1345-1500 MAIN SESSION CS Speed Dating with Google

Conference attendees are invited up close and personal with some of Google’s computer science education tools and funding programs across a variety of Computer Science education initiatives. Cameron Fadjo, Neil Fraser, JamieSue Goodman, Kevin O’Malley, Karen Parker, Chris Stephenson, and Phil Wagner provide speedy introductions to the Google suite followed by community “mingling”.

1545-1700 PANEL Supporting the CS Learning Process

This engaging panel of experts from private industry, non-profit and academic institutions will unpack the challenge between strong pedagogy and compelling learning platforms. Google, Code.org, Middlebury College, and Prospect Hill Academy representatives debate emerging themes and challenges.

1000-1045 DEMO CS1 & CS2 Materials for Engaging and Retaining Undergraduate CS Students

Representatives from Google, NCWIT and University of California Long Beach will introduce the Engage CSedu repository, a free compilation of lesson plans, articles and related materials to augment your current computer science instruction tools. This session will showcase CS 1 and CS2 curriculum created by faculty.

1045-1200 PANEL Research, Resources & Communities: Informal Education as a Partner in CS Ed

The aggregate value of computer science educational resources is discussed among project leads the the custom Computer Science search engine from Google, Santa Fe Institute, Georgia Institute of Technology and National Girls Collaborative Project. Panelists include Cameron Fadjo (Google), Betsy DiSalvo (Georgia Institute of Technology, Irene Lee Santa Fe Institute) and Karen Peterson (National Girls Collaborative Project).

1345-1500 PANEL Building and Sustaining Communities of Practice

In a loosely-structure dialogue, seasoned university and high school practioners will address themes related to community engagement and strategies for cultivating more active with opportunities for educators to contribute to the conversation. Moderated by Google’s Karen Parker.

1900-2200 WORKSHOP Pencil Code: Bridging the Gap Between Visual & Text-Based CS Education

Join this three-hour workshop for a hands-on look at Pencilcode, a simple text-based coding language teaching programming fundamentals through drawing, music and fiction-writing exercises. Hear from the creators themselves, as well as educators using this creative platform in the field. Attendees will leave with an understanding of best practices for teaching transitioning students to text code. Led by David Bau and Matthew Dawson from Google with Anthony Bau, Phillips Exeter Academy.

Computer Science education is more than digital literacy.
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26-28 Supporter Sessions
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38-43 Guide to Exhibitors
Back cover Supporter Thank You

http://sigcse2015.sigcse.org
Welcome to SIGCSE 2015, the 46th ACM Technical Symposium on Computer Science Education. This year’s symposium presents the latest advances in computer science education in a variety of formats: papers, posters, panels, special sessions, workshops, birds of a feather meetings and, new this year, demonstrations and lightning talks. This year’s symposium theme is “Keep Connected. Keep Committed. Keep Computing.” We are asking our attendees to consider how they can use the conference to keep connected to each other and the field, to keep committed to the cause of computing education, and most fundamentally, to keep computing and to demonstrate to all our students how exciting this field truly is.

We are delighted to have Jessica Hodgins of Carnegie Mellon University and Disney Research giving SIGCSE 2015’s opening plenary address on Thursday. Her work at Carnegie Mellon and Disney Research will demonstrate what new and exciting things will keep us computing in the coming years. Keith Hampton of Rutgers University is speaking at our Saturday luncheon. His work in social media demonstrates how keeping us connected is an important part of building strong relationships. Finally, it is our pleasure to announce the recipients of the two annual SIGCSE awards, the recipients of which demonstrate keeping committed to the field of computing education and to the SIGCSE organization and community. Frank Young of Rose-Hulman Institute of Technology will receive the SIGCSE Award for Lifetime Service to the Computer Science Education Community, and will speak at our First Timer’s Lunch on Thursday. (SIGCSE First Timers will receive their lunch for free. SIGCSE Old Timers are encouraged to purchase a ticket, join us for lunch, meet some First Timers, and recognize Frank’s contributions.) Mark Allen Weiss of Florida International University is the recipient of the SIGCSE Award for Outstanding Contributions to Computer Science Education. Mark will give the plenary address on Friday.

As noted above, we are very excited to be introducing two new tracks for SIGCSE 2015. A Demos track will be presented in the exhibit hall during breaks, and a session dedicated to Lightning Talks will take place on Friday afternoon at 3:45pm.

Symposium statistics are presented in the adjacent table. This year’s program includes the usual wide selection of events, including the Evening Reception on Thursday and the ACM SIGCSE Student Research Competition, as well as another puzzle challenge. Our exhibit hall features a number of exhibitors showcasing the latest in hardware, software tools, textbooks and educational programs and research.

We encourage you to participate in our SIGCSE 2015 Pre-symposium Events. As of the publication deadline for this overview, meetings on the following topics will occur on Wednesday: ACM SIGCAS Symposium on Computing for the Social Good: Educational Practices, CSTEachingTips.org: Tip-A-Thon, GENI in your Classroom, Git and GitHub: Foundations for Educators, LittleFe Build-Out, Managing the Academic Career for Women Faculty in Undergraduate Computing Programs, SIGCSE 2015 Department Chairs Roundtable, and Teaching to Diversity in Computer Science.

Our sincere thanks go out to the people who have made this Symposium extraordinary. First, our Program Committee: Paul Carter, Steve Cooper, Tom Cortina, Michelle Craig, Pam Cutter, R.J. Dake, Lynn Degler, Paul Denny, Peter DePasquale, John Dooley, Brian Dorn, Ria Galanos, Brian Hare, Sarah Heckman, Mike Helmick, Matt Jadud, Cary Laxer, Sara Melnick, Larry Merkle, Briana Morrison, David Musicant, Alvaro Monge, Cheryl Seals, Ann Sobel, Valerie Henderson Summet, Paul Tymann, Henry Walker, and Jian Zhang. Additional thanks go to our Associate Program Chairs who provided meta-reviews for papers: Eric Aaron, Ruth Anderson, Don Blaheta, Alistair Campbell, Stephen Edwards, Mary Anne Egan, Dave Levine,
Sam Rebelsky, Brad Richards, Tammy Vandegrift, Ellen Walker, and Steve Wolfman. We would also like to thank our International Liaison Committee (Reyyan Ayfer, Karen Bradshaw, Orit Hazzan, Fredrik Heintz, Jeisson Hidalgo-Céspedes, Meriel Huggard, Ville Isomottonen, Sridhar Iyer, Janet Lin, Chris McDonald, Ian Sanders, Clarisse Sieckennius de Souza, Claudia Szabo, Gary Wong, Mark Zarb, and Ming Zhang) for helping ensure that SIGCSE 2015 is welcoming to attendees from around the world. Last, but certainly not least, we would like to thank all our student volunteers who help us with all the small details, and of course the authors and reviewers, without whom there would be no program at all.

In addition to our committee, there are others who have given to the symposium in a volunteer capacity and we need to acknowledge their contributions as well. They have added to the experience of the attendees in various ways: Zack Butler from the Rochester Institute of Technology gave his time to challenge us with our Puzzle Challenge, and Tracy Camp and her CONNECT team kept us connected throughout our time at the conference. And it is hard to imagine this conference without a visual identity. Andy Phelps, Director of the MAGIC Center at Rochester Institute of Technology, gave his time and artistic talent to create our conference logo and all of its variations, and who listened to all of our requests for tweaks and changes and actually gave them to us.

We wish to thank all our supporters, vendors, exhibitors and in-kind donors whose participation does more than make the Symposium possible; your participation enhances the collaboration and learning experiences all week. A special thank you to the following supporters: Google (Platinum), Microsoft (Platinum), ABET (Gold), Oracle Academy (Gold), GitHub (Silver), Gradescope (Silver), Piazza (Silver), Teradata University Network (Silver), Zyante (Silver), and Turing’s Craft (Bronze). Special thanks to Dorothea Heck and her team at D. Lawrence Planners for coordinating an outstanding exhibition and their creative efforts with conference planning and logistics.

We are grateful for the support and guidance given to us by SIGCSE President Susan Rodger and the entire Board, as well as the contributions of the SIGCSE Symposium Site Coordinators Bob Beck and Scott Grissom. ACM provides the infrastructure for conferences and the help of April Mosqus, Ann Lane, Irene Frawley, and Donna Cappo from ACM has been extremely valuable. Sheridan Printing Company brings all the materials for the proceedings together and we thank Lisa Tolles and Adrienne Grisci for all their support through this process. We have truly fallen in love with Kansas City and the people we have met and worked with there. We thank Dennis Cross and all of the staff at the Kansas City Convention Center, as well as Leticia Hickman and Jeremy Sanders and their staff at the Kansas City Marriott Downtown for making our events at both venues just wonderful. Nate Lawrence and his staff at PB & J Catering have done a remarkable job giving us a delectable taste of what Kansas City has to offer from the culinary perspective, and we are grateful for their culinary artistry. Every time we set foot in the city, Jenny Wilson from Visit KC has always shown us the best KC has to offer and has been a wonderful ally in our quest to find the best restaurants and attractions to share with all of you as attendees. Without Jenny, our time in KC would certainly have been less enjoyable.

Special thanks to our home institutions for providing needed resources: Baldwin Wallace University, the Rochester Institute of Technology, the University at Buffalo, and the University of British Columbia. We hope you enjoy the Symposium. Keep connected, keep committed, and keep computing.

**Symposium Chairs**

Adrienne Decker  
*Rochester Institute of Technology*

Kurt Eiselt  
*University of British Columbia*

**Program Chairs**

Jodi Tims  
*Baldwin Wallace University*

Carl Alphonce  
*University at Buffalo*
Symposium Chairs
Adrienne Decker, Rochester Institute of Technology
Kurt Eiselt, University of British Columbia

Program Chairs
Carl Alphonce, University at Buffalo
Jodi Tims, Baldwin Wallace College

Panels and Special Sessions
Peter DePasquale, The College of New Jersey

Workshops
Paul Carter, University of British Columbia
Alvaro Monge, California State University, Long Beach

Publications
Jian Zhang, Texas Woman’s University

Database Administrators
John Dooley, Knox College
Henry Walker, Grinnell College

Registration
Lynn Degler, Rose-Hulman Institute of Technology
Cary Laxer, Rose-Hulman Institute of Technology
Larry Merkle, Computational Optimization Services

Posters
Michelle Craig, University of Toronto

Birds of a Feather
Ria Galanos, Thomas Jefferson High School for Science and Technology

Lightning Talks and Demos
Mike Helmick, Google Inc.

Student Volunteers and Activities
Pam Cutter, Kalamazoo College
Sarah Heckman, North Carolina State University
Sara Melnick, Bronx Academy for Software Engineering

Treasurer
Paul Tymann, Rochester Institute of Technology

Evaluations
Steve Cooper, Stanford University

Kids Camp
Cheryl Seals, Auburn University
Valerie Henderson Summet, Emory University

Publicity/Social Media
Briana Morrison, Southern Polytechnic State University

Webmaster
Matt Jadud, Berea College

Support/Exhibitor Liaison
Tom Cortina, Carnegie Mellon University
Dave Musicant, Carleton College

Pre-Conference Events & Affiliated Events Liaison
Brian Dorn, University of Nebraska Omaha

K-12 Liaison
RJ Dake, Kansas State Department of Education

Local Arrangements
Brian Hare, University of Missouri – Kansas City

Student Research Competition
Ann Sobel, Miami University (Ohio)

International Liaison
Paul Denny, University of Auckland, New Zealand

International Committee
Paul Denny (Chair), University of Auckland, New Zealand
Reyyan Ayfer, Bilkent University, Turkey
Karen Bradshaw, Rhodes University, South Africa
Orit Hazzan, Technion – IIT, Israel
Fredrik Heintz, Linköping University, Sweden
Jeisson Hidalgo-Céspedes, University of Costa Rica
Meriel Huggard, Trinity College Dublin, Ireland
Ville Isomottonen, University of Jyväskyla, Finland
Sridhar Iyer, Indian Institute of Technology Bombay, India
Janet Lin, National Taiwan Normal University, Taiwan
Chris McDonald, University of Western Australia
Ian Sanders, University of South Africa
Clarisse Sieckenius de Souza, PUC-Rio, Brazil
Claudia Szabo, The University of Adelaide, Australia
Gary K. W. Wong, The Hong Kong Institute of Education
Mark Zarb, University of Dundee, Scotland
Ming Zhang, Peking University, China

Associate Program Chairs
Eric Aaron, Vassar College
Ruth E. Anderson, University of Washington
Don Blaheta, Longwood University
Alistair Campbell, Hamilton College
Stephen Edwards, Virginia Tech
Mary Anne Egan, Siena College
Dave Levine, St. Bonaventure University
Sam Rebelsky, Grinnell College
Brad Richards, University of Puget Sound
Tammy Vandegrift, University of Portland
Ellen Walker, Hiram College
Steve Wolfman, University of British Columbia
### SIGCSE 2015 Symposium At-A-Glance

#### Wednesday · March 4

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tbody>
<tr>
<td>8:00 am - 5:00 pm</td>
<td>Pre-conference Events</td>
<td>See page 10</td>
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<tr>
<td>3:00 pm - 9:30 pm</td>
<td>Registration</td>
<td>Lobby 2500</td>
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<tr>
<td>7:00 pm - 10:00 pm</td>
<td>Workshops 1 - 7</td>
<td>See page 10</td>
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<tr>
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<td>Registration</td>
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<tr>
<td>8:30 am - 10:00 am</td>
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<td>10:00 am - 10:45 am</td>
<td>Break, Exhibits &amp; Demos</td>
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<tr>
<td>10:45 am - 12:00 pm</td>
<td>Technical Sessions</td>
<td>See page 11</td>
</tr>
<tr>
<td>12:00 pm - 1:45 pm</td>
<td>First Timer's Luncheon (Young)</td>
<td>1501</td>
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<tr>
<td>12:00 pm - 1:45 pm</td>
<td>Lunch Break</td>
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<td>1:45 pm - 3:00 pm</td>
<td>Technical Sessions</td>
<td>See pages 12-13</td>
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<td>1:45 pm - 5:00 pm</td>
<td>Student Research Posters</td>
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<td>NSF Showcase #2</td>
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<td>See pages 14-15</td>
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<td>5:30 pm - 6:20 pm</td>
<td>Birds of a Feather: Flock 1</td>
<td>See page 30</td>
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<tr>
<td>6:30 pm - 7:20 pm</td>
<td>Birds of a Feather: Flock 2</td>
<td>See page 31</td>
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<tr>
<td>7:30 pm - 8:30 pm</td>
<td>SIGCSE Reception</td>
<td>Imperial Ballroom, Marriott</td>
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#### Friday · March 6

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<td>Break, Exhibits &amp; Demos</td>
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<td>NSF Showcase #3</td>
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<td>10:00 am - 12:00 pm</td>
<td>Poster Session I</td>
<td>Lobby 2500</td>
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<td>Technical Sessions</td>
<td>See pages 16-17</td>
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<td>12:00 pm - 1:45 pm</td>
<td>Lunch Break</td>
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<td>12:00 pm - 1:45 pm</td>
<td>International Lunch</td>
<td>Gordon Biersch Restaurant</td>
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<td>1:45 pm - 3:00 pm</td>
<td>Technical Sessions</td>
<td>See pages 18-19</td>
</tr>
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<td>Break, Exhibits &amp; Demos</td>
<td>Exhibit Hall</td>
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<td>3:00 pm - 5:00 pm</td>
<td>Poster Session II</td>
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<td>3:00 pm - 4:30 pm</td>
<td>NSF Showcase #4</td>
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<td>Technical Sessions</td>
<td>See pages 19-20</td>
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<td>3:45 pm - 5:00 pm</td>
<td>Lightning Talks</td>
<td>3501D</td>
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<tr>
<td>5:10 pm - 5:55 pm</td>
<td>SIGCSE Business Meeting</td>
<td>2505A</td>
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<tr>
<td>6:00 pm - 6:55 pm</td>
<td>CCSC Business Meeting</td>
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<td>7:00 pm - 10:00 pm</td>
<td>Workshops 8 -19</td>
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#### Saturday · March 7

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<tr>
<td>9:00 am - 10:15 am</td>
<td>Technical Sessions</td>
<td>See page 22</td>
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<td>10:15 am - 10:45 am</td>
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<td>See pages 23-24</td>
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<tr>
<td>12:00 pm - 2:00 pm</td>
<td>Luncheon &amp; Keynote (Hampton)</td>
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<tr>
<td>2:00 pm - 3:00 pm</td>
<td>Registration</td>
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<tr>
<td>3:00 pm - 6:00 pm</td>
<td>Workshops 20 -30</td>
<td>See pages 24-25</td>
</tr>
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WiFi Network: SIGCSE
Access Code: SIGCSE2015
MARriott TOWER

Muehlebach Tower
Keynote Presentations

Thursday, March 5
8:30 am - 10:00 am
Room: 2501AB

Educating for Both Art and Technology
Jessica Hodgins, Carnegie Mellon University and Disney Research

Universities have traditionally drawn firm lines between classes in art and those in technology based fields such as computer science, placing them in separate departments, schools, and colleges. Human resources departments of companies have drawn similar lines between their “creative” and their “tech” employees, recruiting from different universities and creating different job titles and pay structures. In this talk, I will argue that the leaders of the next generation are going to be “hybrids” who each contribute to both sides of the art and tech divide and find it natural to interact and collaborate with co-workers with varied and mixed educational and work backgrounds. As an example of this style of education, I will report on an interdisciplinary course entitled Animation Art and Technology, which I have co-taught with Professor James Duesing in the School of Art for the past ten years at Carnegie Mellon University. The students are an interdisciplinary mix drawn from the traditional majors of art, computer science as well as a computer science and art bachelor's degree program. The class produces four or five animations each semester, most of which have a substantive technical component, and the students are challenged to consider content innovation as equal to the technical aspects of their projects. Building on this style of education, Carnegie Mellon has recently created a program called IDeATE (Integrative Design, Arts and Technology Network) that offers a variety of minors and concentrations to students interested in blending art and technology in a variety of ways. 120 students enrolled in the first year indicating that the students recognize the need for these “hybrid” skill sets.

As an example of the success of these efforts in industry, I will report on several research projects completed at Disney Research that would not have been possible without the highly collaborative efforts of teams of creative and techies.

Thursday, March 5
12:00 pm - 1:45 pm
Room: 1501

Paying Back and Paying Forward
Frank H. Young, Professor Emeritus, Rose-Hulman Institute of Technology

As professionals we need to pay back for the many opportunities we have been given, for the benefits we have received, for the sacrifices others have made so that we could thrive, and for support from society and industry. We have been nurtured in many ways and we have an obligation to pay back for this nurturing.

As educators we have an obligation to pay forward to ensure that there are replacements for us, to ensure that the computing professions contribute to the welfare of society, to ensure that those being educated for the future have the ability and opportunity to thrive, and to ensure that the computing professions set an example in providing opportunities for all who have the ability to contribute.

Volunteering helps foster a sense of community and is absolutely necessary for SIGCSE. The SIGCSE community needs, welcomes, and rewards volunteers. Volunteering also rewards the individual volunteer in many ways.
Keynote Presentations

**Friday, March 6**
8:30 am - 10:00 am
Room: 2501AB

**Data Structures Courses: Past, Present, and Future**
Mark Allen Weiss, Florida International University

The “Data Structures” course is arguably one of the most important for computer science majors. In this talk, I will discuss how this course has evolved over the last three decades, and discuss some topics we might want to start thinking about in the next decade.

---

**Saturday, March 7**
12:00 pm - 2:00 pm
Room: 2501AB

**Connected, Committed and Social? The Consequences of Computing for Relationships**
Keith N. Hampton, Rutgers University

Digital technologies are increasingly an ubiquitous part of everyday communication. These technologies offer contact with friends and family that is both persistent and pervasive. Social ties that at one time would have gone dormant, or vanished entirely, are now made persistent through social media. As we transition through different jobs, neighborhoods, schools, and communities our social ties remain. Contact is no longer reliant on the occasional phone call and holiday card, but has a persistent presence on our screens and through our mobile devices. What are the benefits and the consequences of being connected? Are our relationships more committed? What impact will these emerging developments in computing have for society? It has been said that these technologies offer new opportunities for democratic participation, that they support collective action, and give marginalized individuals a voice. Social capital, once lost through the dormancy of ties, hidden as a result of infrequent contact, can be made visible through the persistent and pervasive nature of these new media. Yet, the practice of social media may not live up to its hype; they may contribute to social isolation, stress, and disengagement. Based on a series of large-scale studies of where people connect, who they connect with, and what they discuss, this presentation explores contradictory evidence of how digital technologies are related to social capital, democratic engagement, and the fear and joy that we may all be missing out.
## Pre-Symposium Events

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
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<tbody>
<tr>
<td>8:15 am - 5:15 pm</td>
<td>Managing the Academic Career for Women Faculty in Undergraduate Computing Programs</td>
<td>2502A</td>
</tr>
<tr>
<td>8:15 am - 5:30 pm</td>
<td>LittleFe Build-Out</td>
<td>2505A</td>
</tr>
<tr>
<td>8:30 am - 12:00 pm</td>
<td>GENI in Your Classroom</td>
<td>2503A</td>
</tr>
<tr>
<td>8:30 am - 12:30 pm</td>
<td>Cyber Education Program Steering Committee Meeting</td>
<td>2503B</td>
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<tr>
<td>8:30 am - 5:00 pm</td>
<td>SIGCSE2015 Department Chairs Roundtable</td>
<td>2502B</td>
</tr>
<tr>
<td>9:00 am - 5:00 pm</td>
<td>Git and GitHub: Foundations for Educators</td>
<td>2505B</td>
</tr>
<tr>
<td>1:00 pm - 4:00 pm</td>
<td>CSTeachingTips.org: Tip-A-Thon</td>
<td>2503A</td>
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<tr>
<td>1:00 pm - 4:30 pm</td>
<td>Teaching to Diversity in Computer Science</td>
<td>2503B</td>
</tr>
<tr>
<td>1:00 pm - 5:30 pm</td>
<td>ACM SIGCAS Symposium on Computing for the Social Good: Educational Practices</td>
<td>2504A</td>
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## Wednesday Workshops: 7:00 pm - 10:00 pm

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Title</th>
<th>Room</th>
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</thead>
</table>
| Workshop 1 | Teaching Computing Foundations to Non-Majors  
Catherine Bareiss, Larry Vail, Olivet Nazarene University | 2503A    |
| Workshop 2 | Teaching Parallel & Distributed Computing with MPI  
Joel C Adams, Calvin College; Richard A Brown, St. Olaf College; Elizabeth Shoop, Macalester College | 2502A    |
| Workshop 3 | Teaching Computer Science Soft Skills  
Orit Hazzan, Gadi Har-Shai, Technion - Israel Institute of Technology | 2502B    |
| Workshop 4 | SEED Labs: Using Hands-on Lab Exercises for Computer Security Education  
Wenliang Du, Syracuse University | 2504A    |
| Workshop 5 | Teaching Introductory Computer Science for a Diverse Student Body: Girls Who Code Style  
Jeff Stern, University of Michigan; Ashley Gavin, Independent; Kari Bancroft, Girls Who Code | 2505A    |
| Workshop 6 | Making Music with Computers: Creative Programming in Python  
Bill Manaris, College of Charleston; Andrew R. Brown, Griffith University; Tobias Kohn, ETH Zürich | 2503B    |
| Workshop 7 | Intellectual Property Law Basics for Computer Science Instructors  
CANCELED | 2505B    |

### Thursday, March 5

#### Schedule of Events

### Keynote Session

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
</table>
| 8:30 am - 10:00 am | **Welcome:** Adrienne Decker, Symposium Co-Chair, Rochester Institute of Technology and Kurt Eiselt, Symposium Co-Chair, University of British Columbia  
**Plenary Session:** Educating for Both Art & Technology  
Jessica Hodgins, VP, Disney Research and Professor, Carnegie Mellon | 2501AB        |

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

#### Paper Sessions

<table>
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<th>Room</th>
<th>Time</th>
<th>Event</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>2502A</td>
<td>10:45 AM</td>
<td>Student Response to Teaching of Memory Cues and Resumption Strategies in Computer Science Classes</td>
<td>Noah John, Jaime Ruiz, Colorado State University</td>
</tr>
<tr>
<td>2503A</td>
<td>11:10 AM</td>
<td>Closing the Cyberlearning Loop</td>
<td>Ashok Ram Basawapatna, Alexander Repenning, AgentSheets Inc.; Kyu Han Koh, University of Colorado</td>
</tr>
<tr>
<td>3501C</td>
<td>11:35 AM</td>
<td>Analyzing Student Work Patterns Using Programming Exercise Data</td>
<td>Jaime Spacco, Knox College; Paul Denny, University of Auckland; Brad Richards, University of Puget Sound; David Babcock, David Hovemeyer, James Moscola, York College of Pennsylvania; Robert Duvall, Duke University</td>
</tr>
</tbody>
</table>

### CS Education Research

**Chair:** Ahmad Ghafarian, University of North Georgia  
**Room:** 2502A

### Curriculum

**Chair:** Henry Walker, Grinnell College  
**Room:** 2503A

### CS1/CS2: Focus on CS1

**Chair:** Valerie Summet, Emory University  
**Room:** 3501C

### Beyond CS2: Miscellaneous Topics

**Chair:** Carsten Kleiner, University of Applied Sciences Hannover  
**Room:** 3501D

### Beyond CS2: Embedding Secure Coding Instruction into the IDE: A Field Study in an Advanced CS Course

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Michael Whitney</td>
<td>Heather Lipford-Richter, Bill Chu</td>
<td>University of North Carolina Charlotte</td>
</tr>
</tbody>
</table>

### Beyond CS2: Augmenting Undergraduate Computer Science Education With Programmable Smartwatches

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andrey Esakia</td>
<td>Shuo Niu, D. Scott McCrickard, Virginia Tech</td>
<td>University of North Carolina at Charlotte</td>
</tr>
</tbody>
</table>

### Beyond CS2: Simulating IBM Watson in the Classroom

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wlodek W. Zadrozny, Sean Gallagher, Walid Shalaby, Adarsh Avadhani</td>
<td></td>
<td>University of North Carolina at Charlotte</td>
</tr>
</tbody>
</table>

### Beyond CS2: NSF Showcase #1 (See page 29 for a complete listing of NFS Showcases)

**Room:** Exhibit Hall

### Beyond CS2: Demo Sessions: Michael E. Caspersen, Chair

<table>
<thead>
<tr>
<th>Demonstration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EarSketch: A Web-based Environment for Teaching Introductory Computer Science Through Music Remixing</td>
<td>Jason Freeman, Brian Magerko, Regis Verdin, Georgia Institute of Technology</td>
</tr>
<tr>
<td>Blockly Language Creation and Applications: Visual Programming for Media Computation and Bluetooth Robotics Control</td>
<td>Jake Trower, Jeff Gray, University of Alabama</td>
</tr>
</tbody>
</table>

### Beyond CS2: Program Decomposition and Complexity in CS1

<table>
<thead>
<tr>
<th>Demonstration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supporting Creativity and User Interaction in CS 1 Homework Assignments</td>
<td>Tammy VanDeGrift, University of Portland</td>
</tr>
</tbody>
</table>

### Beyond CS2: Creating a Computer Simulator as a CS1 Student Project

<table>
<thead>
<tr>
<th>Demonstration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embedding Secure Coding Instruction into the IDE: A Field Study in an Advanced CS Course</td>
<td>Michael Whitney, Heather Lipford-Richter, Bill Chu, Jun Zhu, University of North Carolina Charlotte</td>
</tr>
</tbody>
</table>
### Thursday, March 5

#### Schedule of Events

**Special Sessions and Panels:** 10:45 am - 12:00 pm

| Special Session | Tutorial: Concurrency with Alice 3 and Java  
Wanda Dann, Dennis Cosgrove, Don Slater, Carnegie Mellon University | Room: 3501H |
|-----------------|---------------------------------------------------------------------------------------------------------------|-------------|
| Panel Session   | Booming Enrollments - Good Times?  
Tracy Camp, Colorado School of Mines; Stu Zweben, The Ohio State University; Ellen Walker, Hiram College; Lecia Barker, University of Texas at Austin | Room: 3501G |
| Special Session | Integrating Live Projects Into Computing Curriculum  
J. D. Chase, Prem Uppuluri, Tracy Lewis, Ian Barland, Jeff Pittges, Radford University | Room: 2505A |
| Microsoft Supporter Session | Visual Studio 2013 and 2015: Game Changing Features for All Platforms  
Jenry Nixon, Microsoft (See page 26 for session description) | Room: 2505B |
| Teradata University Supporter Session | Engage Your Students with the Power of Data  
Heikki Topi, Bentley University; Nenad Jukic, Loyola University Chicago (See page 26 for complete abstract) | Room: 2502B |

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
</table>
| 12:00 pm - 1:45 pm | First Timer's Lunch: Paying Back and Paying Forward  
Frank H. Young, Professor Emeritus, Rose-Hultman Institute of Technology | Room: 1501 |
| 12:00 pm - 1:45 pm | Lunch Break                                                                           | On Your Own |
| 1:45 pm - 5:00 pm  | Student Research Competition Posters Session                                              | Lobby 2500 |

### Thursday 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>
</tr>
</thead>
</table>
| Automated Assessment  
Chair: Sarah Heckman, North Carolina State University | WebWolf: Towards a Simple Framework for Automated Assessment of Webpage Assignments in an Introductory Web Programming Class  
Antonio Carvalho Siochi, William Randall Hardy, Christopher Newport University | The Role of Automation in Undergraduate Computer Science Education  
Chris Wilcox, Colorado State University | Mechanical TA: Partially Automated High-Stakes Peer Grading  
James R. Wright, Chris Thornton, Kevin Leyton-Brown, University of British Columbia |
| Room: 2503A | | | |
| Gender & Diversity  
Chair: Eric Aaron, Vassar College | Are Females Disinclined to Tinker in Computer Science?  
Samantha Krieger, Meghan Allen, Catherine Rawn, University of British Columbia | The Emerging Role of Self-Perception in Student Intentions  
Gabriela T. Richard, Yasmin B. Kafai, Orkan Telhan, University of Pennsylvania; Barrie Adieberg, E-Line Media |
| Room: 2502A | | | |
| Non-majors/Interdisciplinary  
Chair: Jian Zhang, Texas Woman’s University | Computer Scientists at the Biology Lab Bench  
Andrea Tartaro, Renee J. Chosed, Furman University | Data Journalism: Lessons Learned While Designing an Interdisciplinary Service Course  
Christopher Plaue, The University of Georgia; Lindsey R. Cook, U.S. News & World Report | Introducing Computing Concepts to Non-Majors: A Case Study in Gothic Novels  
Heather Bort, Dennis Brylow, Marquette University; Mimi Czarnik, Alverno College |
| Room: 3501E | | | |

**SIGCSE 2015**
### Thursday 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>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CS1/CS2: Themed Approaches</strong>&lt;br&gt;Chair: Suzanne Matthews, United States Military Academy&lt;br&gt;Room: 3501C</td>
<td>Statistics-infused Introduction to Computer Science&lt;br&gt;Olaf A. Hall-Holt, Kevin R. Sanft, St. Olaf College</td>
<td>Building Worlds: Bridging Imperative-First and Object-Oriented Programming in CS1 - CS2&lt;br&gt;Zoë Wood, Aaron Keen, California Polytechnic State University</td>
<td>A Data Programming CS1 Course&lt;br&gt;Ruth E. Anderson, Michael D. Ernst, University of Washington; Robert Ordóñez, Southern Adventist University; Paul Pham, The Evergreen State College; Ben Tribelhorn, Seattle University</td>
</tr>
<tr>
<td><strong>Beyond CS2: Programming Languages/Compilers</strong>&lt;br&gt;Chair: Monisha Pullimood, The College of New Jersey&lt;br&gt;Room: 3501D</td>
<td>A Descent into the Maelstrom: Teaching Legacy Programming and Re-engineering&lt;br&gt;Michael Wirth, University of Guelph</td>
<td>A Framework for Teaching Programming Languages&lt;br&gt;Kent D. Lee, Luther College</td>
<td>The Interpreter In An Undergraduate Compilers Course&lt;br&gt;John H. E. Lasserter, Hobart and William Smith Colleges</td>
</tr>
</tbody>
</table>

### Special Sessions and Panels: 1:45 pm - 3:00 pm

<table>
<thead>
<tr>
<th>Panel Session</th>
<th>Flipped Classrooms&lt;br&gt;Jesse M. Heines, University of Massachusetts Lowell; Jeff L. Popyack, Drexel University; Briana Morrison, Southern Polytechnic State University; Kate Lockwood, University of St. Thomas; Doug Baldwin, SUNY Geneseo</th>
<th>Room: 3501G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Session</td>
<td>Computer Science Principles Curricula: On-the-Ground; Adoptable; Adaptable; Approaches to Teaching&lt;br&gt;Owen Astrachan, Duke University; Daniel Garcia, Berkeley; Bradley Beth, Calvin Lin, University of Texas; Jeff Gray, University of Alabama; Ralph Morelli, Trinity College; Bennett Brown, Project Lead The Way; Nigmanath Sridhar, Cleveland State University; Marie desJardins, University of Maryland Baltimore County</td>
<td>Room: 3501H</td>
</tr>
<tr>
<td>Google Supporter Session</td>
<td>CS Speed Dating with Google&lt;br&gt;Christine Stephenson, Kevin O’Malley, Karen Parker, Neil Fraser, Phil Wagner, JamieSue Goodman, Cameron Fadjo, Google (See page 26 for abstract)</td>
<td>Room: 2504A</td>
</tr>
</tbody>
</table>

#### Exhibits and Demos

- **Break, Exhibits & Demos**
- **Demo Sessions:** Stephen H. Edwards, Chair
  - A Classroom Tested Accessible Multimedia Resource for Engaging Underrepresented Students in Computing: The University of Maryland Curriculum In A Box<br>Elissa Redmiles, Mary Allison Abad, Isabella Coronado, Sean Kross, Amelia Malone, University of Maryland
  - Using BlueJ to Code Java on the Raspberry Pi<br>Amjad Altadmri, Neil C. C. Brown, Michael Kölling, University of Kent
- **NSF Showcase #2** (See pages 29 for a complete listing of NFS Showcases)
<table>
<thead>
<tr>
<th>Thursday Sessions: 3:45 pm - 5:00 pm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Paper Sessions</strong></td>
</tr>
<tr>
<td>Block Languages</td>
</tr>
<tr>
<td>Chair: Sen Zhang, SUNY Oneonta</td>
</tr>
<tr>
<td>Room: 3501E</td>
</tr>
<tr>
<td>Gender &amp; Diversity</td>
</tr>
<tr>
<td>Chair: Lina Battestilli, NCSU</td>
</tr>
<tr>
<td>Room: 2502A</td>
</tr>
<tr>
<td>Student Engagement: Flipped Classroom</td>
</tr>
<tr>
<td>Chair: Madeleine Schep, Columbia College</td>
</tr>
<tr>
<td>Room: 3501C</td>
</tr>
<tr>
<td>CS1/CS2: Persistence and Attitudes</td>
</tr>
<tr>
<td>Chair: Dr Mark Zarb, Robert Gordon University</td>
</tr>
<tr>
<td>Room: 3501D</td>
</tr>
<tr>
<td>Beyond CS2: Algorithms</td>
</tr>
<tr>
<td>Chair: Ariel Ortiz, Tecnológico de Monterrey, Campus Estado de México</td>
</tr>
<tr>
<td>Room: 2503A</td>
</tr>
</tbody>
</table>
### Thursday, March 5

**Schedule of Events**

#### Special Sessions and Panels: 3:45 pm - 5:00 pm

| Special Session | Curricular Assessment: Tips and Techniques  
|                 | Henry M. Walker, Grinnell College; Sue Fitzgerald, Metropolitan State University; John F. Dooley, Knox College  
| Panel Session   | Best Practices for IRB Approval: Four Perspectives  
|                 | Michael S. Kirkpatrick, James Madison University; Janice E. Cuny, National Science Foundation; Mark Guzdial, Georgia Institute of Technology; Amanda Holland-Minkley, Washington & Jefferson College; Clifford A. Shaffer, Virginia Tech  
| Panel Session   | Supporting the Computer Science Learning Process  
|                 | Amy Briggs, Middlebury College; David Bau, Google; Caroline Meeks, Prospect Hill Academy; Pat Youngpradit, Code.org  
| Oracle Supporter Session | Database Design and Database Programming with SQL  
|                     | Nancy Hoffman, Oracle Academy Curriculum Developer  

#### Thursday, March 5 Schedule of Events

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
</table>
| 5:30 pm - 6:20 pm | Birds of a Feather Flock #1  
|                | (See pages 30-31 For a complete listing of all Birds of a Feather presentations)          | Marriott Hotel        |
| 6:30 pm - 7:20 pm | Birds of a Feather Flock #2  
|                | (See pages 30-31 For a complete listing of all Birds of a Feather presentations)          | Marriott Hotel        |
| 7:30 pm - 8:30 pm | SIGCSE Reception  
|                |                                                                                          | Imperial Ballroom, Marriott Hotel |

### Friday, March 6

**Schedule of Events**

#### Keynote Session

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
</table>
| 8:30 am - 10:00 am | Welcome: Jodi Tims, Program Co-Chair, Baldwin Wallace University and Carl Alphonce, Program Co-Chair, University at Buffalo  
|                | Plenary Session: Data Structures Courses: Past, Present and Future  
|                | Mark Allen Weiss, Professor, Florida International University  
|                |                                                                                          | Room: 2501AB           |

#### Friday, March 6 Schedule of Events

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
</table>
| 10:00 am - 10:45 am | Break, Exhibits & Demos  
|                |                                                                                          | Exhibit Hall          |
| 10:00 am - 10:45 am | Demo Sessions: Stephen H. Edwards, Chair  
|                | Looking Glass  
|                | Caitlin Kelleher, Washington University in St. Louis  
|                | EngageCSEdu: CS1 and CS2 Materials for Engaging and Retaining Undergraduate CS Students  
|                | Alvaro Monge, California State University Long Beach; Beth A. Quinn, National Center for Women & Information Technology; Cameron L. Fadjo, Google, Inc.  
| 10:00 am - 11:30 am | NSF Showcase #3  
|                | (See page 29 for a complete listing of NSF Showcases)                                   | Exhibit Hall          |
| 10:00 am - 12:00 pm | Poster Sessions  
|                | (See pages 32-33 for a complete listing of Poster Sessions)                             | Lobby 2500            |
**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>Chair: Maria Jump, King's College</td>
<td>Leigh Ann Sudol-DeLyser, Carnegie Mellon University</td>
<td>Paul Denny, The University of Auckland</td>
<td>Arto Vihavainen, University of Helsinki; Craig S. Miller, Amber Settle, DePaul University</td>
</tr>
<tr>
<td>Room: 2502A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Focus on K-12: Professional Development</strong></td>
<td>Growing a K-12 Community of Practice</td>
<td>Computing on the Silicon Prairie: The State of CS in Nebraska Public Schools</td>
<td>Supporting CS10K: A New Computer Science Methods Course for Mathematics Education Students</td>
</tr>
<tr>
<td>Chair: Charles Hardnett, Gwinnett Technical College</td>
<td>Stephen Cooper, Stanford University; Susan H Rodger, Duke University; Madeleine Schep, Columbia College; RoxAnn H. Stalvey, College of Charleston; Wanda Dann, Carnegie Mellon University</td>
<td>Brian Dorn, University of Nebraska at Omaha; Derek Babb, Omaha North High School; Dawn M. Nizzi, Westside High School Career Center; Cory M. Epler, Nebraska Department of Education</td>
<td>Robin Flatland, Darren Lim, James Matthews, Scott Vandenberg, Siena College</td>
</tr>
<tr>
<td>Room: 3501C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Soft Skills: Teamwork &amp; Communication</strong></td>
<td>Using a Message Board as a Teaching Tool in an Introductory Cyber-Security Course</td>
<td>Further Evaluations of Industry-Inspired Pair Programming Communication Guidelines with Undergraduate Students</td>
<td>Supporting Programming Assignments with Activity Streams: An Empirical Study</td>
</tr>
<tr>
<td>Chair: Senethia Thomas, University of Florida</td>
<td>Raymond Greenlaw, Christopher Brown, Zachary Dannelly, Andrew Phillips, USNA; Sarah Standard, Avian LLC</td>
<td>Mark Zarb, Robert Gordon University; Janet Hughes, University of Dundee; John Richards, IBM; T.J. Watson Research Center</td>
<td>Christopher D. Hundhausen, Adam S. Carter, Olusola Adesope, Washington State University</td>
</tr>
<tr>
<td>Room: 2503A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Beyond CS2: Cloud Computing</strong></td>
<td>Hands-On Network Programming Projects in the Cloud</td>
<td>Teaching Cybersecurity Analysis Skills in the Cloud</td>
<td>A Cloud Computing Course: From Systems to Services</td>
</tr>
<tr>
<td>Chair: Don Goelman, Villanova University</td>
<td>Weiying Zhu, Metropolitan State University of Denver</td>
<td>Richard S. Weiss, The Evergreen State College; Stefan Boesen, Dartmouth College; James F. Sullivan, Michael E. Locasto, University of Calgary; Jens Mache, Erik Nilsen, Lewis &amp; Clark College</td>
<td>Mohammed Suhail Rehman, Majd F. Sakr, Carnegie Mellon University; Jason Boles, Mohammad Hammoud, Carnegie Mellon University in Qatar</td>
</tr>
<tr>
<td>Room: 3501D</td>
<td></td>
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</tr>
</tbody>
</table>

**Special Sessions and Panels: 10:45 am - 12:00 pm**

<table>
<thead>
<tr>
<th>Special Session</th>
<th>Special Session Details</th>
<th>Room: 3501H</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget Beowulfs</td>
<td>Joel C. Adams, Calvin College, Jacob Caswell, St. Olaf College, Suzanne J. Matthews, United States Military Academy, Charles Peck, Earlham College, Elizabeth Shoop, Macalester College, David Toth, Centre College</td>
<td>Room: 3501H</td>
</tr>
<tr>
<td>Room: 3501H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Panel Session</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using App Inventor in Introductory CS Courses</td>
<td>Meimei Gao, Mercer County Community College; Julie Johnson, Vanderbilt University; Dale Reed, University of Illinois at Chicago; Cate Sheller, Kirkwood Community College; Franklyn Turbak, Wellesley College</td>
<td>Room: 3501G</td>
</tr>
</tbody>
</table>

**Friday, March 6 Schedule of Events**

16 SIGCSE 2015
## Friday, March 6

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

| Panel Session | Research, Resources and Communities: Informal Ed as a Partner in Computer Science Education  
Cameron L Fadjo, Google, Inc.; Betsy DiSalvo, Georgia Institute of Technology; Irene Lee, Santa Fe Institute; Karen Peterson, National Girls Collaborative Project | Room: 2505A |
|---|---|---|
| Microsoft Supporter Session | TouchDevelop: Not Just for Beginners Any More  
Peli de Halleux, Microsoft (See page 27 for abstract) | Room: 2505B |
| ABET Supporter Session | Computer Science And ABET Accreditation: What You Should Know  
Lillian “Boots” Cassel, Villanova University; David Cordes, Allen Parrish, University of Alabama; Andrew Phillips, U.S. Naval Academy; Stan Thomas, Wake Forest University (See page 27 for abstract) | Room: 2504A |

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</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:sigcse2015-international@rit.edu">sigcse2015-international@rit.edu</a> for more information</td>
<td>Gordon Biersch Restaurant (100 East 14th Street)</td>
</tr>
</tbody>
</table>

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### Accredit Your Computing Program

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Proud to be a Gold Supporter of SIGCSE 2015!
**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>
</tr>
</thead>
</table>
| **CS Education Research**  
Chair: Bo Brinkman, Miami University  
Room: 2502A | Recursion vs. Iteration: An Empirical Study of Comprehension Revisited  
Renee McCauley, College of Charleston; Brian Hanks, BFH Educational Consulting; Sue Fitzgerald, Metropolitan State University; Laurie Murphy, Pacific Lutheran University | Tracking Student Learning from Class to Exam using Isomorphic Questions  
Daniel Zingaro, University of Toronto Mississauga; Leo Porter, University of California, San Diego | The Effectiveness of Visualization for Learning Expression Evaluation  
Amruth N Kumar, Ramapo College of New Jersey |
| **Focus on K-12: Professional Development**  
Chair: Martha Kosa, Tennessee Technological University  
Room: 3501C | Analyzing Year One of a CS Principles PD Project  
Ralph Morelli, Pauline Lake, Trinity College; Chinna Uche, Connecticut Computer Science Teachers Association; Lawrence Baldwin, Baldwin Institutional Research Consulting | Field Experiences in Teaching Computer Science: Course Organization and Reflections  
Lori Pollock, Chrystalia Mouza, James Atlas, Terry Harvey, University of Delaware | A Mid-Project Report on a Statewide Professional Development Model for CS Principles  
Jeff Gray, University of Alabama; Kathy Haynie, Haynie Research and Evaluation; Sheryl Packman, Gator Analytics; Mary Boehm, Carol Crawford, A+ College Ready; Deepa Muralidhar, Atlanta Girls School |
| **Student Engagement: Active Learning**  
Chair: Susan Hammond, Faulkner University  
Room: 3501D | Integrating Role-Playing Games into Computer Science Courses as a Pedagogical Tool  
David Thot, Centre College; Mary Kayler, University of Mary Washington | SIGCSE 2015 Best Paper  
Structuring Flipped Classes with Lightweight Teams and Gamification  
Celine Latulipe, N. Bruce Long, Carlos E. Seminario, University of North Carolina at Charlotte | Blending Problem- and Project-Based Learning in Internet of Things Education: Case Greenhouse Maintenance  
Hanna Mäenpää, Sasu Tarkoma, Samu Varjonen, Arto Vihavainen, University of Helsinki |
| **Testing: Improving Quality of Student Testing**  
Chair: Ahmad Noor, Northern Virginia Community College  
Room: 2503A | Can the Security Mindset Make Students Better Testers?  
Sara Hooshangi, The George Washington University; Richard Weiss, The Evergreen State College; Justin Capps, New York University | An Empirical Study of Iterative Improvement in Programming Assignments  
Raymond S. Pettit, John D. Homer, Roger Gee, Adam Starbuck, Ableine Christian University; Susan Mengel, Texas Tech University | Reconsidering Automated Feedback: A Test-Driven Approach  
Kevin Buffardi, California State University, Chico; Stephen H. Edwards, Virginia Tech |
| **Beyond CS2: OS/Virtualization**  
Chair: Steven Andrianoff, St. Bonaventure University  
Room: 3501E | MC-Live: A Portable Computing Environment for Computer Science Students  
Lee Wittenberg, Maryville College | Teaching Virtualization by Building a Hypervisor  
Abhinand Palicherla, Tintri, Inc. Tao Zhang, Donald E. Porter, Stony Brook University | MiniOS: An Instructional Platform for Teaching Operating Systems Projects  
Rafael Roman Otero, Alex Aravind, University of Northern British Columbia |
Special Sessions and Panels: 1:45 PM - 3:00 PM

<table>
<thead>
<tr>
<th>Special Session</th>
<th>Achieving a Shared Goal with AP Computer Science A and AP Computer Science Principles</th>
<th>Room: 3501G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Session</td>
<td>Towards Grand Challenges in Computing Education Across Disciplines</td>
<td>Room: 3501H</td>
</tr>
<tr>
<td>Google Supporter Session</td>
<td>Building and Sustaining Communities of Practice</td>
<td>Room: 2504A</td>
</tr>
</tbody>
</table>

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

3:00 pm - 3:45 pm  Demo Sessions: Michael E. Casperen, Chair  Exploring Computer Science Topics with Programmable Smartwatches  Shuo Niu, Andrey Esakia, Scott McCrickard, Virginia Tech  ENGAGE: A Game-based Learning Environment for Middle School Computational Thinking  Kristy Elizabeth Boyer, Philip Sheridan Buffum, Kirby Culbertson, Megan Hardy Frankosky, James C. Lester, Allison Martinez-Arocho, Wookhee Min, Bradford W. Mott, Fernando J. Rodriguez, Eric N. Wiebe, North Carolina State University  Exhibit Hall

3:00 pm - 5:00 pm  Poster Sessions  (See pages 32-33 for a complete listing of Poster Sessions)  Lobby 2500

3:00 pm - 4:30 pm  NSF Showcase #4  (See page 29 for a complete listing of NSF Showcases)  Exhibit Hall

3:45 pm - 5:00 pm  Lightning Talks: Stephen H. Edwards, Chair  (See page 36 for a complete list of Lightning Talks)  Room: 3501D

Friday 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>
</tr>
</thead>
<tbody>
<tr>
<td>CS Education Research  Chair: Sehum Sohoni, Arizona State University  Room: 2502A</td>
<td>Correlation of Topic Model and Student Grades Using Comment Data Mining  Shaymaa Sorour, Kaf Elsheikh University (Egypt) &amp; Kyushu University; Kazumasa Goda, Kyushu Institute of Information Science; Tsunenori Mine, Kyushu University</td>
<td>Bats, Balls, and Lures: Cognitive Style in CS Education  Barry Wittman, Jean Pretz, Elizabethtown College</td>
<td>SOLO Taxonomy for Assessing Novices’ Algorithmic Design  David Ginat, Eti Menashe, Tel-Aviv University</td>
</tr>
</tbody>
</table>

Focus on K-12: Engaging Students  Chair: Ravi Gandham, Seattle Colleges  Room: 3501C

| CS Education Research  Chair: Sehum Sohoni, Arizona State University  Room: 2502A | Correlation of Topic Model and Student Grades Using Comment Data Mining  Shaymaa Sorour, Kaf Elsheikh University (Egypt) & Kyushu University; Kazumasa Goda, Kyushu Institute of Information Science; Tsunenori Mine, Kyushu University | Bats, Balls, and Lures: Cognitive Style in CS Education  Barry Wittman, Jean Pretz, Elizabethtown College | SOLO Taxonomy for Assessing Novices’ Algorithmic Design  David Ginat, Eti Menashe, Tel-Aviv University |

Focus on K-12: Engaging Students  Chair: Ravi Gandham, Seattle Colleges  Room: 3501C

| Focus on K-12: Engaging Students  Chair: Ravi Gandham, Seattle Colleges  Room: 3501C | What Does It Take to Do Computer Programming?  Antti-Jussi Lakanen, Ville Isomöttönen, Mathematical Information Technology, University of Jyväskylä | Engaging High School Students in Modeling and Simulation through Educational Media  David Musicant, Carleton College; S. Selcon Guezey, Purdue University | An Analysis of User Engagement in Relation to Computing Workshop Activities  Rachel Menzies, Michael Crabb, Daniel Herron, Karen Petrie, Craig Stewart, Mark Zarb, University of Dundee |
Friday, March 6  

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

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room/Location</th>
</tr>
</thead>
</table>
| 3:45 pm  | **Testing: Tools & Techniques**  
Chair: Joan M. Lucas, The College at Brockport, State University of New York  
Unci: a C++-based Unit-testing Framework for Intro Students  
Don Blaheta, Longwood University  
Bug Infestation! A Goal-plan Analysis of CS2 Students’ Recursive Search Tree Solutions  
Laurie Murphy, Pacific Lutheran University; Sue Fitzgerald, Metropolitan State University; Scott Grissom, Grand Valley State University; Renée McCauley, College of Charleston  
Ante Up  
Michael K. Bradshaw, Centre College | Room: 3501E |
| 4:10 pm  | **Soft Skills: Teamwork**  
Chair: Ruth E. Anderson, University of Washington  
On the Evaluation of Student Team Software Development Projects  
Anya Tafliovich, University of Toronto Scarborough; Andrew Petersen, University of Toronto Mississauga; Jennifer Campbell, University of Toronto  
An Experience Report at Teaching a Group Based Agile Software Development Project Course  
Craig Anslow, Frank Maurer, University of Calgary  
An Experience Report: Using Mobile Development To Teach Software Design  
Jennifer Campbell, University of Toronto Scarborough | Room: 2503A |

**SPECIAL SESSIONS AND PANELS: 3:45 pm - 5:00 pm**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
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</thead>
</table>
| 3:45 pm  | **Special Session**  
Perspectives on Adopting and Facilitating Guided Inquiry Learning  
Helen H. Hu, Westminster College; Clifton Kussmaul, Muhlenberg College; Deepa Muralidhar, Atlanta Girls School; Kristine Nagel, Georgia Gwinnett College | Room: 3501G |
| 4:10 pm  | **Special Session**  
Introduction to Access CS10K and Accessible Tools for Teaching Programming  
Andreas Stefli, University of Nevada, Las Vegas; Richard E. Ladner, University of Washington | Room: 2505A |
| 4:35 pm  | **Panel Session**  
One-Day Activities for K-12 Face-to-Face Outreach  
Daniel D. Garcia, UC Berkeley; Wei Ding, Joseph Cohen, University of Massachusetts, Boston; Barbara Ericson, Georgia Institute of Technology; Jeff Gray, University of Alabama; Dale Reed, University of Illinois at Chicago | Room: 3501H |
| 4:35 pm  | **zyBooks Supporter Session**  
Stop Teaching with One Hand Tied Behind Your Back  
Frank Vahid, Prof. of CS&E, University of California, Riverside, zyBooks CEO/co-founder; Smita Bakshi, zyBooks CEO/co-founder, Former Asst. Prof. of ECE, UC Davis; Joe Hummel, Research Assoc. Prof. of CS, Univ. of Illinois, Chicago; Roman Lysecky, Assoc. Prof. of ECE, Univ. of Arizona; Kris Miller, Computer Science Lecturer, Univ. of California, Riverside (See page 28 for session description) | Room: 2505B |
| 4:35 pm  | **Piazza Supporter Session**  
Beyond the Classroom: Strategies to Engage Hard to Reach Students in Computer Science  
Tony Luckett, Piazza Technologies, Inc. (See page 27 for session description) | Room: 2504A |

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room/Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>5:10 pm</td>
<td><strong>SIGCSE Business Meeting</strong></td>
<td>Room: 2505A</td>
</tr>
<tr>
<td>5:30 pm</td>
<td><strong>Thank Greenfoot It’s Friday! Greenfoot Reborn: A First Look</strong></td>
<td>Room: 2502B</td>
</tr>
<tr>
<td>6:00 pm</td>
<td><strong>CCSC Business Meeting</strong></td>
<td>Room: 2505A</td>
</tr>
<tr>
<td>6:00 pm</td>
<td><strong>NCWIT Academic Alliance Reception, sponsored by Microsoft Research</strong></td>
<td>Count Basie C</td>
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</tbody>
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### Friday, March 6

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

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Title</th>
<th>Presenters</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td><strong>A Swift Introduction to Swift App Development</strong></td>
<td>Michael P. Rogers, Northwest Missouri State University; William M. Siever, Western Illinois University</td>
<td>2502A</td>
</tr>
<tr>
<td>9</td>
<td><strong>Conducting Educational Research in the Computer Science Classroom: Choosing the Appropriate Research Design to Address your Research Question</strong></td>
<td>Aman Yadav, Michigan State University</td>
<td>3501H</td>
</tr>
<tr>
<td>10</td>
<td><strong>Using Pencil Code to Bridge the Gap between Visual and Text-Based Coding</strong></td>
<td>David Bau, Matthew Dawson, Google; Anthony Bau, Phillips Exeter Academy</td>
<td>2502B</td>
</tr>
<tr>
<td>11</td>
<td><strong>Teaching Cryptography and Access Control Hands-On</strong></td>
<td>Steve Carr, Western Michigan University; Melissa Keranen, Jean Mayo, Michigan Technological University</td>
<td>3501E</td>
</tr>
<tr>
<td>12</td>
<td><strong>Bridging the Divide: Developing Culturally-Responsive Curriculum for K-12 Computer Science Education</strong></td>
<td>A. Nicki Washington, Legand Burge, Marlon Mejias, Ketly Jean-Pierre, Qi’Anne Knox, Howard University</td>
<td>2503B</td>
</tr>
<tr>
<td>13</td>
<td><strong>On Beyond Sudoku: Pencil Puzzles for Introductory Computer Science</strong></td>
<td>Zack Butler, Ivona Bezakova, Rochester Institute of Technology</td>
<td>2504A</td>
</tr>
<tr>
<td>14</td>
<td><strong>How to Plan and Run Summer Computing Camps - Logistics</strong></td>
<td>Marguerite A. Doman, Winthrop University; Barbara J. Ericson, Georgia Institute of Technology; Kristine S. Nagel, Nannette P. Napier, Georgia Gwinnett College; Krishnendu Roy, Valdosta State University</td>
<td>2505B</td>
</tr>
<tr>
<td>15</td>
<td><strong>Small or Liberal Arts Colleges Adapting to CS2013: Making It Work</strong></td>
<td>Andrea Danyluk, Williams College; Michael Jipping, Hope College; Rhys Price Jones, Wellesley College; David Reed, Creighton University; Brad Richards, University of Puget Sound; Richard Wisentkowski, Swarthmore College</td>
<td>3501C</td>
</tr>
<tr>
<td>16</td>
<td><strong>Steal This Courseware</strong></td>
<td>Remy DeCausemaker, Stephen Jacobs, Rochester Institute of Technology</td>
<td>2503A</td>
</tr>
<tr>
<td>17</td>
<td><strong>The Internet, Creativity and Global Impact: Curriculum Modules</strong></td>
<td>Lien Diaz, College Board; Andrew Kuemmel, Madison West High School; Richard Kick, Newbury Park High School</td>
<td>3501D</td>
</tr>
<tr>
<td>18</td>
<td><strong>Augmenting introductory Computer Science Classes with GameMaker and Mobile Apps</strong></td>
<td>Veronica Catete, Barry Peddycord III, Tiffany Barnes, NC State University</td>
<td>3501G</td>
</tr>
<tr>
<td>19</td>
<td><strong>Infusing Cooperative Learning into Early Computer Science Courses to Support Improved Engagement</strong></td>
<td>Jeff Gray, University of Alabama; Fran Trees, Rutgers University; Owen Astrachan, Duke University</td>
<td>3501F</td>
</tr>
</tbody>
</table>


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**Saturday, March 7**

### Schedule of Events

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:00 am - 8:15 am</td>
<td><strong>ApplInventor Breakfast</strong></td>
<td>2502B</td>
</tr>
<tr>
<td>9:00 am - 10:15 am</td>
<td><strong>Student Research Competition: Semi-finalist Presentation (Undergraduate)</strong></td>
<td>2502B</td>
</tr>
<tr>
<td></td>
<td><strong>Student Research Competition: Semi-finalist Presentation (Graduate)</strong></td>
<td>2503B</td>
</tr>
<tr>
<td></td>
<td>(See page 35 for a complete listing of the Student Research Competition)</td>
<td></td>
</tr>
</tbody>
</table>
**Saturday Sessions: 9:00 am - 10:15 am**

<table>
<thead>
<tr>
<th>Paper Sessions</th>
<th>9:00 am</th>
<th>9:25 am</th>
<th>9:50 am</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Focus on K-12: Elementary</strong>&lt;br&gt;Chair: Joseph Kendall-Monwick, Capital University&lt;br&gt;Room: 3501C</td>
<td>Using SOLO to Classify the Programming Responses of Primary Grade Students&lt;br&gt;Linda Seiter, John Carroll University</td>
<td>Floors and Flexibility: Designing a Programming Environment for 4th-6th Grade Classrooms&lt;br&gt;Charlotte Hill, Hilary A. Dwyer, Tim Martinez, Danielle Harlow, Diana Franklin, UC Santa Barbara</td>
<td>Getting Started in Teaching and Researching Computer Science in the Elementary Classroom&lt;br&gt;Diana Franklin, Charlotte Hill, Hilary Dwyer, Ashley Iveland, Alexandria Killian, Danielle Harlow, UC Santa Barbara</td>
</tr>
<tr>
<td><strong>Non-majors/Interdisciplinary</strong>&lt;br&gt;Chair: Evan Barba, Georgetown University&lt;br&gt;Room: 2503A</td>
<td>Improving Non-CS Major Performance in CS1&lt;br&gt;Victor T. Norman, Joel C. Adams, Calvin College</td>
<td>Can We “Flip” Non-Major Programming Courses Yet?&lt;br&gt;Douglas Baldwin, SUNY Geneseo</td>
<td>Evaluating Pair-Programming for Non-Computer Science Major Students&lt;br&gt;Clem O’Donnell, Jim Buckley, Abdulhussein Mahdi, John Nelson, Michael English, University of Limerick</td>
</tr>
<tr>
<td><strong>Focus on K-12: Outreach/Summer Camps</strong>&lt;br&gt;Chair: Christine Moore, College of Charleston&lt;br&gt;Room: 3501D</td>
<td>From 9 to 90: Engaging Learners of All Ages&lt;br&gt;Allison Sauppé, Daniel Szafir, Chien-Ming Huang, Bilge Mutlu, University of Wisconsin-Madison</td>
<td>A Socio-Cognitive Analysis of Summer Camp Outcomes and Experiences&lt;br&gt;Chulakorn Aritajati, Mary Beth Rosson, Joselena Perena, Dana Cinque, The Pennsylvania State University; Ana Segura, University of Houston-Downtown</td>
<td>Computational Bead Design: A Pilot Summer Camp in Computer Aided Design and 3D Printing for Middle School Girls&lt;br&gt;Courtney Starrett, Margaretue Doman, Chlotia Garrison, Merry Sleigh, Winthrop University</td>
</tr>
</tbody>
</table>

**Special Sessions and Panels: 9:00 am - 10:15 am**

<table>
<thead>
<tr>
<th>Special Session</th>
<th>Big Data in Computer Science Education Research&lt;br&gt;Orit Hazzan, Technion - Israel Institute of Technology; Clifford A. Shaffer, Virginia Tech</th>
<th>Room: 3501G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special Session</td>
<td>Scaling High School Computer Science: Exploring Computer Science and Computer Science Principles&lt;br&gt;Owen Astrachan, Duke University; Gail Chapman, UCLA, Jeff Gray, University of Alabama, Ralph Morelli, Trinity College</td>
<td>Room: 2505A</td>
</tr>
<tr>
<td>Panel Session</td>
<td>SPOCs: What, Why, and How&lt;br&gt;Janet Burge, Wesleyan University; Armando Fox, UC Berkeley; Dan Grossman, University of Washington; Gerald Roth, Vanderbilt University; Joe Warren, Rice University</td>
<td>Room: 2504A</td>
</tr>
<tr>
<td>Panel Session</td>
<td>Panel: Technology We Can’t Live Without!&lt;br&gt;Daniel D. Garcia, UC Berkeley, Eric Allatta, Academy for Software Engineering; Manuel Pérez-Quiones, Virginia Tech; Jeff Solin, Lane Tech College Prep High School</td>
<td>Room: 3501H</td>
</tr>
<tr>
<td>GitHub Supporter Session</td>
<td>Stories from the GitHub Classroom: Changing Practice, One Pull Request at a Time&lt;br&gt;John Britton, Education Liaison, GitHub (See page 28 session description)</td>
<td>Room: 2505B</td>
</tr>
</tbody>
</table>
### Saturday Sessions: 10:45 am - 12:00 pm

<table>
<thead>
<tr>
<th>Paper Sessions</th>
<th>10:45 am</th>
<th>11:00 am</th>
<th>11:15 am</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Teaching Practices</strong>&lt;br&gt;Chair: John Cigas, Park University&lt;br&gt;Room: 2502A</td>
<td>Insights into Teaching and Learning: Reflections on MOOC Experiences&lt;br&gt;Janet Burge, Wesleyan University</td>
<td>What Influences CS Faculty to Adopt Teaching Practices?&lt;br&gt;Leica J. Barker, Jane Gruning, University of Texas at Austin; Christopher Lynnly Hovey, Northeastern University</td>
<td>Personalized Attention @ Scale&lt;br&gt;Dirk Grunwald, Elizabeth Boese, Rhonda Hoenigman, Andy Saylor, Judith Stafford, University of Colorado, Boulder</td>
</tr>
<tr>
<td><strong>Focus on K-12: Miscellaneous Topics</strong>&lt;br&gt;Chair: Adrian German, Indiana University Bloomington&lt;br&gt;Room: 3501C</td>
<td>Transferring Skills at Solving Word Problems from Computing to Algebra Through Bootstrap&lt;br&gt;Emmanuel Schanzer, Harvard University; Kathi Fisler, WPI; Shiriram Krishnamurthi, Brown University; Matthias Felleisen, Northeastern University University</td>
<td>A Practical Guide to Developing and Validating Computer Science Knowledge Assessments with Application to Middle School&lt;br&gt;Philip Sheridan Buffum, Eleni V. Lobene, Megan Hardy Frankosky, Kristy Elizabeth Boyer, Eric N. Wiebe, James C. Lester, North Carolina State University</td>
<td>Reactive Game Engine Programming for STEM Outreach&lt;br&gt;Alan Cleary, Montana State University; Lucas Vandenbergh, John Peterson, Western State Colorado University</td>
</tr>
<tr>
<td><strong>Computers &amp; Society</strong>&lt;br&gt;Chair: Rachelle Hippler, Bowling Green State University&lt;br&gt;Room: 2503A</td>
<td>Building CS Research Capacity in sub-Saharan Africa by Implementing a Doctoral Training Program&lt;br&gt;Mikko Apiola, Jarkko Suhanen, Erkki Sutinen, University of Eastern Finland; Abbi Nangawe, College of Business Education</td>
<td>Engaging Non-Traditional Students in Computer Science through Socially-Inspired Learning and Sustained Mentoring&lt;br&gt;Jennifer Burg, Victor Paul Pauca, William Turkett, Errin Fulp, Samuel S. Cho, Peter Santiago, Daniel Canas, H. Donald Gage, Wake Forest University</td>
<td>How Much Impact Can Be Made In a Week? Designing Effective International Service Learning Projects for Computing&lt;br&gt;Grace Ngai, Hong Kong Polytechnic University; Stephen C.F. Chan, Hong Kong Polytechnic University and Office of Service Learning</td>
</tr>
<tr>
<td><strong>Beyond CS2: Networking/Security</strong>&lt;br&gt;Chair: Faisal Kaleem, Metropolitan State University&lt;br&gt;Room: 3501D</td>
<td>Lowering the Barrier to Systems-level Networking Projects&lt;br&gt;Joel Sommers, Colgate University</td>
<td>A Simple Laboratory Environment for Real-World Offensive Security Education&lt;br&gt;Maxim Timchenko, David Starobinski, Boston University</td>
<td>KENSv2: An Educational Networking Framework for Full Layer Implementation and Testing&lt;br&gt;Keunhong Lee, Joongi Kim, Sue Moon, KAIST</td>
</tr>
</tbody>
</table>

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**Saturday, March 7**

**Schedule of Events**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
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</thead>
<tbody>
<tr>
<td>10:15 am - 10:45 am</td>
<td>Break, Exhibits &amp; Demos</td>
</tr>
<tr>
<td>10:15 am - 11:45 am</td>
<td><strong>NSF Showcase #5</strong>: (See page 29 for a complete listing of NSF Showcases)</td>
</tr>
</tbody>
</table>

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**Exhibit Hall**
### Special Sessions and Panels:
10:45 am - 12:00 pm

<table>
<thead>
<tr>
<th>Special Session</th>
<th>Title</th>
<th>Room</th>
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</thead>
<tbody>
<tr>
<td>Special Session</td>
<td>The CS Concept Inventory Quiz Show</td>
<td>3501G</td>
</tr>
<tr>
<td></td>
<td>Nafeesa Dewji, Steven A Wolman, University of British Columbia; Geoffrey L. Herman, University of Illinois at Urbana-Champaign; Leo Porter, University of California, San Diego; Cynthia Taylor, Oberlin College; Jan Vahrenhold, Westfälische Wilhelms-Universität Münster</td>
<td></td>
</tr>
<tr>
<td>Panel Session</td>
<td>Bringing Grades K-5 to the Mainstream of Computer Science Education</td>
<td>2505A</td>
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<tr>
<td></td>
<td>Katie Apone, Pat Yongpradit, Code.org; Marina Bers, Tufts University; Karen Brennan, Harvard University; Diana Franklin, UC Santa Barbara; Maya Israel, University of Illinois at Urbana-Champaign</td>
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<tr>
<td>Special Session</td>
<td>Nifty Assignments</td>
<td>3501H</td>
</tr>
<tr>
<td></td>
<td>Nick Parlante, Julie Zelenski, Marty Stepp, Stanford University; Suzanne J. Matthews, David R. Raymond, United States Military Academy; Mark Sherrif, Luther Tychonievich, Ryan Laver, University of Virginia; Allison Obourn, University of Washington; Peter-Michael Osiera, University of Pennsylvania; Stuart Reges, University of Washington; Josh Hug, University of California, Berkeley</td>
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<tr>
<td>Gradescope</td>
<td>Gradescope: Grade More Efficiently, with Better Feedback</td>
<td>2505B</td>
</tr>
<tr>
<td>Supporter Session</td>
<td>Gradescope: Grade More Efficiently, with Better Feedback</td>
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<tr>
<td></td>
<td>Pieter Abbeel, UC Berkeley Computer Science</td>
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<td>(See page 28 for session description)</td>
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</table>

### Keynote Session

12:00 pm - 2:00 pm

<table>
<thead>
<tr>
<th>Event</th>
<th>Title</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luncheon</td>
<td>Luncheon: Connected, Committed and Social? The Consequences of Computing for Relationships</td>
<td>2501AB</td>
</tr>
<tr>
<td></td>
<td>Keith Hampton, Associate Professor, Rutgers University</td>
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</table>

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

<table>
<thead>
<tr>
<th>Workshop</th>
<th>Title</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workshop 20</td>
<td>Computer Science Principles With EarSketch</td>
<td>3501C</td>
</tr>
<tr>
<td></td>
<td>Jason Freeman, Brian Magerko, Regis Verdin, Georgia Institute of Technology</td>
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<tr>
<td>Workshop 21</td>
<td>Teaching Computing with Processing, the Bridge Between High School and College</td>
<td>2502A</td>
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<tr>
<td></td>
<td>Aaron Cadle, James Martin High School; Ira Greenberg, Southern Methodist University; Deepak Kumar, Dianna Xu, Bryn Mawr College; Darby Thompson, Sidwell Friends School; Ursula Wolz, RiverSound Solutions</td>
<td></td>
</tr>
<tr>
<td>Workshop 22</td>
<td>Supporting New Adopters to Peer Instruction in Computing</td>
<td>2502A</td>
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<tr>
<td></td>
<td>CANCELED</td>
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<tr>
<td>Workshop 23</td>
<td>Reviewing NSF Proposals: Learn about Effective Proposal Writing via the Review Process</td>
<td>2502B</td>
</tr>
<tr>
<td></td>
<td>Paul Tymann, Michael Erlinger, National Science Foundation</td>
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<tr>
<td>Workshop 24</td>
<td>Creating Stimulating, Relevant, and Manageable Introductory Computer Science Projects that Utilize Real-Time, Large, Web-Based Datasets</td>
<td>2503A</td>
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<tr>
<td></td>
<td>Eli Tilevich, Clifford A. Shaffer, Austin Cory Bart, Virginia Tech</td>
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<tr>
<td>Workshop 25</td>
<td>Building Code Magnet Labs for Tablets and Other Devices</td>
<td>2503B</td>
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<tr>
<td></td>
<td>Barry L. Kurtz, Rahman Tashakkori, Appalachian State University; Ahmad Esmaili, Stony Brook University</td>
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<tr>
<td>Workshop 26</td>
<td>Introducing Secure Coding in CS0, CS1, and CS2</td>
<td>2504A</td>
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<tr>
<td></td>
<td>Siddharth Kaza, Blair Taylor, Towson University; Elizabeth K. Hawthorne, Union County College</td>
<td></td>
</tr>
</tbody>
</table>
### SATURDAY WORKSHOPS: 3:00 pm - 6:00 pm

| Workshop 27 | Puzzle-Based Learning: Introducing Creative Thinking and Problem Solving for Computer Science and Engineering  
  Raja Sooriamurthi, Carnegie Mellon University; Nickolas Falkner, Zbigniew Michalewicz, University of Adelaide; Ed Meyer, Baldwin Wallace University  
  Room: 2505B |
| Workshop 28 | KELP CS and LaPlaya: A Computational Thinking Curriculum and Development Environment for 4th-6th Grade  
  CANCELED  
  Room: 3501C |
| Workshop 29 | Teaching Privacy  
  Gerald Friedland, Serge Egelman, International Computer Science Institute; Daniel Garcia, University of California, Berkeley  
  Room: 3501D |
| Workshop 30 | Decoding CS Principles - A Curriculum From Code.org  
  Baker Franke, Brooke Osborne, Code.org  
  Room: 3501G |

Visual Studio 2013 and 2015: Game Changing Features for All Platforms

Presented courtesy of Microsoft

10:45 am - 12:00 pm
Room: 2505B

Speaker: Jerry Nixon, Microsoft

The recently-released Visual Studio 2013 Community Edition is changing the game in software development. This full-featured IDE is now available to students and pro developers, for academic and commercial use, FOR FREE. Looking forward, Visual Studio 2015 is promising to support Windows, Android and iOS to a greater degree than has ever been imagined before. In this fast-paced, demo-filled workshop Jerry Nixon, Microsoft Visual Studio expert and Microsoft Virtual Academy Host will show how the world’s most powerful IDE can be used to support a wide-variety of teaching technologies and scenarios including new “universal” app types and Microsoft Azure.

Engage your Students with the Power of Data

Presented courtesy of Teradata University

10:45 am - 12:00 pm
Room: 2502B

Speakers: Heikki Topi, Bentley University; Nenad Jukic, Loyola University Chicago

Teradata University Network (TUN) provides faculty members and students in computer science and information systems with a rich variety of free resources for teaching and learning about information management, databases, data warehousing, data science, and analytics. These resources include software (both from Teradata and its partners, such as SAS, MicroStrategy, and Tableau), teaching materials (exercises, assignments, tutorials, case studies, etc.), and access to real-world data sets. The purpose of this session is to give the participants an introduction to the TUN resources and demonstrate how these resources can be used to support computer science courses. The session will also demonstrate ways in which you can contribute to TUN and make it an even better community for yourself and faculty with similar interests.

Database Design and Database Programming with SQL

Presented courtesy of Oracle Academy

3:45 pm - 5:00 pm
Room: 2505B

Speaker: Nancy Hoffman, Oracle Academy Curriculum Developer

This workshop introduces topics that should be included in a database course. In Database Design and Database Programming with SQL, available from Oracle Academy, students learn to analyze complex business scenarios and create a data model. Students then implement their database design by creating a physical database using SQL. Teacher training, curriculum, and online database environment are free to high schools, technical schools, community colleges, and universities.
Supporter Sessions

Friday, March 6

Presented courtesy of ABET

Computer Science and ABET Accreditation: What You Should Know
► 10:45 am - 12:00 pm
Room: 2504A
Facilitators: Lillian “Boots” Cassel, Villanova University; David Cordes, Allen Parrish, University of Alabama; Andrew Phillips, U.S. Naval Academy; Stan Thomas, Wake Forest University

This highly interactive session includes three distinct components related to ABET accreditation of computer science programs. 1) The benefits to computer sciences programs of ABET accreditation, and the related costs; 2) Using a “town hall” format, participants are invited to voice questions, problem statements and concerns about ABET accreditation to a panel of experts; and (3) An update on current discussions regarding future changes to the accreditation criteria.

Presented courtesy of Microsoft

TouchDevelop: Not Just for Beginners Any More
► 10:45 am - 12:00 pm
Room: 2505B
Speaker: Peli de Halleux, Microsoft

From its early days as a phone app programming tool, TouchDevelop has grown into a fully-featured collaborative development environment that supports phone, tablet, desktop apps for Windows/Android/iOS and even cloud apps running Azure. Skill levels allow a progression from block programming to curly-brace text programming within the same editor. In this hands-on workshop, Peli de Halleux, Principle Research Software Engineer for Microsoft Research, will show all the latest features of TouchDevelop that will help teachers and faculty get their students making full-featured, high quality apps and games FAST!

Presented courtesy of Google

Building and Sustaining Communities of Practice
► 1:45 pm - 3:00 pm
Room: 2504A
Moderator: Karen Parker
Speakers: Rick Adrion, University of Massachusetts Amherst; Padmaja Bandaru, AMSA Charter School; Jen Rosato, College of St. Scholastica; Jeff Gray, University of Alabama

In this session, we will focus on building and sustaining strong communities of practice in the Computer Science space. Research (Joyce & Showers, 2002; Wiske, Stone, & Levinson, 1993) shows that peer-to-peer professional development and on-going support improve the adoption and implementation of new content by educators. Google’s CS4HS program specifically funds advocacy efforts to extend the learnings of CS4HS workshops through these Communities of Practice. In an interactive caucus setting, CSTA leaders and seasoned COP practitioners will address themes related to community engagement with opportunities for educators to contribute to the conversation. Visit http://www.cs4hs.com/ to learn more.

Presented courtesy of Piazza Technologies, Inc.

Beyond the Classroom: Strategies to Engage Hard to Reach Students in Computer Science
► 3:45 pm - 5:00 pm
Room: 2504A
Speaker: Tony Luckett, Piazza Technologies, Inc.

STEM often struggle to engage hard to reach students (e.g., women, minorities, non-native speakers and introverts). With trends in higher education pointing to larger classes and floods of instructional tools, professors might find themselves overwhelmed, asking: Which tools should I use? Who among my peers is successfully adjusting to these trends? How do I offer personalized attention to my students without being available 24/7? Which students might I reach that I haven’t previously?

This workshop will take a close look at three case studies from leading CS professors who are leveraging technology to meaningfully engage their students. We will explore the course context, why they decided to use their particular models and what the outcomes were.

http://sigcse2015.sigcse.org
Supporter Sessions

Friday, March 6

Stop Teaching with One Hand Tied Behind Your Back

► 3:45 pm - 5:00 pm
Room: 2505B

Speakers: Frank Vahid, Prof. of CS&E, Univ. of California, Riverside, zyBooks CTO & co-founder; Smita Bakshi, zyBooks CEO/co-founder, Former Asst. Prof. of ECE, UC Davis; Joe Hummel, Research Assoc. Prof. of CS, Univ. of Illinois, Chicago; Roman Lysecky, Assoc. Prof. of ECE, Univ. of Arizona; Kris Miller, Computer Science Lecturer, University of California, Riverside.

Textbooks previously played an important role supplementing an instructor’s efforts. But today, a third of students don’t acquire “required” books, and those that do hardly use them. Homeworks help students really learn, but shrinking resources make grading them almost impossible, and book exercise solutions are available on the web anyways. MOOCs role in assisting instructors is unclear. Online automation systems are often too hard to set up and student spend weeks learning the system rather than learning your subject. As a result, instructors are left to teach with one hand tied behind their back.

But change is coming, at least for CS instructors. Newer materials built collaboratively by professors and modern software developers are easy to adopt and use for both instructors and students, seamlessly integrate teaching material and “homework”, auto-generate and auto-grade homework exercises, and soon will fully integrate automated program assignment grading too. The materials use less text and more activities, so students learn by doing.

This session will summarize research using zyBooks as well as other active learning approaches that complement an instructor’s efforts, showing improved grades with little/no additional effort by instructors who are freed instead to focus on real teaching. Presenters will share their personal experiences in switching to zyBooks, and discuss how their classes changed. Audience members will be invited to share their collective experiences too, and provide suggestions for what is needed to really help them do their jobs.

Saturday, March 7

Stories from the GitHub Classroom: Changing Practice, One Pull Request at a Time

► 9:00 am - 10:15 am
Room: 2505B

Speaker: John Britton, GitHub, Education Liaison

This session will walk through several case studies for transforming your classroom using GitHub. Attendees will learn how to use GitHub to design a community of practice, where students work together to improve their projects and share ideas. Stories will include the voices of students as they learn to master version control, engage in the open software community and build a portfolio on the web. Instructors will leave with resources, tools and how-to’s to support an applied and authentic curriculum.

Gradescope: Grade More Efficiently, with Better Feedback

► 10:45 am - 12:00 pm
Room: 2505B

Speaker: Pieter Abbeel, UC Berkeley Computer Science

Gradescope helps instructors grade paper-based homeworks and exams online, for free. Our product has been used to grade over 1,500,000 pages of tests and homework, belonging to over 20,000 students. Instructors report that grading is up to 2x faster, and students love the improved accuracy and feedback.

Pieter Abbeel teaches Advanced Robotics, and Introduction to AI - offered as one of the first MOOCs on edX. He is the director of the Robot Learning Lab at UC Berkeley. His research has enabled autonomous helicopter acrobatics only exceptional human pilots can perform and some of the most advanced robotic manipulation capabilities. Awards include MIT TR35, Sloan, DARPA, ONR, AFOSR, and NFS young investigator, and the Dick Volz award for best US PhD thesis in robotics and automation.
NSF Project Showcase Sessions feature recipients of education-related National Science Foundation grants and will take place in the SIGCSE Booth #209.

NSF Showcase #1
Thursday, March 5
10:00 am - 11:30 am

Process Oriented Guided Inquiry Learning in CS
Clif Kussmaul, Daniel Libby, Helen H. Hu, Chris Mayfield, Muhlenberg College

Multiplayer Board Game Strategies in the Introductory CS Curriculum
Ivona Bezakova, Sean Strout, Rochester Institute of Technology

Learning Algorithm Design: A Project-Based Curriculum
Andrea Lobo, Rowan College

Practicing the Process of Programming
Amruth Kumar, Ramapo College of New Jersey

NSF Showcase #2
Thursday, March 5
3:00 pm - 4:30 pm

Machine Learning Experiences in Artificial Intelligence: A Multi-Institutional Project
Ingrid Russell, Hartford College

Recruitment and Retention for Community Colleges Program
Wendy DuBrow, University of Colorado

COMP 101: Design and Evaluation of a Team-based Course for Freshmen Computing Majors
Penny Rheingans, Carolyn Seaman, Susan Martin, Marie desJardins, University of Maryland, Baltimore County

REU Site: CyberSAFE@UALR: Cyber Security and Forensics Research at the University of Arkansas at Little Rock
Mengjun Xie, U. Arkansas, Little Rock

NSF Showcase #3
Friday, March 6
10:00 am - 11:30 am

Integrating Open Source Software Projects into a Software Engineering Course
Robert McCartney, Swapna Gokhale, University of Connecticut

MyCS: Middle-years Computer Science
Zach Dodds, Harvey Mudd

A Free On-line CSP eBook for Teachers
Barbara Ericson, Mark Guzdial, Briana Morrison, Georgia Tech

The CSE Early Research Scholars Program at the University of California, San Diego
Christine Alvarado, UC San Diego

NSF Showcase #4
Friday, March 6
3:00 pm - 4:30 pm

Science of Information: Bringing Many Disciplines Together
Deepak Kumar, Mark Ward, Robert Brown, Bryn Mawr College

Revitalizing the Computer Science Undergraduate Curriculum using Mobile Computing Platforms
Josh Dehlinger, Siddharth Kaza, Shiva Azadegan, Towson

Making Music with Computers: Creative Programming in Python
Bill Manaris, College of Charleston

CryptoMentor, A Suite of Visualization Tools for Modern Cryptography
Jean Mayo, Melissa Keranen, Ching-Kuang Shene, Michigan Technological University

NSF Showcase #5
Saturday, March 7
10:15 am - 11:45 am

Learn CS1/2 by Playing and Building Commercial Grade Casual Games
Rob Nash, Kelvin Sung, Jason Pace, University of Washington

How to Run a Successful REU Site - Prospectives from a Decade of Experience
Daniela S. Raicu, Jacob D. Furst, Depaul

Teachers’ Resources for Online Privacy Education
Gerald Friedland, Serge Egelman, Dan Garcia, Blanca Gordo, UC Berkeley

SecKnitKit (Security Knitting Kit): Integrating Security into Traditional Computer Science Courses
Ambareen Siraj, Tennessee Tech

http://sigcse2015.sigcse.org
FLOCK #1: THURSDAY, MARCH 5
5:30 pm - 6:20 pm • Located in the Marriott Tower

Universal Access to Computing Education
Room Bennie Moten A
Richard E. Ladner, Brianna Blaser, University of Washington; Daniela Marghitu, Auburn University

Mapping Alice Curriculum to Standards
Room Mary Lou Williams B
Donald Slater, Wanda P. Dann, Carnegie Mellon University; Stephen Cooper, Stanford University

Brainstorming How to Use Lego Mindstorms EV3 in the Classroom
Room Big Joe Turner A
Greg Kawell, Samford University; Benjamin Schafer, University of Northern Iowa

What Math is the Right Math for Computing?
Room Mary Lou Williams A
Doug Baldwin, SUNY Geneseo; John P. Dougherty, Haverford College

K12 CS Teaching Methods Courses
Room Lester Young A
Shuchi Grover, SRI International; R. Benjamin Shapiro, Tufts University; Brian Dorn, University of Nebraska Omaha

Process Oriented Guided Inquiry Learning (POGIL) in Computer Science
Room Bennie Moten B
Clif Kussmaul, Muhlenberg College; Helen H. Hu, Westminster College; Chris Mayfield, James Madison University

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

Resources and Strategies for Flipped Classrooms
Room Julia Lee A
Edward Gehringer, North Carolina State University; Mark S. Hall, University of Wisconsin-Marathon Co.

The Great Objective-C Swift Migration of 2015
Room Jay McShann B
Michael P. Rogers, Northwest Missouri State University; William Siever, Western Illinois University

Teaching Track Faculty in CS
Room Julia Lee B
Mark Shertiff, University of Virginia; Daniel Garcia, University of California, Berkeley

Juggling the Jigsaw: Enabling CS1 Growing Enrollment and Diversity at Undergraduate Institutions
Room Andy Kirk A
Farzana Rahman, James Madison University; Dee Weikle, Eastern Mennonite University

Interactive Ebooks and Course Materials -- A BOF for Authors and Instructors
Room Count Basie A
Cay Horstmann, San Jose State University; Smita Bakshi, Zyante Inc.; Amruth Kumar, Ramapo College of New Jersey; Frank Vahid, University of California

Updating the ACM/IEEE 2008 Curriculum in Information Technology
Room Andy Kirk B
Mihaela Sabin, University of New Hampshire; Svetlana Peitsverger, Southern Polytechnic State University; Cara Tang, Portland Community College

Teaching Algebra and Computing through Bootstrap and Program by Design
Room Count Basie B
Emmanuel Schanzer, Harvard University; Kathi Fisler, WPI

Teaching Security Using Hands-on Exercises in 2015
Room Count Basie C
Richard S Weiss, The Evergreen State College, Michael E. Locasto, The University of Calgary; Jens Mache, Lewis & Clark College; Blair Taylor, Towson University; Elizabeth Hawthorne, Union County College; Justin Cappos, New York University; Ambereen Siraj, Tennessee Technical University

Creating Learning Assessment Tools for Cybersecurity Education
Room Big Joe Turner B
Geoffrey L. Herman, University of Illinois, Urbana-Champaign; Ronald Dodge, United States Military Academy

Automatically Generated Feedback for CS Student Work: Best Practices
Room 12 Street Room
Bruce W. Char, Jeffrey Popyack, Jeremy Johnson, William Mongan, Drexel University

Computer Science Principles: Expanding the Community
Room Lester Young B
Owen Astrachan, Duke University; Lien Diaz, College Board; Richard Kick, Newbury Park, HS; Amy Briggs, Middlebury College; Fran Trees, Rutgers

New Concepts in Database System Education
Room Central Street Room
Carsten Kleiner, University of Applied Sciences & Arts
FLOCK #2: THURSDAY, MARCH 5
6:30 pm - 7:20 pm • Located in the Marriott Tower

Open Educational Resources: What Next?
Room Julia Lee B
Lillian (Boots) Cassel, Villanova University; Cynthia Lee, Stanford University; Cliff Shaffer, Virginia Tech; Darina Dicheva, Winston-Salem State University; David Hovemeyer, York College of Pennsylvania

Computer Science: Small Department Initiative
Room Andy Kirk A
Catherine Bareiss, Olivet Nazarene University

Empirical Research in CS Education
Room Count Basie A
Mark Sherriff, University of Virginia; Sarah Heckman, North Carolina State University

CS 4 Everyone: Diversifying the K-12 Pipeline for CS at College and High School Level
Room Andy Kirk B
Farzana Rahman, Sharon Simmons, James Madison University; Jennifer Stevens, Virginia Advanced Study Strategies, Inc.

Preparing Undergraduates to Make the Most of Attending CS Conferences
Room Count Basie B
Janet Davis, Grinnell College; Christine Alvarado, UC San Diego; Miranda C. Parker, Georgia Tech; Jennelle Nystrom, Yahoo!

Can Programming Boot Camp Help Under-represented College Students Succeed in Computing Degrees?
Room Count Basie C
Kristine S Nagel, Sonal Dekhane, Nannette Napier, Georgia Gwinnett College

SIGCSE Reads: Time for Book Discussion
Room Big Joe Turner B
Rebecca Bates, Minnesota State University, Mankato; Judy Goldsmith, University of Kentucky; Valerie Summet, Emory University

Working with Undergraduate Teaching Assistants: Best Practices and Lessons Learned
Room Central Street Room
Chris Gregg, Tufts University; Colleen M. Lewis, Harvey Mudd College

Blended CS Courses using Massive, Open, Online Courses (and other Online Resources)
Room 12 Street Room
Douglas H. Fisher, Vanderbilt University; Janet Burge, Wesleyan University; Mary Lou Maher, University of North Carolina; Jerry Roth, Vanderbilt University

Handling Very Large Lecture Courses: Keeping the Wheels on the Bus
Room Big Joe Turner A
Josh Hug, Daniel D. Garcia, UC Berkeley

Proposed ABET Computer Science Criteria and the CS2013 Curriculum
Room Bennie Moten A
Michael Oudshoorn, Wentworth Institute of Technology; Stan Thomas, Wake Forest University; Barbara Boucher Owens, Southwestern University; Deborah Trytten, University of Oklahoma; Mary-Jane Willshire, Capella University

AP CS A – Sharing Teaching Strategies and Curricular Ideas
Room Lester Young B
Paul Tymann, Rochester Institute of Technology; Lester Wainright, Charlottesville High School; Sandy Czajka, Riverside Brookfield High School

Perspectives on How Computer Science Curricula 2013 Influences Two-Year College Programs
Room Mary Lou Williams A
Cindy S. Tucker, Bluegrass Community and Technical College; Cara Tang, Portland Community College; Elizabeth K. Hawthorne, Union County College

Addressing Professional Development Needs for K-12 CS – Working with Your Local CSTA Chapter
Room Mary Lou Williams B
David Reed, Creighton University; Frances P. Trees, Rutgers University

Study Abroad Experiences in Computer Science
Room Lester Young A
Michael Goldweber, Xavier University

Sharing Best Practices for Alumni Engagement
Room Bennie Moten B
Meghan Allen, Michele Ng, University of British Columbia; Ben Coleman, Moravian College; Diane Horton, University of Toronto; Lynn Lambert, Christopher Newport University

Assessments for Computational Thinking in K-12
Room Jay McShann A
Shuchi Grover, Marie Bienkowski, Eric Snow, SRI International

Student Contributions to Humanitarian Free and Open Source Software (HFOSS)
Room Julia Lee A
Lori Postner, Nassau Community College; Stoney Jackson, Western New England University; Ben Coleman, Moravian College; Suzanne Mello-Stark, University of Rhode Island; Samuel Rebelsky, Grinnell College

Partnering to Promote State-by-State Computing Education Reform
Room Jay McShann B
William Richards Adrion, University of Massachusetts Amherst; Mark Gudial, Barbara Ericson, Georgia Institute of Technology

http://sigcse2015.sigcse.org
Friday, March 6

10:00 am - 12:00 pm

Room Lobby 2500

**Factors Affecting High School Student Engagement in Introductory Computer Science Classes**
Sarah J. Wille, Dae Kim, Outlier Research & Evaluation, University of Chicago

**Exploring Computer Science Course and Math Achievement**
Daniel W. Lewis, Santa Clara University; Lisa Kohne, Timothy Mechlinski, Mariana Schmalstig, SmartStart Evaluation & Research

**Just Enough Programming for Eight-years Olds**
Karen H. Jin, University of New Hampshire; Gavin Kearns, Paul Elementary School

**Moving Ahead with Undergraduate Computational Science Programs**
Lori Carter, Tim Little, Claire Mathews, Point Loma Nazarene University

**Computing in the Classroom: A Workshop for Teachers to Infuse Computational Thinking into K-12 Classrooms**
Yegem Kurt-Peker, Lydia Ray, Rania Hodnod, Shamim Khan, Columbus State University

**Using POGIL Activities to Teach CS Principles to Diverse Students**
Helen H. Hu, Westminster College

**A Case Study on Adding Computer Science as a Math Graduation Elective: A Report from the Alabama CS/Mathematics Crosswalk Committee**
Jeff Gray, University of Alabama; Mary Boehm, Carol Crawford, Kitty Morgan, A+ College Ready; Jeff Baker, Huntsville High School; Gina McCarty, Lawrence County High School; Kelley Rouze, Montgomery County Schools; Jill Westerlund, Hoover High School, Carol Yarbrough, Alabama School of Fine Arts

**Creating New Languages in Blockly: Two Case Studies in Media Computation and Robotics**
Jake Trower, Jeff Gray, University of Alabama

**Automating Software Engineering Best Practices Using an Open Source Continuous Integration Framework**
Sarah Heckman, Jason King, Michael Winters, North Carolina State University

**A Bottom-Up Approach to Teaching Server-Side Web Development Skills**
Ariel Ortiz, Tecnológico de Monterrey, Campus Estado de México

**Teaching Text-based Programming in a Blocks-based World**
David Weintrop, Uri Wilensky, Northwestern University; Jennifer Roscoe, Daniel Law, Lane Tech College Prep

**Summer Programming Boot Camp: A Strategy For Retaining Women In IT**
Sonal Dekhane, Kristine Nagel, Nannette Napier, Georgia Gwinnett College

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**Evaluating Scratch Programs to Assess Computational Thinking in a Science Lesson**
Jennifer Albert, Barry Peddycord III, Tiffany Barnes, North Carolina State University

**Integrating Cutting Edge Devices to Increase Student Retention in Programming**
Evelyn Brannock, Robert Lutz, Mai Yin Tsoi, Georgia Gwinnett College

**E-Assess: A Web-Based Tool for Coordinating and Managing Program Assessment**
Jean H. French, D. Brian Larkins, Coastal Carolina University

**CS2013 Assessment Exam**
E. Kent Palmer, MacMurray College; Terry Linkletter, Central Washington University; Paulette Alexander, Patricia L. Roden, University of North Alabama; Kewal Dharival, Institute for Certification of Computing Professionals, Indira R. Guzman, Trident University International

**Case Studies of Use: Creating Counselor Champions for Change in K12 Computing Education**
Sarah Hug, University of Colorado, Boulder; Jane Krauss, Catherine Ashcraft, NCWIT

**A Qualitative Analysis of Students’ Difficulties with the Quicksort Algorithm Using Arrays**
Amit Maor, Harvey Mudd College/Claremont McKenna College

**STEM Careers Infographic Project (SCIP): Teaching Media-Based Computational Thinking Practices**
Brittany Ann Kos, University of Colorado; Elizabeth Sims, St. Vrain Valley School District

**Algorithmic Thinking: Program that Solve Well-defined Visual Problems**
Elodie Fourquet, Colgate University

**Culturally Responsive Computing: An In-depth Examination of Outcomes in COMPUGIRLS**
Catherine Ashcraft, University of Colorado

**Students’ (Mis)Understanding of Dictionaries**
Emily Stansbury, Harvey Mudd College

**It’s Not Just About Functionality Anymore**
Samuel A. Rebelsky, Grinnell College

**“Maker Innovators”: A Workshop for Youth Creating Responsive and Wearable Game Interfaces with Tangible and Digital Construction Toolkits**
Gabriela T. Richard, Yasmin B. Kafai, University of Pennsylvania

**Using Big Data and BKT to Evaluate Course Resources**
Zachary Mark MacHardy, Dan Garcia, UC Berkeley
Friday, March 6

3:00 pm - 5:00 pm

Room Lobby 2500

Student Board-Writing to Integrate Communication Skills and Content to Enhance Student Learning
Mark E Hoffman, Quinnipiac University

Correlating ACM Core IT Learning Outcomes with Associate Degree and Certificate Programs
Cara Tang, Portland Community College; Cindy S. Tucker, Bluegrass Community and Technical College; Elizabeth K. Hawthorne, Union County College

Madeup: A Language for Making Things Up
Chris Johnson, Peter Bui, University of Wisconsin, Eau Claire

Student Discovery of Network Security Ethics
Alisa Neeman, Michael Snider, Allen Hudson, University of Rio Grande and Rio Grande Community College

Extending SQL Auto-Grading to DML and DDL Statements
Carsten Kleiner, Felix Heine, Bastian Fischer, University of Applied Sciences&Arts

Conflict-Driven Cooperative-Learning in Computing Courses
Swaroop Joshi, Neelam Soundarajan, Rajiv Parmnath, The Ohio State University

A Nearest Neighbors Analysis of Student Academic Performance in Computer Science
R. Mitchell Parry, Appalachian State University

Integrating Mobile Computing and Security into a Computer Science Curriculum
Xiaohong Yuan, Kelvin S. Bryant, Kenneth Williams, Jinsheng Xu, North Carolina A&T State University

The Effects of Formal Undergraduate Research Experiences on Student Aspirations for Graduate Study in Computer Science
Ana Nyame-Mensah, Computing Research Association

CSteach: Engaging Latino/a Youth in Computer Science with Social Justice and Near Peers
Louise Ann Lyon, Jill Denner, ETR; Jacob Martinez, DigitalNEST

Security Injections 2.0: Using Segmentation, Instant-feedback, and Auto-grading to Enhance Secure Coding Modules for Lower-level Programming Courses
Sagar Raina, Blair Taylor, Siddharth Kaza, Towson University

Conceptum: An Online Infrastructure for Concept Inventories
Guatam Mohan, David Wurtele, Kevin Webb, Swarthmore College; Benjamin Rempel, Eli Rosenberg, Cynthia Taylor, Oberlin College

Raspberry HadooPI: A Low-Cost, Hands-On Laboratory in Big Data and Analytics
Kenneth Fox, William M Mongan, Jeffrey Popyack, Drexel University

The State of CS Circles
David Pritchard, University of Southern California; Sandy Graham, Troy Vasiga, University of Waterloo

Building the Pascaline: Digital Computing Like It’s 1642
David S. Touretzky, Carnegie Mellon University

Using Workflow Technology to Create Scenario-based Workflows for Information Security Education
Wu He, Ashish Kshirsagar, Alexander Nwala, Yaohang Li, Old Dominion University

Gender Differences in High School Students’ Decisions to Study Computer Science and Related Fields
Hai Hong, Jennifer Wang, Jason Ravitz, Mo-Yun Lei Fong, Google Inc.

Learning from What Works
Nicholas Senske, University of North Carolina at Charlotte

MIPSUnit: A Unit Testing Framework for MIPS Assembly
Zachary Kurmas, Jack Rosenhauer, Grand Valley State University

A Web-based Simulator for Learning Multiprocessor Real-time Scheduling
Yuting Zhang, Xin Shan, Yingyuan Zhang, Juejie Wang, Boston University Metropolitan College

Teaching Debugging Skills in Shader-Based Computer Graphics Programming
Ying Zhu, G. Scott Owen, Georgia State University

Developing Computational Thinking Through Image Making and Constructionist Learning

Smartwatches For Junior/Senior Level CS Education
Andrey Esakia, Virginia Tech

A Gateway Game to Make Computational Problem Solving Accessible and Engaging
Emmett Tomai, Roberto Flores, Casey Richardson, Jose Rojas, Julio Oliva, German Zuniga, University of Texas - Pan American

Oh, Snap! Enabling and Encouraging Success in CS1
Michael Ball, Lauren Mock, Jonathan McKinsey, Zachary Machardy, Daniel Garcia, Nathaniel Titterton, Brian Harvey, UC Berkeley

http://sigcse2015.sigcse.org
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The Oracle Academy provides education institutions globally with industry-leading software, curriculum, support, and certification resources that faculty can integrate into their classrooms. Students gain experience and develop skills that help them excel in the 21st century workplace.

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GitHub Education

During the four days of SIGCSE 2015:

35,000 Questions asked by students
14,000 Answers posted by students
6,000,000 Times a student was helped
0 Emails sent to professors

Stop by our booth to learn more
education.github.com
2015 ACM SIGCSE Student Research Competition

First Round of Competition
Thursday, March 5
1:45 pm - 5:00 pm

Semi-Finalist Presentations
Saturday, March 7
9:00 am - 10:15 am

Undergraduate: Room 2502B
Graduate: Room 2503B

The Student Research Competition (SRC) 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 a visual presentation to highlight different aspects of their research to individual evaluators. These presentations are evaluated on their quality, the significance of the work, 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 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
FrenchPress Gives Students Automated Feedback on Java Program Flaws
Hannah Blau, University of Massachusetts

Minding the Gap Between Blocks-Based and Text-Based Programming
David Weintrop, Northwestern University

Selecting the Optimal Hardware Prefetching Algorithm for Parallel Workloads
Saami Rahman, Texas State University

Situating Computational Thinking with Big Data: Pedagogy and Technology
Austin Cory Bart, Virginia Tech

Using Active Learning Techniques in Mixed Undergraduate/Graduate Courses
Brian P. Railing, Georgia Institute of Technology

User Interface Design and Agility: Practices for Integration in CS Classrooms
Mohammed Seyam, Virginia Tech

UNDERGRADUATE STUDENT RESEARCH PROJECTS
Improvement of Robot Mapping and Localization Using Combined Sensory Data
Deanna Biesan, Baldwin Wallace University

Speed Estimation Using Computer Vision
Matthew Bowen, University of Alabama

Developing a Robotics Education Platform using Android Based Cellbots
Donald D Buhl-Brown, Austin Peay State University

ACEit!
Jae Hyun Choe, Kalamazoo College

Computational Creativity in the Culinary Arts
Erol Cromwell, Davidson College

Data Mining: Building Better Bug Messages
Mindy Chua DeWaal, Southern Utah University

Using CABECTPortal as a Case Study to Extend the Capabilities of Penetration Testing Tools
Derek M. Duchesne, The College of New Jersey

Focused Mining of University Course Descriptions from Highly Variable Sources
Thomas D. Effland, SUNY University at Buffalo

Real Time Occupancy Notification: A Comparison Between Passive Infrared and iBeacon Implementations
Brandon Gottlob, The College of New Jersey

Automation of Layer 7 DDoS Attacks and Post Forensic Analysis of Server Logs
Barry Hamilton Jr., Jacksonville University

NeuroSoccer
Andrew Keenan, Villanova University

Parallel Author Verification of E-mail
Andreas D. Kellas, Alexander Molnar, Leo St. Amour, Frederick Ulrich, Suzanne J. Matthews, United States Military Academy

Development of an Offset Detection Task for MIREX 2015
Damion Jarrell Long, David Heise, Lincoln University

Automatic Fall Detection Using Mobile Devices
Melissa Katherine Mulcahy, Central Connecticut State University

Web-based Application for Virtual Exercise Regimen
Christina Noe, The University of Alabama in Tuscaloosa

Selection in 3D Graphics Environments
Lindsey Press, Villanova University

Jumping Implementation in Video Games
Joseph J. Rioux, James Vanderhyde, Benedictine College

The Backbone Project
Dharmin Shah, Rose-Hulman Institute of Technology
FRIDAY, MARCH 6

3:45 pm - 5:00 pm
Chair: Stephen Edwards, Virginia Tech

Room 3501D

Montessori Methods + A Living Textbook > Traditional CS Instruction
Nicole Anderson, Tim Gegg-Harrison, Winona State University

Coaster: Teaching Computer Graphics Incrementally
Robert R. Lewis, Washington State University, Tri-Cities

Hugging and Bridging: What It Is And Why You Should Be Doing It!
Shuchi Grover, Stanford University

Making Computer Science a First-Class Object in the K-12 Next Generation Science Standards
Marie Bienkowski, SRI International

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AccessComputing
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206-221-4163
www.uw.edu/accesscomputing

AccessComputing, with over 30 partner organizations and institutions, uses evidence-based practices to increase the participation and success of people with disabilities in computing. It supports communities of practice, minigrants to fund activities that promote computing careers for students with disabilities, a searchable knowledge base with case studies and effective practices, and mentoring and internships for students with disabilities.

ACM CCECC
Booth 116
2 Penn Plaza, Suite 701
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212-626-0530 • http://women.acm.org

ACM-W supports, celebrates, and advocates internationally for women in computing. Primary activities are celebrations for women in computing, ACM-W chapters, scholarships for women students to attend research conferences, and Athena Lecturer Awards.

Advancing the Successful IT Student through Enhanced Computational Thinking (ASSECT)
Booth 219
Center for IT
University of Massachusetts Boston
100 Morrissey Boulevard
Boston, MA 02125
617-287-7295 • www.batec.org

Advancing the Successful IT Student through Enhanced Computational Thinking (ASSECT) is a project of Broadening Advanced Technological Education Connections (BATEC), an ATE National Center of Excellence for Computing and Information Technologies which has developed a rubric for computational thinking in Information Technology and industry-relevant scenarios for use in entry level IT classes.

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www.cmd-it.org

CMD-IT’s vision is to contribute to the national need for an effective workforce in computing and IT through inclusive activities focused on minorities and people with disabilities. The vision is accomplished by insuring that under-represented groups are fully engaged and to promoting innovation that enriches, enhances, and enables these communities.
The Committee on the Status of Women in Computing Research (CRA-W) and The Coalition to Diversify Computing (CDC)

Booth 219
1828 L Street NW, Suite 800
Washington, DC 20036
www.cra-w.org
www.cdc-computing.org

The CRA-W/CDC Alliance consists of the Committee on the Status of Women in Computing Research and the Coalition to Diversify Computing. Together, the Alliance offers programs at the undergraduate through mid-career levels aimed at increasing and retaining the number of women and underrepresented minorities participating in computing research and education.

Computer Science Teachers Association (CSTA)

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2 Penn Plaza, Suite 701
New York, NY 10121
212-626-0507 • www.csta.acm.org

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

Consortium for Computing Sciences in Colleges

Booth 420
Attention Susan Dean
5 Maple Street
Walton, NY 13856 • www.ccsc.org

The purpose of the Consortium is to promote the betterment of computer-oriented curricula in two- and four-year colleges and universities; to improve the use of computing as an educational resource for all disciplines; to encompass regional constituencies devoted to this purpose; and to promote a national liaison among local, regional, and national organizations also devoted to this purpose. Predominantly these colleges and universities are oriented toward teaching, rather than research.

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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.

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CodeWorkout/Web-CAT

Booth 112
Virginia Tech, Dept. of Computer Science
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Blacksburg, VA 24060
540-321-5723 • edwards@cs.vt.edu

CodeWorkout is a drill-and-practice coding question service that allows students and teachers to work with expert-written questions and to write their own. Students can learn through practice while teachers can create homework or online quizzes. CodeWorkout is produced by the Web-CAT team, so learn about automated program grading as well.

CS Unplugged: Encourage Computing Without Computers

Booth 219
Colorado School of Mines
1500 Illinois St
Golden, CO 80401
www.toilers.mines.edu/CS-Unplugged

VCTAL, The Value of Computational Thinking across Grade Levels 9-12, is a DIMACS project to develop a set of instructional modules, mini-modules, and a full-year online textbook for use in high school classrooms. The modules cultivate a facility with computational thinking in students across different grade levels and subject areas.

- **Vendor Session**: Visual Studio 2013 and 2015: New Features for All Platforms and Users Thursday 10:45am

- **Vendor Session**: Touch Develop for iOS, Android, Windows and IoT Friday 10:45am

- **Hospitality Suite** 2022 at the Marriott: stop by for conversation and refreshments 7pm—10pm Thursday through Saturday
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Booth 219
Lincoln University
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Lincoln University is a comprehensive HBCU (Historically Black University) in Jefferson City, Missouri, with a mission to serve a diverse population. LU offers degrees in computer science and computer information systems along with multiple funded programs providing support and opportunities for undergraduate research, including CROMA, LU WOMEN, and STEM Alliance.

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http://www.cs.virginia.edu/~sherriff/nsfshowcase/

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