information technology, and information systems. This session will discuss the new criteria and provide an opportunity for feedback on the proposed cybersecurity program criteria.
An Online Solution to Authoring of Student Code Tests of Any Complexity and IDE Based Tutorial Content

8:45 am - 10:00 am
Room: 618-619
Speaker: Freddy May, Founder of Codio

This presentation shows how CS lecturers can author and publish a rich library of tutorial content (including re-purposing existing lecture materials) as well as both simple and highly complex auto-graded code tests. Everything is done with just a browser and without the need for any in-house infrastructure.

You will see how students are able to write everything from simple functions right up to highly complex projects using databases and any other components that might be required. This code can be tested and displayed to lecturers and assistants who are able to monitor their progress. We will demonstrating seamless integration with all major LMS platforms, and how course leaders can significantly reduce wasted administration time and system administration overheads, as well as enhance the overall student experience.

Introduction to Watson Internet of Things - Learn to Build Your IoT app

8:45 am - 10:00 am
Room: 608
Speaker: Gayathri Magie, WW Academic Initiatives Lead, IBM

Learn the platform for all of your Internet of Things development and application needs. Learn about IBM’s Watson IoT platform on IBM Bluemix that will help you rapidly connect your devices, and also infuse capabilities around device management, information management, real-time analytics, risk management and cognitive computing. Create and deploy your IoT application on the cloud using Node-Red with ease. You will also learn to use a variety of “recipes” provided by our device partners and individual users to connect your devices to the cloud. You can take the knowledge and contribute yourself to the developerWorks recipes community.

Grading Both Written and Programming Assignments on One Platform

8:45 am - 10:00 am
Room: 609
Speakers: Ibrahim Awwal, Gradescope; Sergey Karayev, Gradescope

You will learn how to manually grade both paper-based exams and programming projects in our rubric-based interface. Additionally, you will see how you can build your own autograders to automatically grade programming projects. Lastly, we will show a recent feature we call AI-assisted grading: for question types such as simple math questions, Gradescope AI groups student answers by content, so that you can review and grade answer groups instead of individual submissions.

Gradescope has been used to grade over ten million pages of handwritten work and over half a million programming projects. Ibrahim Awwal (ECE MS from UCSD) is a co-founder who has developed Gradescope since it was a humble TA-developed side project. Sergey Karayev (Computer Science PhD from Berkeley) is a co-founder who has been focusing on applying his research in computer vision and machine learning to AI-assisted grading.

Developing Computational Thinking Skills Through Hands-on, Playful Learning

8:45 am - 10:00 am
Room: 606
Speakers: Mitch Resnick, Professor of Learning Research, MIT Media Lab; Yannick Dupont Educational Content Development Manager, LEGO Education

Digital technologies are changing the ways in which we play, learn and create. These tend to take on an even greater force when it comes to their potential impact on the lives of students. For over 35 years LEGO Education has been working with teachers and educational specialists to deliver playful learning experiences that bring subjects to life in the classroom and make learning fun and impactful. By bridging physical and digital educational resources, students are encouraged to think creatively, reason systematically and release their potential to shape their own future.

This session will provide an introduction to LEGO Education, where learning is at the very core of the LEGO Group’s values. Get an in-depth overview of the LEGO Education learning philosophy and our approach to computational thinking and the design engineering process. Learn more about how LEGO Education uniquely combines the familiarity of the simple, easy-to-use bricks with easy-to-use computer science, coding resources and engaging STEM challenges designed to meet curriculum standards. LEGO Education empowers teachers and their students to explore, learn and apply coding to the real world.
Exciting Ways To Engage Your Students With the Power of Data

10:45 am - 12:00 pm
Room: 618-619

Speakers: Susan Baskin, Teradata Corporation; Karen Davis, University of Cincinnati

Teradata University Network (TUN) provides computer science and information systems faculty members and students with a rich variety of FREE resources for teaching and learning about data and database management, data warehousing, data science, data analytics, and information management. These resources include software (both from Teradata and its partners, such as Fuzzy Logix, IBM Watson Analytics, MicroStrategy, NetApp, SAS, and Tableau), teaching materials (exercises, assignments, tutorials, case studies, etc.), and access to real-world data sets. This session will provide information on our 2017 TUN student competitions, an introduction to TUN resources, and demonstrate how these resources can be used to support your computer science courses. In addition, you will learn how you can contribute to TUN to make it an even better community for CS faculty.

How I Implemented GitHub In My Classroom: CS50, Automated Testing and GitHub for Large Courses

10:45 am - 12:00 pm
Room: 616-617

Speakers: David Malan, Harvard University; Omar Shaikh, San Francisco State University; S. Monisha Pulimood, College of New Jersey; Vanessa Gennarelli, GitHub Education

In this session, we will present three examples of GitHub in the classroom: GitHub for CS50 (the largest course at Harvard) that collects assignments, enables portfolios and promotes project-based learning; an automated testing framework, Travis CI, with GitHub Classroom to support students and teaching assistants for large courses; and GitHub for group projects in a service learning course. Learn from the speakers’ specific experiences and variations, reflections and recommendations. After a brief presentation, there will be time for Q&A. Following the hour-long program will be a GitHub classroom lab, where teachers can work with an instructional designer to use GitHub classroom themselves and see how it works.

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Flock #1: Thursday, March 9
5:30 pm - 6:20 pm

SIGCSE Reads: Time for Book Discussion
Room 812
Rebecca Bates, Minnesota State University, Mankato; Valerie Summet, Rollins University; Nanette Veilleux, Simmons College

Teaching and Learning Under Pressure: Intensive (Accelerated, Block) Computer Science Courses
Room 605
Janet Burge, Colorado College; Bo Brinkman, Miami University

Advancing Data Science for Students of All Majors
Room 616-617
Lillian N. Cassel, Michael Posner, Villanova University; Darina Dicheva, Winston Salem State University; Don Goelman, Villanova; Heikki Topi, Bentley University; Christo Dichev, Winston Salem State University

Communicating What Liberal Arts Colleges Contribute to Computer Science
Room 609
Janet Davis, Whitman College; Angela Berardinelli, Mercyhurst University; Amanda Holland-Minkley, Washington & Jefferson College; Ellen Walker, Hiram College

Sustainable Methods for Impactful Service Learning in Computer Science
Room 201
Nate Derbinsky, Durga Suresh, Wentworth Institute of Technology

High School CS Teacher Certification: Standards, Assessments, and Professional Development
Room 611
Carol L. Fletcher, William Wesley Monroe, The University of Texas at Austin

Practical Systems Programming in Computer Science Education
Room 615
Peter Froehlich, Johns Hopkins University; Borja Sotomayor, University of Chicago

Process Oriented Guided Inquiry Learning (POGIL) in the CS Classroom
Room 310
Saturnino Garcia, University of San Diego

Computer Science Curricular Guidelines for Associate-Degree Transfer Programs
Room 203
Elizabeth Hawthorne, Union County College; Cara Tang, Portland Community College; Cindy Tucker, Bluegrass Community and Technical College; Christian Servin, El Paso Community College

Handling Very Large Lecture Courses: Keeping the Wheels on the Bus III
Room 606
Josh Hug, UC Berkeley; Cynthia Lee, Stanford University

GitHub, Tutors, Relatives, and Friends: The Wide Web of Plagiarism
Room 607
Amardeep Kahlon, Austin Community College; Bonnie MacKellar, St. John’s University; Anastasia Kurdia, Tulane University

Weaving Diversity and Inclusion into CS Content
Room 608
Justin Li, Occidental College

Using Tangible Manipulatives for Hands-on Activities in Undergraduate Computer Science Classes
Room 204
Stephanie Ludi, University of North Texas; Stan Kurkovsky, Central Connecticut State University

Perspectives on Teaching Humanitarian Free and Open Source Software
Room 211
Becka Morgan, Western Oregon University; Heidi Ellis, Western New England University; Gregory Hislop, Drexel University; Grant Braught, Dickinson College; Lori Postner, Nassau Community College

Strengthening Informal CS Education Program Delivery Through Evaluation Capacity Building
Room 620
Jason Ravitz, Google; Karen Peterson, National Girls Collaborative Project; Kathy Haynie, Haynie Research and Evaluation; Juliet Tiffany-Morales, Google

CSTA K-12 CS Standards for All
Room 602-604
Deborah Seehorn, CSTA; Bryan Twerek, San Francisco Unified School District; Todd Lash, University of Illinois at Urbana-Champaign

A Town Meeting: SIGCSE Committee on Expanding the Women-in-Computing Community
Room 618-619
Gloria Townsend, DePauw University

Researching the K–12 Computer Science Framework
Room 613-614
Pat Yongpradit, Code.org
FLOCK #2: THURSDAY, MARCH 9
6:30 pm - 7:20 pm

The ACM Code of Ethics and Professional Conduct: Teaching Strategies and the Coming Update
Room 312
Bo Brinkman, Miami University; Karla Carter, Bellevue University

The Power of Analogies in Introductory CS Education
Room 307
Yingjun Cao, University of California, San Diego; Scott Anderson, Wellesley College

Evaluating the Long-Term Impact of Pre-college Computing Activities
Room 203
Adrienne Decker, Rochester Institute of Technology; Monica McGill, Bradley University; Alan Peterfreund, Sage Fox Group

Alternative Publishing and Dissemination of CS Education Research
Room 320
Nickolas Falkner, The University of Adelaide; Elizabeth Patitsas, University of Toronto; Colleen Lewis, Harvey Mudd College

Strategies for Including Soft Skills and Interdisciplinary Content in CS Education
Room 204
Amanda Holland-Minkley, Washington Jefferson College; Thomas Lombardi, University of the Virgin Islands; Madeline Smith, Colgate University

Competency-Based Education in Lower-Division Computer Science Taught at Community Colleges
Room 211
Amardeep Kahlon, Linda Smarzik, Mary Kohis, Austin Community College

Access to Computing Education for Students with Disabilities
Room 311
Richard Ladner, University of Washington; Andreas Stefik, University of Nevada, Las Vegas; Daniela Marghita, Auburn University

Surviving “Open-ended Projects” in Project-Based Learning: A Teacher’s Perspective
Room 201
Tina Ostrander, Green River College; Ruby ElKharboutly, Quinnipiac University; Karen Jin, University of New Hampshire

Improving Effectiveness of CS Teacher Professional Development
Room 205
Karen Parker, Sloan Davis, Chris Stephenson, Jason Ravitz, Google

Collaborative Research into Game Jams, Hackathons and Event-Based Teaching in Higher Education
Room 615
Ian Pollock, Lonny Brooks, California State University, East Bay

Sharing and Using Programming Log Data
Room 310
Thomas W. Price, North Carolina State University; Neil C. C. Brown, University of Kent; Chris Piech, Stanford University; Kelly Rivers, Carnegie Mellon University

Can We Really Do It? - Conducting Significant Computer Science Research in Primarily Undergraduate Institutions (PUIs)
Room 613-614
Farzana Rahman, James Madison University; Suzanne Matthews, United States Military Academy, West Point; Kelly Shaw, University of Richmond; Andrea Danyluk, Williams College

An IoT BOF
Room 602-604
Michael Rogers, Northwest Missouri State University; Bill Siever, Washington University in St. Louis

CS4What? A Game-based Discussion about the Purposes of Universal Computer Science Education
Room 616-617
Rafi Santo, Indiana University; David Phelps, University of Washington

Teaching Track Faculty in CS
Room 606
Mark Sherriff, University of Virginia; Christopher Gregg, Stanford University; Shawn Lupoli, University of Maryland, Baltimore County

Mapping Alice Curriculum to Standards: A BOF for the Alice Community
Room 618-619
Donald Slater, Eric Brown, Wanda Dann, Carnegie Mellon University

Forming Strong and Effective Student Teams
Room 608
Anya Taflovich, University of Toronto Scarborough; Jennifer Campbell, University of Toronto; Daniel Zingaro, University of Toronto Mississauga; Francisco Estrada, University of Toronto Scarborough; Leo Porter, University of California, San Diego

Building and Supporting a Community of CS Educators Teaching Cybersecurity in 2017
Room 609
Richard Weiss, The Evergreen State College; Ambareen Siraj, Tennessee Tech University; Jens Macha, Lewis & Clark College; Elizabeth Hawthorne, Union County College; Blair Taylor, Siddharth Kaza, Towson University; Michael Locasto, SRI International
**Friday, March 10**

J. Philip East, *Chair*

10:00 am - 12:00 pm

**Exhibit Hall**

**Poster Session #1**

**What Should Cybersecurity Students Learn in School? Results from Interviews with Cyber Professionals**
Keith Jones, Akbar Siami-Namin, Miriam Armstrong, Texas Tech University

**Agile Development in Project-based Curriculum at Scale for Middle and High School Girls**
Sarah Judd, Megan Sullivan, Jeff Stern, Girls Who Code

**CS1: Computation & Cognition – An Evidence-based Course to Broaden Participation**
Clifton Kussmaul, Muhlenberg College

**Should Your College Computer Science Program Partner with a Coding Boot Camp?**
Louise Ann Lyon, ETR; Quinn Burke, College of Charleston; Jill Denner, ETR; James Bowring, College of Charleston

**Examining PhD Student Interest in Teaching: An Analysis of 19 Years of Historical Data**
Travis Mandel, University of Washington; Jens Mache, Lewis & Clark College

**Using Professional Development to Move Toward a Guided Discovery Approach in the Classroom**
Susan B. Miller, University of Colorado

**CodeBox64: A Tactile Input Modality for Block Programming**
Max Paulk, Amber Wagner, Kennesaw State University

**Cracking the Code: Bringing Introductory Computer Science to a Charleston Middle School**
Clare Rumsey, Quinn Burke, College of Charleston; Christopher Thurman, Charleston, SC School District

**Coding for All: Computer Science Outreach for All Ages and Budgets**
Jennifer Sabourin, Lucy Kosturko, Scott Mcquiggan, SAS Institute

**Cyber Crime Investigators: Pathways from High School to Cybersecurity Careers for First Generation College-Bound Students**
Nicole Simon, Megan Banford, City University of New York; John Jay College of Criminal Justice

**Motivating K-12 Students Toward Computer Science, and Computer Science Students Toward Teaching**
Peter Tucker, Whitworth University; Robert Bryant, Gonzaga University

**Enhancing Cybersecurity Education Using POGIL**
Xiaohong Yuan, North Carolina A&T State University; Li Yang, The University of Tennessee at Chattanooga; Wu He, Old Dominion University; Jennifer Ellis, The University of Tennessee at Chattanooga; Jinsheng Xu, Cynthia Waters, North Carolina A&T State University
FRIDAY, MARCH 10

J. Philip East, Chair

3:00 pm - 5:00 pm

Exhibit Hall

Merging MyCS: Lessons from a District-wide Middle-school CS Pilot
Sam Andow, Kaitlyn Eng, Harvey Mudd College; Julia McCarthy, Claremont McKenna College; Olivia Palenscar, Scripps College; Thomas Schneider, Adam Schulze, Zachary Dodds, Harvey Mudd College; Bryan Twrek, San Francisco USD

Implementing “In-Lab” Autograding for Snap!
Michael Ball, UC Berkeley

Studying Implementation of Secondary Introductory Computer Science: Pilot Results
Marie Bienkowski, Eric Snow, SRI International

Measuring Learning of Code Patterns in Informal Learning Environments
Sayamindu Dasgupta, Massachusetts Institute of Technology; Benjamin Mako Hill, University of Washington

On the Integration of Big Data and Cloud Computing Topics
Debzani Deb, Winston-Salem State University

What We Say vs. What They Do: A Comparison of Middle-School Coding Camps in the CS Education Literature and Mainstream Coding Camps
Anita DeWitt, Julia Fay, Madeleine Goldman, Eleanor Nicolson, Linda Oyoli, Lukas Resch, Jovan Martinez Saldahia, Souldeth Sounalath, Tyler Williams, Kathryn Yetter, Elizabeth Zak, Naran Brown, Samuel A. Rebelsky, Grinnell College

Early Intervention to Enhance Female Interest in Computing Sciences
Jean French, Hailey Crouse, Coastal Carolina University

Computer Science Teaching Knowledge: A Framework and Assessment
Aleata Hubbard, Yvonne Kao, WestEd

Open Extensible System for Dynamic Problem Creation for Computer Science
Keith Irwin, Darina Dicheva, Christo Dichev, Winston-Salem State University

An Interactive Web Application Visualizing Memory Space For Novice C Programmers
Ryosuke Ishizue, Waseda University; Kazunori Sakamoto, National Institute of Informatics; Hironori Washizaki, Yoshiaki Fukazawa, Waseda University

Emerging Learning Progressions in K-5 Integrated Mathematics and Computer Science Lesson Plans
Maya Israel, Todd Lash, George Reese University of Illinois at Urbana Champaign

Hopper's Fables: A Mathematical Storytelling Adventure
Deja Jackson, Cindi Simmons, Kate Zelaya, Erica Pantoja, Amber Wagner, Kennesaw State University

Computational Thinking App Design Mat: Supporting the Development of Students’ Computational Thinking Skills
Yerika Jimenez, University of Florida; Theodore Hays, Clemson University; Christina Gardner-McCune, University of Florida

Building Bridges: How the Southeast is Increasing the Representation of Students with Disabilities in STEM
Daniela Marghitu, Auburn University; Amber Wagner, Kennesaw State University

Implementing CS Principles as a Breadth-First Survey Course
Chris Mayfield, James Madison University

Can Undergraduate Computing Research Be Student-Driven?
Chelsea Patek, Ankur Chattopadhyay, University of Wisconsin - Green Bay

Broadening Secure Mobile Software Development (SMSD) Through Curriculum
Kai Qian, Hossain Shahrir, Kennesaw State University; Fan Wu, Cassandra Thomas, Tuskegee University; Emmanuel Agu, Worcester Polytechnic Institute

Applications of Specifications Grading in Computer Science Courses
Christian Roberson, Florida Southern College

Do Computer Science Exposure Activities and Courses Influence the Pursuit of Computing Majors in Higher Education among Underrepresented High School Students?
Allison Scott, Kapor Center for Social Impact; Alexis Martin, Frieda McAlear, Level Playing Field Institute

Curricular Guidance for Associate-Degree Transfer Programs in Computer Science with Contemporary Cybersecurity Concepts
Cara Tang, Portland Community College; Cindy Tucker, Bluegrass Community and Technical College; Elizabeth K. Hawthorne, Union County College; Christian Servin, El Paso Community College; Teresa Moore, Volunteer State Community College

CS OPEN: Building Evaluative Capacity for Out of School Organizations that Engage Girls in Computer Science
Juliet Tiffany-Morales, Google; Kathy Haynie, Haynie Research and Evaluation; Jason Ravitz, Google; Karen Peterson, National Girls Collaborative Project

A Flexible Late Day Policy Reduces Stress and Improves Learning
Jeramey Tyler, Matthew Peveler, Barb Cutler, Rensselaer Polytechnic Institute

Finding Exercise Equilibrium: How to Support the Game Balance at the Very Beginning?
Jan Vykopal, Jakub Čegan, Masaryk University

Collecting Participation Data Across NSF CS10K-funded Professional Development Providers
Rebecca Zarch, Alan Peterfreund, SageFox Consulting Group

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NSF Project Showcase Sessions feature recipients of education-related National Science Foundation grants

NSF Showcase will take place in The Exhibit Hall.

**NSF Showcase #1**
Thursday, March 9
10:00 am - 11:30 am

EDURange: An Easy-to-use Framework For Cybersecurity Education
Jens Mache, Lewis and Clark College; Richard Weiss, Evergreen State College; Michael Locasto, University of Calgary

A New Tool for Guiding Faculty in Customizing Database Visualizations for Learners of Many Majors
Suzanne W. Dietrich, Arizona State University; Don Goelman, Villanova University

Software Tutors for Introductory Programming: Epplets, Codelets and Problets
Amruth N. Kumar, Ramapo College of New Jersey

Computing in the Arts: Community Building and Curriculum Development
Jennifer Burg, Wake Forest University

**NSF Showcase #2**
Thursday, March 9
3:00 pm - 4:30 pm

CyberPaths: Broadening the Path to STEM Professions through Cybersecurity Learning
Xenia Mountrouidou, College of Charleston; Xiang-Yang Li, Illinois Institute of Technology

CS Principle Ebooks for Teachers and Students Building On Educational Psychology Principles
Barbara Ericson, Mark Guzdial, Miranda Parker, Georgia Tech

Activity-Based Logical Code Reasoning
Michelle Cook, Jason O. Hallstrom, Joseph E. Hollingsworth, Murali Sitaraman, Clemson University

Design Challenges and Stories: Integrating Reflective Design Learning in Computer Science
John Georgas, Northern Arizona University

**NSF Showcase #3**
Friday, March 10
10:00 am - 11:30 am

Information Assurance and Security Education on Portable Labs
Dan Lo, Kennesaw State University

Increasing Student Interest in Data Structures Courses with Real-World Data and Visualizations Using BRIDGES
Kalpathi Subramanian, UNC Charlotte; Jamie Payton, Temple University; Michael Youngblood, PARC; Robert Kosara, Tableaux Software; Paula Goolkasian, David Burlinson, Mihai Mehedint, Dakota Carmer, UNC Charlotte

Automated Laboratory Generation for Yakama Nation Students
Brent Lagesse, University of Washington

On Beyond Sudoku: Pencil Puzzles for Introductory Computer Science
Zack Butler, Ivona Bezakova, Rochester Institute of Technology

**NSF Showcase #4**
Friday, March 10
3:00 pm - 4:30 pm

Collaborative Research: Capacity Building in Cybersecurity-literacy: An Inter-disciplinary Approach
Shamik Sengupta, University of Nevada, Reno

Authentic STEAM-based Computer Science Education for Non-Majors
Brian Magerko, Tom McKlin, Lea Ikkache, Georgia Tech

Puzzle-Based Learning Approach to Teaching Cyber Security Concepts
Joshua Britt, Jackson State Community College

Integration of Computing with Electronic Textiles to Improve Teaching and Learning of Electronics in Secondary Science
Colby Tofel-Grehl, Utah State University

**NSF Showcase #5**
Saturday, March 11
10:00 am - 11:30 am

Designing and Studying of Maker Oriented Learning to Transform Advanced Computer Science
Zane Cochran, Georgia Tech

Transforming Computer Science Education Research Through Use of Appropriate Empirical Research Methods: Mentoring and Tutorials
Jeffrey Carver, University of Alabama; Sarah Heckman, North Carolina State University; Mark Sherriff, University of Virginia

Middle-years Computer Science
Sam Andow, Kaitlyn Eng, Julia McCarthy, Olivia Palenscar, Adam Schulze, Tommy Schneider, Zachary Dodds, Harvey Mudd College; Bryan Twarek, San Francisco Unified School District

Collaborative Research: Developing Course Modules to Teach Service-Oriented Programming Through Exemplification and Visualization
Rajendra Raj, Rochester Institute of Technology
2017 ACM Student Research Competition@SIGCSE

First Round of Competition - Posters
Thursday, March 9 • 1:45 pm - 5:00 pm
Exhibit Hall

Semi-Finalist Oral Presentations
Saturday, March 11 • 8:45 am - 10:00 am
Undergraduate Room 611
Graduate Room 612

The ACM Student Research Competition (SRC) at SIGCSE awards prizes to the top three graduate and undergraduate students determined by conference attendee evaluations of their research projects. Initially, students use the interactive nature of visual presentation to highlight different aspects of their research to individual evaluators. These presentations are evaluated on their quality, the significance of the works, and the clarity of the informal discussion. The semi-finalists, the top five students in their category, present their contributions using the standard forum of conference presentation during two conference sessions. The venue provides selected audience attendees with another platform for evaluation, the student with the experience in formal presentations, and conference participants with the opportunity to learn of ongoing, current research in computer science.

The winners will be announced and receive their awards during Saturday’s luncheon.

GRADUATE STUDENT RESEARCH PROJECTS

Neo-Piagetian Classification of Reasoning Ability and Mental Simulation in Microsoft’s Kodu Game Lab
Ashish Aggarwal, University of Florida

Managing the Internet of Things
Ben Romano, The University of Alabama

Sniffing Through Millions of Block-Based Programs for Bad Smells
Peeratham Techapalokul, Virginia Tech

Scaling Up Automated Verification: A Case Study and Formal-IDE for the Construction of High Integrity Software
Daniel Welch, Clemson University

UNDERGRADUATE STUDENT RESEARCH PROJECTS

The Application of 2D Structure Tensor in Visual Arts Design
Alec Battles, Jian Zhang, Texas Woman’s University

The Urban Archivist Application
James Belford, St Martins University

Tapped-based Authentication for Mobile Device Security
Łukasz Brodowski, Cameron Dziurgot, Donald Moretz, Central Connecticut State University

Mixed-initiative Personal Assistant Agents
Joshua Buck, Saverio Perugini, University of Dayton

Time Lord: Covert Timing Channel Implementation and Realistic Experimentation
Eduardo J. Castillo, Wolford College; Xenia Mountroudou, Xiangyang Li, College of Charleston

ORC2A: A Proof Assistant for Undergraduate Education
Jianting Chen, Meetha Gopalaswamy, Prabir Pradhan, Sooji Son, Peter-Michael Osera, Grinnell College

Raising Flags: Detecting Covert Storage Channels using Relative Entropy
Josephine Chow, University of Maryland, College Park; Xiangyang Li, Johns Hopkins University; Xenia Mountroudou, College of Charleston

Identifying and Exploiting Vulnerabilities in Civilian Unmanned Aerial Vehicle Systems and Evaluating and Countering Potential Threats Against the United States Airspace
Philip Costello, Randolph-Macon College

Quadrilateral Mesh Generation with a Provably Good Aspect Ratio Bound
Christopher Gillespie, Mark Moore, Colin Brown, Rutgers University, Camden, NJ

Applying Machine Learning to Predict Davidson College’s Admissions Yield
Joseph Jamison, Davidson College

Optimizing Kinect® Depth Sensing Using Dynamic Polarization
Jakub Janecek, Darya Aleinikava, Grace Mirsky, Benedictine University

One Size Doesn’t Fit All
Zane Johnston, Kennesaw State University

Recursive Convergence
Amy MacDonough, Haverford College

Creative Computing and Society: When Undergraduates Design a Curriculum For an Introductory Computing Course
Sierra Magnotta, Anushika Sharma, Jingyu Wu, Darakhshan Mir, Bucknell University

Digitalizing Paper-Based Exams: An Assessment of Programming Grading Assistant
Hannah Murphy, Arizona State University

A Pathway to Strengthening Support for BJC Teachers
Meghana Subramaniam, Veronica Catete, North Carolina State University

Teacher Configurable Coding Challenges for Block Languages
Nath Tumlin, University of Alabama

Improving SAT-Solving with Machine Learning
Haoze Wu, Davidson College

Quadrilateral Mesh Boundary Classification and Editing
Ziyan Yang, Bryn Mawr College

Using Scratch and Female Role Models While Storytelling Improves Fifth-Grade Students’ Attitudes toward Computing
Raza Zaidi, Isabel Freihofer, Gloria Townsend, DePauw University
Supporter Sessions

Lightning Talks

Saturday, March 11
Chair: Steve Wolfman, University of British Columbia
10:45 am - 12:00 pm
Room 609

Teach Global Impact: A Resource for CSP (or Any CS Class!)
Julia Bernd, International Computer Science Institute; Jonathan Corley, University of West Georgia

Accessibility as a First-Class Concern in Teaching GUIs and Software Engineering
Joel Ross, Andrew Ko, David Stearns, University of Washington iSchool

Class-Sourcing Exams: Student-Generated Exam Questions
Kendra Walther, University of Southern California

Using the 5 Practices to Improve Facilitation of POGIL Activities
Dee Weikle, James Madison University

Lessons learned from an EPIC Course - Mobile Application Development for Mobile Health
Chen-Hsiang Yu, Wentworth Institute of Technology
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  - Numerical Methods / PDEs
- **CMPSC 465**
  - Data Structures and Algorithms
- **CBE 30338**
  - Chemical Process Control
- **CS 180x**
  - AP Computer Science A on edX

**SIGCSE 2017 Vocareum Supporter Session Times**

- **Thursday, March 9, 10:45am - noon**
  - **Room 616-617**
  - Assessment Strategies for large CS classes
  - Christine Alvarado (UC San Diego) & Sanjay Srivastava (Vocareum)

- **Friday, March 10, 1:45 - 3:00pm**
  - **Room 618-619**
  - The Next Frontier For Large Online Classes
  - David Joyner (Georgia Tech) & Sanjay Srivastava (Vocareum)

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Keynote: Embracing Uncertainty (Jeanette Wing)  Thursday, 8:30am-10:00am
The Micro:bit: Hands-on Computing for the New Generation  Thursday, 10:00am-10:45am
Creating Cool Stuff—Pupils’ Experience of the BBC micro:bit  Thursday, 1:45pm-3:00pm
Dos and Don’ts of Partnering Software Professionals and Computer Science Classrooms  Friday, 10:45am-12:00pm
Preparing and Supporting Industry Professionals as Volunteer High School Computer Science Co-Instructors  Friday, 1:45pm-3:00pm
Physical and Game-based Computing for CS Education  Friday, 3:45pm-5:00pm
Teach Access: Preparing Computing Students for Industry  Saturday, 10:45am-12:00pm

Come visit us at booth #309
Auburn University - jGRASP
Booth 307
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jGRASP is a freely available integrated development environment with visualizations for improving the comprehensibility of software. Features include: Control Structure Diagrams (CSDs) for Java, C/C++, Objective-C, Python, Ada, and VHDL; UML class diagrams for Java; and dynamic viewers and canvas integrated with a visual debugger, workbench, and interactions for Java.

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Colloquium for Information Systems Security Education (CISSE)
Booth 202
49004 Packard Ct.
Belleville, MI 48111
www.cisse.info

In 1996 the Colloquium for Information Systems Security Education (CISSE) was created to define requirements for Information Assurance (IA) Education. We have aided in the implementation of IA Courses in K-12, Community Colleges, Universities and governmental training for the last 21 years. Join us for our 21st Conference at the JW Marriott in Las Vegas, June 12-14, 2017.

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www.crc.press.com

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CSTA
Booth 412
230 Washington Avenue
Extension, Suite 101
Albany, New York 12203
www.csteachers.org

The Computer Science Teachers Association (CSTA) is a membership organization that supports and promotes the teaching of computer science. CSTA provides opportunities for K–12 teachers and their students to better understand computer science and to more successfully prepare themselves to teach and learn.

CS Teaching Tips
Booth 503
Harvey Mudd College
301 Platt Blvd.
Claremont, CA 91711
www.csteachingtips.org

CS Teaching Tips is a NSF funded project providing teaching tips to computer science educators. Learn more about CS Teaching Tips at CSTeachingTips.org and on Twitter @CSTeachingTips.

CS Unplugged: Encourage Computing without Computers
Booths 401, 403, 405
Colorado School of Mines
1500 Illinois St
Golden CO 80401
www.toilers.mines.edu/CS-Unplugged

We seek to broaden participation in computing by deploying CS Unplugged activities in middle school classrooms. We have developed detailed lesson plans and have conducted studies which show that students are learning fundamental computing concepts (e.g., binary numbers) and teachers are able to deploy the activities themselves.

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Expanding Computing Education Pathways (ECEP)
Booths 401, 403, 405
School of Interactive Computing
85 5th Street NW
Atlanta, Georgia 30332-0760
www.ecepalliance.org
ECEP seeks to increase the number and diversity of students in the pipeline to computing and computing-intensive degrees by promoting state-level CS education reform. We support 16 states and Puerto Rico in the development of effective and replicable interventions while helping to expand state-level infrastructure that drives educational policy change.

Exploring Computing Careers through a Virtual Career Fair Using Embodied Conversational Agents
Booths 401, 403, 405
Morehouse College
Department of Computer Science
830 Westview Drive, S.W.
Atlanta, GA 30314
www.morehouse.edu
Exploring Computing Careers is a Broadening Participation Research Project aimed at increasing the number of underrepresented minorities, particularly African Americans, entering into computing majors and subsequently into computing-related careers. To achieve this vision, rural and urban high school students will interact with embodied conversational agents in virtual career exploration fairs.

Fostering Retention in STEM Disciplines at Minority Serving Institutions
Booths 401, 403, 405
Tuskegee University
College of Arts and Sciences
1200 W Montgomery Road
70-353 - Kenney Hall
Tuskegee, AL 36088
This NSF-funded project examines the psychosocial and structural factors affecting retention in STEM fields at partnering HBCUs and Hispanic Serving Institutions (HSIs). Data is gathered through focus groups and surveys at partnering institutions. Partners are guided to create their own action plans to improve STEM retention on their campuses.

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education.github.com
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Instructors, request free repositories at education.github.com

Google
Booths 102
1600 Amphitheater Parkway
Mountain View, CA 94043
www.google.com/edu/cs/
Google for CS education
Computer science education is a pathway that provides students with critical thinking skills needed to solve complex problems, creativity that fosters new ideas, and skills to drive innovation in tech and other fields. We believe that all students deserve an opportunity to learn and create using these skills.
By creating accessible learning opportunities through our programs, resources, tools and community partnerships, our goal is to make CS engaging and accessible for students, parents and teachers worldwide.

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ICCP
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Chicago, IL 60625
www.iccp.org

ICCP provides a national benchmarking exam for Computer Science, Information Systems, and Information Technology 4-year and 2-year academic programs. The reports we provide help assess your students and programs against the national ACM curriculum. ICCP is a non-profit organization based out of Chicago, IL.

Institute for African American Mentoring in Computing Sciences (iAAMCS)
Booths 401, 403, 405
University of Florida
Department of Computer and Information Science and Engineering
301 CISE Building
Gainesville, FL 32611
www.cise.ufl.edu/~juan/iAAMCS/index.html

iAAMCS pronounced “i am cs” the Institute for African-American Mentoring in Computing Sciences aims to significantly increase the number of Black/African-Americans pursuing and completing the PhD in computing fields through a national mentoring model. iAAMCS is synergized by previous NSF BPC Alliances (ARTSI, A4RC and EL) interventions and activities.

Institute of International Education (IIE), Fulbright Scholar Program
Booth 118
1400 K Street, NW, Ste. 700
Washington, DC 20005
www.iie.org/cies

The Fulbright Scholar Program provides grants in over 125 countries to support teaching and research in a variety of academic and professional fields. Recently, Fulbright has introduced new options to better accommodate the interests and commitments of today’s scholars, including innovations that increase flexibility, impact and scope of the program.

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Lighthouse
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Program in Science, Technology & Society
Dept. of Engineering & Society
University of Virginia
Charlottesville, VA 22904
LH4CS.org

Lighthouse is a set of projects for developing effective educators who promote diversity in computing. Tapestry successfully uses face-to-face learning workshops with high school teachers to increase the number and diversity of female enrollments in high school computing. CC will provide a comparable on-line environment for community college instructors.

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Mercury Learning and Information provides content in the STEM disciplines designed for the professional/reference, trade, library, higher education, career school, and on-line training markets. Most texts include instructor’s materials. Instructor’s exam copies are available upon approval at www.merclearning.com/reviewcopy.html

Microsoft
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Redmond, WA 98052
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Microsoft seeks to empower all young people, especially those most vulnerable to being left behind, by providing access to computer science education and digital skills they need to participate in a world that’s being transformed by technology. Through partnerships around the world with nonprofits, governments, educators and businesses, millions of youth have gained the problem-solving, critical-thinking and coding skills they can use to build better careers and lives.

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National Center for Women & Information Technology (NCWIT)
Booths 401, 403 & 405
University of Colorado
Campus Box 320
Boulder, CO 80309-0320
www.ncwit.org

The National Center for Women & Information Technology (NCWIT) is a non-profit community of change leaders who represent more than 850 universities, companies, non-profits, and government organizations nationwide working to increase girls’ and women’s meaningful participation in computing by utilizing NCWIT resources for taking action in recruitment, retention, and advancement.

NCWIT EngageCSEdu Project
Booths 407
1111 Engineering Dr.,
NCWIT ECCE 1B36
Boulder, CO 80309
www.ncwit.org

EngageCSEdu is a platform for instructors of introductory computer science courses to find and share high quality course materials to engage all students. All materials are peer reviewed for both quality and use of at least one research-based “Engagement Practice.” Visit our booth to learn more.

NSF Showcase
Booth 301
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Box 400740
Charlottesville, VA 22904
www.nsfshowcase.org

Every year, twenty sponsored NSF projects are asked to present their work in an interactive, personal format during the break sessions at SIGCSE. The goal of the showcase is to share information about programs and research that attendees might not otherwise hear about. http://www.cs.virginia.edu/~sherriff/nsfshowcase/
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STARS Computing Corps.
Booths 401, 403 & 405
Temple University
1925 N. 12th Street
Philadelphia, PA 19122
www.starsalliance.org/
The STARS Computing Corps is an NSF-funded national alliance of over 50 colleges and universities that engages a diverse group of college students in service learning projects with regional K-12 schools, industry, and community partners to inform, engage, and prepare future students for entry and success in college computing programs. Since 2006, STARS students have reached over 130,000 K-12 students in workshops, camps, and after school programs that introduce computer science concepts.
Sustainable Diversity in the Computing Research Pipeline (CRA-W/CDC) Alliance

Booths 401, 403 & 405
1828 L Street NW, Suite 800
Washington, DC 20036
www.cra-w.org

The Sustainable Diversity in the Computing Research Pipeline (CRA-W/CDC) Alliance offers programs at the undergraduate through mid-career levels aimed at increasing and retaining the number of women, underrepresented minorities and people with disabilities participating in computing research and education.

University of Puerto Rico

Booth 109
Computer Science Department
P.O. Box 77377
San Juan, PR 00936-8377

UPR-RP is a public, research-oriented Hispanic Serving Institution. The Department of Computer Science offers an ABET-accredited B.S. degree. The main goal of the EIP project is to enhance the delivery of the introductory computer science programming course through a set of well-structured online laboratory experiences.

Virginia Tech

Booth 304
Virginia Tech – Department of Computer Science
Blacksburg, VA 24061
www.vt.edu

The Department of Computer Science at Virginia Tech is a world leader in Computer Science Education Research. Notable projects include the Web-CAT autograder system for large class projects, the OpenDSA open eTextbook system, CodeWorkout for small programming exercises, and BlockPy for transitioning students from blocks-based languages to Python.

Teradata University Network

Booth 103
11695 Johns Creek Parkway
Suite 400
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www.teradatauniversitynetwork.com

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Turing’s Craft, Inc.

Booth 300
671 E. 17th Street
Brooklyn, NY 11230-1703
www.turningscraft.com

Turing’s Craft is the provider of the CodeLab service, the web-based interactive programming exercise system for intro programming classes in Python, Java, C++, C, JavaScript, C#, VB, SQL and MATLAB. First offered in 2002 to reduce attrition and raise the overall level of instruction in CS classes, it is a seasoned system that has been used in over 400 institutions in 20 countries and analyzed over one hundred and fifteen million exercise submissions from more than 300,000 students.

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Women In Cybersecurity

Booths 401, 403 & 405
Tennessee Tech University
P.O. Box 5101
Cookeville, TN 38505
www.csc.tnstate.edu/wicys/about/

WiCyS has been a continuing effort to recruit, retain and advance women in cybersecurity. It brings together women (students/faculty/researchers/professionals) in cybersecurity from academia, research and industry for sharing of knowledge/experience, networking and mentoring. Beyond the annual conference, WiCyS is a community of engagement, encouragement and support for women in cybersecurity.

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