

# SIGCSE2015

KANSAS CITY

46th ACM TECHNICAL SYMPOSIUM on COMPUTER SCIENCE EDUCATION



Conference Program | Exhibit Guide

**March 4-7, 2015**

Kansas City Convention Center  
Kansas City, Missouri

**KEEP  
CONNECTED.**



**KEEP  
COMMITTED.**



**KEEP  
COMPUTING.**





## THURSDAY

### 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".

RM 2504A

### 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.

RM 2505A

## FRIDAY

### 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.

EXHIBIT HALL

### 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, Ireme Lee Santa Fe Institute) and Karen Peterson (National Girls Collaborative Project).

RM 2505A

### 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.

RM 2504A

### 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.

RM 2502B



Computer Science education  
is more than digital literacy.



[www.google.com/edu](http://www.google.com/edu)



## Conference Program & Exhibit Guide

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## MESSAGE FROM THE SYMPOSIUM AND PROGRAM CHAIRS 2015

*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,



Proposal Type	Accepted	Received	Acceptance Rate
Paper	105	289	36%
Panel	10	18	56%
Special Session	13	25	52%
Workshop	30	71	42%
Poster	51	117	44%
Birds of a Feather	38	55	69%
Demos	10	32	31%
Lightning Talks	11	26	42%

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 Sieckenius 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 Moskus, Ann Lane, Irene Frawley, and Donna Cappel from ACM has been extremely valuable. Sheridan Printing Company brings all the materials for the proceedings together and we thank Lisa Tolles and Adrienne Griscti 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 Alphonse  
*University at Buffalo*





# SIGCSE 2015 SYMPOSIUM COMMITTEE

## Symposium Chairs

Adrienne Decker, *Rochester Institute of Technology*  
Kurt Eiselt, *University of British Columbia*

## Program Chairs

Carl Alphonse, *University at Buffalo*  
Jodi Tims, *Baldwin Wallace College*

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## 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*

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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 Jyväskylä, 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

WiFi Network:  
**SIGCSE**  
Access Code:  
**SIGCSE2015**

## Wednesday • March 4

8:00 am - 5:00 pm	Pre-conference Events	See page 10
3:00 pm - 9:30 pm	Registration	Lobby 2500
7:00 pm - 10:00 pm	Workshops 1 - 7	See page 10

## Thursday • March 5

7:30 am - 5:30 pm	Registration	Lobby 2500
8:30 am - 10:00 am	Plenary & Keynote (Hodgins)	2501AB
10:00 am - 10:45 am	Break, Exhibits & Demos	Exhibit Hall
10:00 am - 11:30 am	NSF Showcase #1	Exhibit Hall
10:45 am - 12:00 pm	Technical Sessions	See page 11
12:00 pm - 1:45 pm	First Timer's Luncheon (Young)	1501
12:00 pm - 1:45 pm	Lunch Break	On your own
1:45 pm - 3:00 pm	Technical Sessions	See pages 12-13
1:45 pm - 5:00 pm	Student Research Posters	Lobby 2500
3:00 pm - 3:45 pm	Break, Exhibits & Demos	Exhibit Hall
3:00 pm - 4:30 pm	NSF Showcase #2	Exhibit Hall
3:45 pm - 5:00 pm	Technical Sessions	See pages 14-15
5:30 pm - 6:20 pm	Birds of a Feather: Flock 1	See page 30
6:30 pm - 7:20 pm	Birds of a Feather: Flock 2	See page 31
7:30 pm - 8:30 pm	SIGCSE Reception	Imperial Ballroom, Marriott

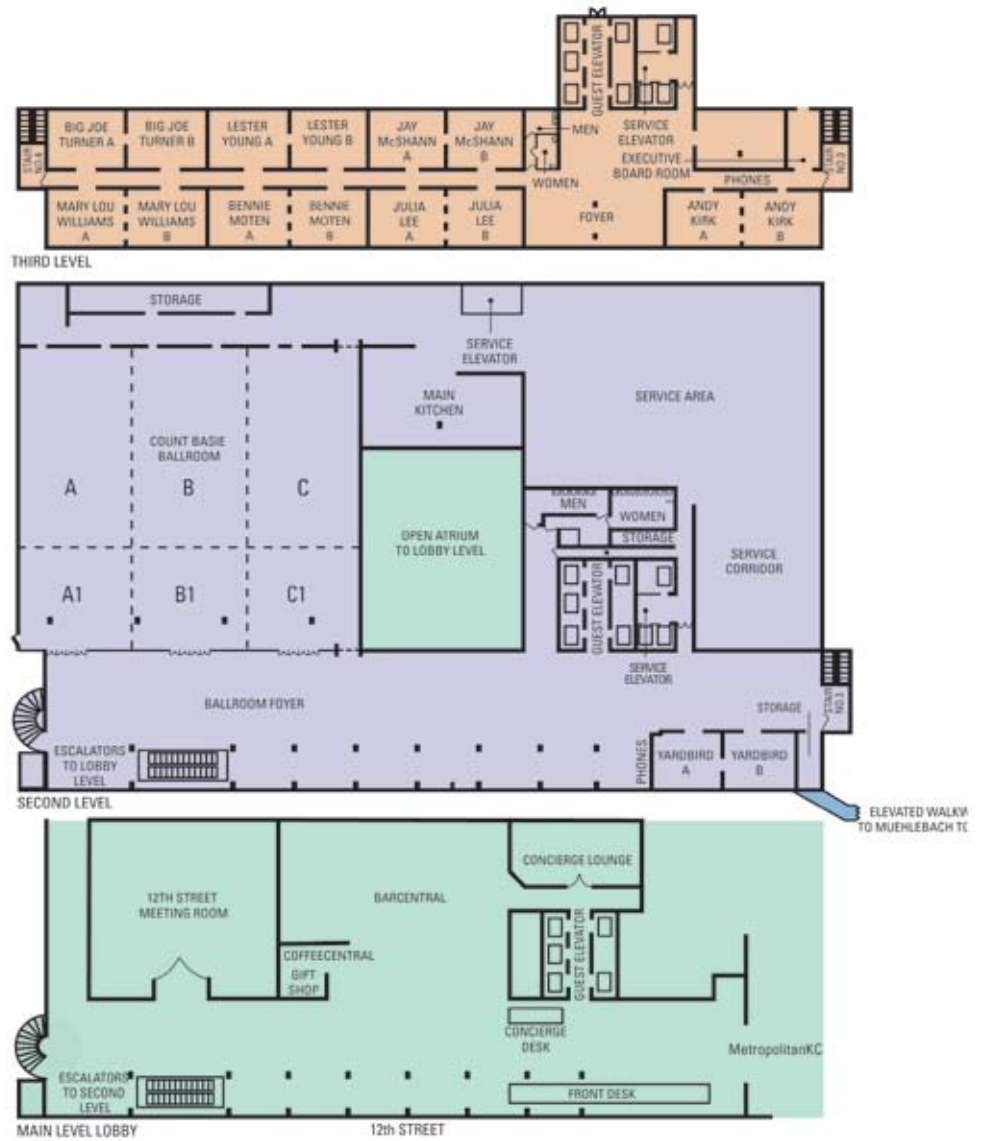
## Friday • March 6

8:00 am - 5:00 pm	Registration	Lobby 2500
8:30 am - 10:00 am	Plenary & Keynote (Weiss)	2501AB
10:00 am - 10:45 am	Break, Exhibits & Demos	Exhibit Hall
10:00 am - 11:30 am	NSF Showcase #3	Exhibit Hall
10:00 am - 12:00 pm	Poster Session I	Lobby 2500
10:45 am - 12:00 pm	Technical Sessions	See pages 16-17
12:00 pm - 1:45 pm	Lunch Break	On your own
12:00 pm - 1:45 pm	International Lunch	Gordon Biersch Restaurant
1:45 pm - 3:00 pm	Technical Sessions	See pages 18-19
3:00 pm - 3:45 pm	Break, Exhibits & Demos	Exhibit Hall
3:00 pm - 5:00 pm	Poster Session II	Lobby 2500
3:00 pm - 4:30 pm	NSF Showcase #4	Exhibit Hall
3:45 pm - 5:00 pm	Technical Sessions	See pages 19-20
3:45 pm - 5:00 pm	Lightning Talks	3501D
5:10 pm - 5:55 pm	SIGCSE Business Meeting	2505A
6:00 pm - 6:55 pm	CCSC Business Meeting	2505A
7:00 pm - 10:00 pm	Workshops 8 - 19	See page 21

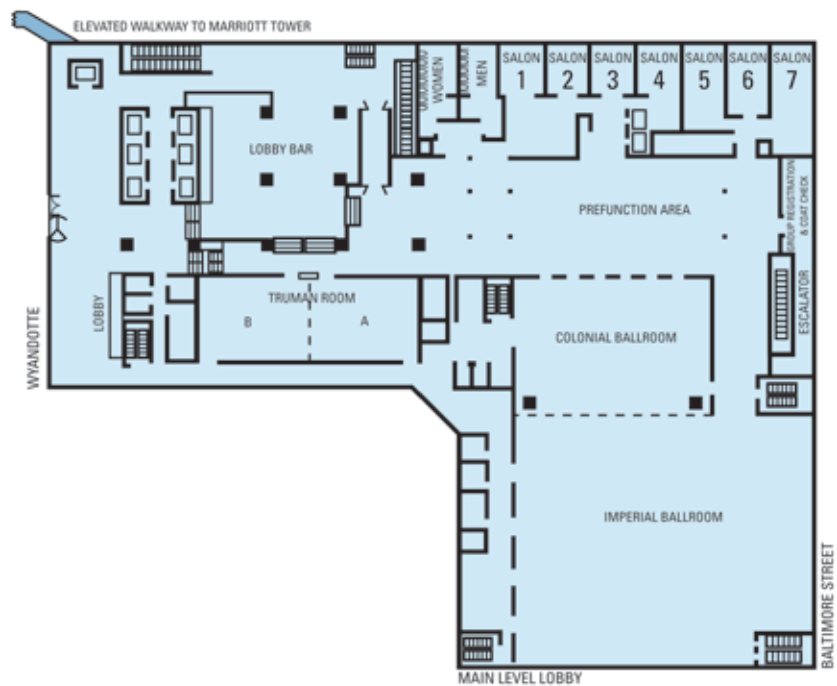
## Saturday • March 7

8:30 am - 11:45 am	Registration	Lobby 2500
9:00 am - 10:15 am	Technical Sessions	See page 22
10:15 am - 10:45 am	Break, Exhibits & Demos	Exhibit Hall
10:15 am - 11:45 am	NSF Showcase #5	Exhibit Hall
10:45 am - 12:00 pm	Technical Sessions	See pages 23-24
12:00 pm - 2:00 pm	Luncheon & Keynote (Hampton)	2501AB
2:00 pm - 3:00 pm	Registration	Lobby 2500
3:00 pm - 6:00 pm	Workshops 20 -30	See pages 24-25

# MARRIOTT TOWER



# MUEHLEBACH TOWER





# KANSAS CITY CONVENTION CENTER



## 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 bachelors 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

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

## WEDNESDAY WORKSHOPS: 7:00 pm - 10:00 pm

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

For a full list of workshops and descriptions visit: <http://sigcse2015.sigcse.org/attendees/SIGCSE2015-workshop-descriptions.pdf>

## KEYNOTE SESSION

8:30 am - 10:00 am	<b>Welcome:</b> Adrienne Decker, <i>Symposium Co-Chair, Rochester Institute of Technology</i> and Kurt Eiselt, <i>Symposium Co-Chair, University of British Columbia</i> <b>Plenary Session: Educating for Both Art &amp; Technology</b> Jessica Hodgins, <i>VP, Disney Research and Professor, Carnegie Mellon</i>	Room: 2501AB
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10:00 am - 10:45 am	Break, Exhibits & Demos	Exhibit Hall
10:00 am - 10:45 am	<b>Demo Sessions:</b> Michael E. Caspersen, <i>Chair</i> <b>EarSketch: A Web-based Environment for Teaching Introductory Computer Science Through Music Remixing</b> Jason Freeman, Brian Magerko, Regis Verdin, <i>Georgia Institute of Technology</i> <b>Blockly Language Creation and Applications: Visual Programming for Media Computation and Bluetooth Robotics Control</b> Jake Trower, Jeff Gray, <i>University of Alabama</i>	Exhibit Hall
10:00 am - 11:30 am	NSF Showcase #1 (See page 29 for a complete listing of NFS Showcases)	Exhibit Hall

## THURSDAY SESSIONS: 10:45 am - 12:00 pm

PAPER SESSIONS	10:45 AM	11:10 AM	11:35 AM
<b>CS Education Research</b> Chair: Ahmad Ghafarian, <i>University of North Georgia</i> <b>Room: 2502A ▶</b>	<b>Student Response to Teaching of Memory Cues and Resumption Strategies in Computer Science Classes</b> Noah John, Jaime Ruiz, <i>Colorado State University</i>	<b>Closing The Cyberlearning Loop</b> Ashok Ram Basawapatna, Alexander Repenning, <i>AgentSheets Inc.</i> ; Kyu Han Koh, <i>University of Colorado</i>	<b>Analyzing Student Work Patterns Using Programming Exercise Data</b> Jaime Spacco, <i>Knox College</i> ; Paul Denny, <i>University of Auckland</i> ; Brad Richards, <i>University of Puget Sound</i> ; David Babcock, David Hovemeyer, James Moscola, <i>York College of Pennsylvania</i> ; Robert Duvall, <i>Duke University</i>
<b>Curriculum</b> Chair: Henry Walker, <i>Grinnell College</i> <b>Room: 2503A ▶</b>	<b>Teaching Computing as Science in a Research Experience</b> Jerod Weinman, David Lopatto, <i>Grinnell College</i> ; David Jensen, <i>University of Massachusetts Amherst</i>	<b>Backward Design: An Integrated Approach to a Systems Curriculum</b> Michael S. Kirkpatrick, Mohamed Aboutabl, David Bernstein, Sharon Simmons, <i>James Madison University</i>	<b>A Module-based Approach to Adopting the 2013 ACM Curricular Recommendations on Parallel Computing</b> Martin Burtscher, Wuxu Peng, Apan Qasem, Hongchi Shi, Dan Tamir, <i>Texas State University</i> ; Heather Thiry, <i>University of Colorado at Boulder</i>
<b>CS1/CS2: Focus on CS1</b> Chair: Valerie Summet, <i>Emory University</i> <b>Room: 3501C ▶</b>	<b>Creating a Computer Simulator as a CS1 Student Project</b> Kian L Pokorny, <i>McKendree University</i>	<b>Program Decomposition and Complexity in CS1</b> Aaron Keen, Kurt Mammen, <i>California Polytechnic State University</i>	<b>Supporting Creativity and User Interaction in CS 1 Homework Assignments</b> Tammy VanDeGrift, <i>University of Portland</i>
<b>Beyond CS2: Miscellaneous Topics</b> Chair: Carsten Kleiner, <i>University of Applied Sciences Hannover</i> <b>Room: 3501D ▶</b>	<b>Embedding Secure Coding Instruction into the IDE: A Field Study in an Advanced CS Course</b> Michael Whitney, Heather Lipford-Richter, Bill Chu, Jun Zhu, <i>University of North Carolina Charlotte</i>	<b>Augmenting Undergraduate Computer Science Education With Programmable Smartwatches</b> Andrey Esakia, Shuo Niu, D. Scott McCrickard, <i>Virginia Tech</i>	<b>Simulating IBM Watson in the Classroom</b> Wlodek W. Zadrozny, Sean Gallagher, Walid Shalaby, Adarsh Avadhani, <i>University of North Carolina at Charlotte</i>



## SPECIAL SESSIONS AND PANELS: 10:45 am - 12:00 pm

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

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

## THURSDAY SESSIONS: 1:45 pm - 3:00 pm

<b>Paper Sessions</b>	<b>1:45 pm</b>	<b>2:10 pm</b>	<b>2:35 pm</b>
<b>Automated Assessment</b> Chair: Sarah Heckman, <i>North Carolina State University</i> <b>Room: 2503A ►</b>	<b>WebWolf: Towards a Simple Framework for Automated Assessment of Webpage Assignments in an Introductory Web Programming Class</b> Antonio Carvalho Siochi, William Randall Hardy, <i>Christopher Newport University</i>	<b>The Role of Automation in Undergraduate Computer Science Education</b> Chris Wilcox, <i>Colorado State University</i>	<b>Mechanical TA: Partially Automated High-Stakes Peer Grading</b> James R. Wright, Chris Thornton, Kevin Leyton-Brown, <i>University of British Columbia</i>
<b>Gender &amp; Diversity</b> Chair: Eric Aaron, <i>Vassar College</i> <b>Room: 2502A ►</b>	<b>Are Females Disinclined to Tinker in Computer Science?</b> Samantha Krieger, Meghan Allen, Catherine Rawn, <i>University of British Columbia</i>	<b>The Emerging Role of Self-Perception in Student Intentions</b> Jennifer Dempsey, Richard T. Snodgrass, Isabel Kishi, Allison Titcomb, <i>University of Arizona</i>	<b>StitchFest: Diversifying a College Hackathon to Broaden Participation and Perceptions in Computing</b> Gabriela T. Richard, Yasmin B. Kafai, Orkan Telhan, <i>University of Pennsylvania</i> ; Barrie Adleberg, <i>E-Line Media</i>
<b>Non-majors/ Interdisciplinary</b> Chair: Jian Zhang, <i>Texas Woman's University</i> <b>Room: 3501E ►</b>	<b>Computer Scientists at the Biology Lab Bench</b> Andrea Tartaro, Renee J. Chosed, <i>Furman University</i>	<b>Data Journalism: Lessons Learned While Designing an Interdisciplinary Service Course</b> Christopher Plaue, <i>The University of Georgia</i> ; Lindsey R. Cook, <i>U.S. News &amp; World Report</i>	<b>Introducing Computing Concepts to Non-Majors: A Case Study in Gothic Novels</b> Heather Bort, Dennis Brylow, <i>Marquette University</i> ; Mimi Czarnik, <i>Alverno College</i>

## THURSDAY SESSIONS: 1:45 pm - 3:00 pm

Paper Sessions	1:45 pm	2:10 pm	2:35 pm
<b>CS1/CS2: Themed Approaches</b> Chair: Suzanne Matthews, <i>United States Military Academy</i> <b>Room: 3501C ▶</b>	<b>Statistics-infused Introduction to Computer Science</b> Olaf A. Hall-Holt, Kevin R. Sanft, <i>St. Olaf College</i>	<b>Building Worlds: Bridging Imperative-First and Object-Oriented Programming in CS1 - CS2</b> Zoë Wood, Aaron Keen, <i>California Polytechnic State University</i>	<b>A Data Programming CS1 Course</b> Ruth E. Anderson, Michael D. Ernst, <i>University of Washington</i> ; Robert Ordóñez, <i>Southern Adventist University</i> ; Paul Pham, <i>The Evergreen State College</i> ; Ben Tribelhorn, <i>Seattle University</i>
<b>Beyond CS2: Programming Languages/Compilers</b> Chair: Monisha Pulimood, <i>The College of New Jersey</i> <b>Room: 3501D ▶</b>	<b>A Descent into the Maelstrom: Teaching Legacy Programming and Re-engineering</b> Michael Wirth, <i>University of Guelph</i>	<b>A Framework for Teaching Programming Languages</b> Kent D. Lee, <i>Luther College</i>	<b>The Interpreter In An Undergraduate Compilers Course</b> John H. E. Lasseter, <i>Hobart and William Smith Colleges</i>

## SPECIAL SESSIONS AND PANELS: 1:45 pm - 3:00 pm

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

3:00 pm - 3:45 pm	<b>Break, Exhibits &amp; Demos</b>	<b>Exhibit Hall</b>
3:00 pm - 3:45 pm	<b>Demo Sessions:</b> Stephen H. Edwards, <i>Chair</i> <b>A Classroom Tested Accessible Multimedia Resource for Engaging Underrepresented Students in Computing: The University of Maryland Curriculum In A Box</b> Elissa Redmiles, Mary Allison Abad, Isabella Coronado, Sean Kross, Amelia Malone, <i>University of Maryland</i> <b>Using BlueJ to Code Java on the Raspberry Pi</b> Amjad Altadmri, Neil C. C. Brown, Michael Kölling, <i>University of Kent</i>	<b>Exhibit Hall</b>
3:00 pm - 4:30 pm	<b>NSF Showcase #2</b> (See pages 29 for a complete listing of NFS Showcases)	<b>Exhibit Hall</b>

## THURSDAY SESSIONS: 3:45 pm - 5:00 pm

Paper Sessions	3:45 pm	4:10 pm	4:35 pm
<b>Block Languages</b> Chair: Sen Zhang, <i>SUNY Oneonta</i> <b>Room: 3501E ▶</b>	<b>DBSnap: Learning Database Queries by Snapping Blocks</b> Yasin N Silva, Jaime Chon, <i>Arizona State University</i>	<b>Language Migration in non-CS Introductory Programming through Mutual Language Translation Environment</b> Yoshiaki Matsuzawa, Takashi Ohata, Sanshiro Sakai, <i>Shizuoka University</i> ; Manabu Sugiura, <i>Keio University</i>	<b>Scratch: A Way to Logo and Python</b> Mark Dorling, Dave White, <i>Computing at School and Network of Excellence</i>
<b>Gender &amp; Diversity</b> Chair: Lina Battestilli, <i>NCSU</i> <b>Room: 2502A ▶</b>	<b>An Effective Alternative to the Grace Hopper Celebration</b> Gloria Childress Townsend, <i>DePauw University</i> Kay Sloan, Rockman et al	<b>Improving Undergraduate Student Performance in Computer Science at Historically Black Colleges and Universities (HBCUs) through Industry Partnerships</b> A. Nicki Washington, Legand Burge, Marlon Mejias, Ketly Jean-Pierre, Qi'Anne Knox, <i>Howard University</i>	<b>A Comparative Study of the Acceptability of Signs for the Brazilian Sign Language Created in Person and Remotely</b> Francisco C. de M. B. Oliveira, Gerarda N. C. Gomes, Anibal C. de Oliveira, Lidiane C. Silva, <i>State University of Ceará</i> ; Adriano T. de Freitas, <i>Federal Institute of Ceará</i> ; Bruno Queiroz, <i>Distance Education Laboratory for People with Disabilities</i>
<b>Student Engagement: Flipped Classroom</b> Chair: Madeleine Schep, <i>Columbia College</i> <b>Room: 3501C ▶</b>	<b>Beyond the Flipped Classroom: Learning by Doing Through Challenges and Hack-a-thons</b> Michael Skirpan, Tom Yeh, <i>University of Colorado at Boulder</i>	<b>Flipped Classroom Strategies for CS Education</b> Mary Lou Maher, Celine Latulipe, Heather Lipford, Audrey Rorrer, <i>University of North Carolina at Charlotte</i>	<b>The Effectiveness of Video Quizzes in a Flipped Class</b> Lisa L. Lacher, <i>University of Houston, Clear Lake</i> ; Mark C. Lewis, <i>Trinity University</i>
<b>CS1/CS2: Persistence and Attitudes</b> Chair: Dr Mark Zarb, <i>Robert Gordon University</i> <b>Room: 3501D ▶</b>	<b>Reconsidering the Impact of CS1 on Novice Attitudes</b> Amber Settle, John Lalor, Theresa Steinbach, <i>DePaul University</i>	<b>Drop, Fail, Pass, Continue: Persistence in CS1 and Beyond in Traditional and Inverted Delivery</b> Diane Horton, Michelle Craig, <i>University of Toronto</i>	<b>Towards Incremental Separation of Surmountable and Insurmountable Programming Difficulties</b> Jason Carter, <i>Cisco Systems</i> ; Prasun Dewan, <i>University of North Carolina</i> ; Mauro Pichiliani, <i>Instituto Tecnológico de Aeronáutica</i>
<b>Beyond CS2: Algorithms</b> Chair: Ariel Ortiz, <i>Tecnológico de Monterrey, Campus Estado de México</i> <b>Room: 2503A ▶</b>	<b>Illustrating the Interaction of Algorithms and Data Structures Using the Matching Problem</b> Joan M. Lucas, <i>The College at Brockport, State University of New York</i>	<b>Fibonacci in The Curriculum: Not Just a Bad Recurrence</b> Saad Mneimneh, <i>Hunter College and the Graduate Center of the City University of New York</i>	<b>Randomized Reduction</b> Brian C. Dean, Raghuveer Mohan, Chad G. Waters, <i>Clemson University</i>

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

<b>Special Session</b>	<b>Curricular Assessment: Tips and Techniques</b> Henry M. Walker, <i>Grinnell College</i> ; Sue Fitzgerald, <i>Metropolitan State University</i> ; John F. Dooley, <i>Knox College</i>	<b>Room: 3501G</b>
<b>Panel Session</b>	<b>Best Practices for IRB Approval: Four Perspectives</b> Michael S. Kirkpatrick, <i>James Madison University</i> ; Janice E. Cuny, <i>National Science Foundation</i> ; Mark Guzdial, <i>Georgia Institute of Technology</i> ; Amanda Holland-Minkley, <i>Washington &amp; Jefferson College</i> ; Clifford A. Shaffer, <i>Virginia Tech</i>	<b>Room: 3501H</b>
<b>Panel Session</b>	<b>Supporting the Computer Science Learning Process</b> Amy Briggs, <i>Middlebury College</i> ; David Bau, <i>Google</i> ; Caroline Meeks, <i>Prospect Hill Academy</i> ; Pat Yongpradit, <i>Code.org</i>	<b>Room: 2505A</b>
<b>Oracle Supporter Session</b>	<b>Database Design and Database Programming with SQL</b> Nancy Hoffman, <i>Oracle Academy Curriculum Developer</i> (See page 26 for complete abstract)	<b>Room: 2505B</b>

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

## KEYNOTE SESSION

8:30 am - 10:00 am	<b>Welcome:</b> Jodi Tims, <i>Program Co-Chair, Baldwin Wallace University</i> and Carl Alphonse, <i>Program Co-Chair, University at Buffalo</i> <b>Plenary Session: Data Structures Courses: Past, Present and Future</b> Mark Allen Weiss, <i>Professor, Florida International University</i>	<b>Room: 2501AB</b>
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10:00 am - 10:45 am	<b>Break, Exhibits &amp; Demos</b>	<b>Exhibit Hall</b>
10:00 am - 10:45 am	<b>Demo Sessions:</b> Stephen H. Edwards, <i>Chair Looking Glass</i> Caitlin Kelleher, <i>Washington University in St. Louis</i> <b>EngageCSEdu: CS1 and CS2 Materials for Engaging and Retaining Undergraduate CS Students</b> Alvaro Monge, <i>California State University Long Beach</i> ; Beth A. Quinn, <i>National Center for Women &amp; Information Technology</i> ; Cameron L. Fadjo, <i>Google, Inc.</i>	<b>Exhibit Hall</b>
10:00 am - 11:30 am	<b>NSF Showcase #3</b> (See page 29 for a complete listing of NSF Showcases)	<b>Exhibit Hall</b>
10:00 am - 12:00 pm	<b>Poster Sessions</b> (See pages 32-33 for a complete listing of Poster Sessions)	<b>Lobby 2500</b>

## FRIDAY SESSIONS: 10:45 am - 12:00 pm

Paper Sessions	10:45 am	11:10 am	11:35 am
<b>Student Engagement: Self Explanation</b> Chair: Maria Jump, <i>King's College</i> <b>Room: 2502A ▶</b>	<b>Expression of Abstraction: Self Explanation in Code Production</b> Leigh Ann Sudol-DeLyser, <i>Carnegie Mellon University</i>	<b>Generating Practice Questions as a Preparation Strategy for Introductory Programming Exams</b> Paul Denny, <i>The University of Auckland</i>	<b>Benefits of Self-explanation in Introductory Programming</b> Arto Vihavainen, <i>University of Helsinki</i> ; Craig S. Miller, Amber Settle, <i>DePaul University</i>
<b>Focus on K-12: Professional Development</b> Chair: Charles Hardnett, <i>Gwinnett Technical College</i> <b>Room: 3501C ▶</b>	<b>Growing a K-12 Community of Practice</b> Stephen Cooper, <i>Stanford University</i> ; Susan H Rodger, <i>Duke University</i> ; Madeleine Schep, <i>Columbia College</i> ; RoxAnn H. Stalvey, <i>College of Charleston</i> ; Wanda Dann, <i>Carnegie Mellon University</i>	<b>Computing on the Silicon Prairie: The State of CS in Nebraska Public Schools</b> Brian Dorn, <i>University of Nebraska at Omaha</i> ; Derek Babb, <i>Omaha North High School</i> ; Dawn M. Nizzi, <i>Westside High School Career Center</i> ; Cory M. Epler, <i>Nebraska Department of Education</i>	<b>Supporting CS10K: A New Computer Science Methods Course for Mathematics Education Students</b> Robin Flatland, Darren Lim, James Matthews, Scott Vandenberg, <i>Siena College</i>
<b>Soft Skills: Teamwork &amp; Communication</b> Chair: Senethia Thomas, <i>University of Florida</i> <b>Room: 2503A ▶</b>	<b>Using a Message Board as a Teaching Tool in an Introductory Cyber-Security Course</b> Raymond Greenlaw, Christopher Brown, Zachary Dannelly, Andrew Phillips, <i>USNA</i> ; Sarah Standard, <i>Avian LLC</i>	<b>Further Evaluations of Industry-Inspired Pair Programming Communication Guidelines with Undergraduate Students</b> Mark Zarb, <i>Robert Gordon University</i> ; Janet Hughes, <i>University of Dundee</i> ; John Richards, <i>IBM</i> ; T.J. Watson, <i>Research Center</i>	<b>Supporting Programming Assignments with Activity Streams: An Empirical Study</b> Christopher D. Hundhausen, Adam S. Carter, Olusola Adesope, <i>Washington State University</i>
<b>Beyond CS2: Cloud Computing</b> Chair: Don Goelman, <i>Villanova University</i> <b>Room: 3501D ▶</b>	<b>Hands-On Network Programming Projects in the Cloud</b> Weiying Zhu, <i>Metropolitan State University of Denver</i>	<b>Teaching Cybersecurity Analysis Skills in the Cloud</b> Richard S. Weiss, <i>The Evergreen State College</i> ; Stefan Boesen, <i>Dartmouth College</i> ; James F. Sullivan, Michael E. Locasto, <i>University of Calgary</i> ; Jens Mache, Erik Nilsen, <i>Lewis &amp; Clark College</i>	<b>A Cloud Computing Course: From Systems to Services</b> Mohammed Suhail Rehman, Majd F. Sakr, <i>Carnegie Mellon University</i> ; Jason Boles, Mohammad Hammoud, <i>Carnegie Mellon University in Qatar</i>

## SPECIAL SESSIONS AND PANELS: 10:45 am - 12:00 pm

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



## SPECIAL SESSIONS AND PANELS: 10:45 am - 12:00 pm

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

12:00 pm - 1:45 pm	Lunch Break	On Your Own
12:00 pm - 1:45 pm	International Lunch: contact <a href="mailto:sigcse2015-international@rit.edu">sigcse2015-international@rit.edu</a> for more information	Gordon Biersch Restaurant (100 East 14th Street)



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## FRIDAY SESSIONS: 1:45 pm - 3:00 pm

Paper Sessions	1:45 pm	2:10 pm	2:35 pm
<b>CS Education Research</b> Chair: Bo Brinkman, <i>Miami University</i> <b>Room: 2502A ▶</b>	<b>Recursion vs. Iteration: An Empirical Study of Comprehension Revisited</b> Renee McCauley, <i>College of Charleston</i> ; Brian Hanks, <i>BFH Educational Consulting</i> ; Sue Fitzgerald, <i>Metropolitan State University</i> ; Laurie Murphy, <i>Pacific Lutheran University</i>	<b>Tracking Student Learning from Class to Exam using Isomorphic Questions</b> Daniel Zingaro, <i>University of Toronto Mississauga</i> ; Leo Porter, <i>University of California, San Diego</i>	<b>The Effectiveness of Visualization for Learning Expression Evaluation</b> Amruth N Kumar, <i>Ramapo College of New Jersey</i>
<b>Focus on K-12: Professional Development</b> Chair: Martha Kosa, <i>Tennessee Technological University</i> <b>Room: 3501C ▶</b>	<b>Analyzing Year One of a CS Principles PD Project</b> Ralph Morelli, Pauline Lake, <i>Trinity College</i> ; Chinma Uche, <i>Connecticut Computer Science Teachers Association</i> ; Lawrence Baldwin, <i>Baldwin Institutional Research Consulting</i>	<b>Field Experiences in Teaching Computer Science: Course Organization and Reflections</b> Lori Pollock, Chrystalla Mouza, James Atlas, Terry Harvey, <i>University of Delaware</i>	<b>A Mid-Project Report on a Statewide Professional Development Model for CS Principles</b> Jeff Gray, <i>University of Alabama</i> ; Kathy Haynie, <i>Haynie Research and Evaluation</i> ; Sheryl Packman, <i>Gator Analytics</i> ; Mary Boehm, Carol Crawford, <i>A+ College Ready</i> ; Deepa Muralidhar, <i>Atlanta Girls School</i>
<b>Student Engagement: Active Learning</b> Chair: Susan Hammond, <i>Faulkner University</i> <b>Room: 3501D ▶</b>	<b>Integrating Role-Playing Games into Computer Science Courses as a Pedagogical Tool</b> David Toth, <i>Centre College</i> ; Mary Kayler, <i>University of Mary Washington</i>	<b>SIGCSE 2015 Best Paper</b> <b>Structuring Flipped Classes with Lightweight Teams and Gamification</b> Celine Latulipe, N. Bruce Long, Carlos E. Seminario, <i>University of North Carolina at Charlotte</i>	<b>Blending Problem- and Project-Based Learning in Internet of Things Education: Case Greenhouse Maintenance</b> Hanna Mäenpää, Sasu Tarkoma, Samu Varjonen, Arto Vihavainen, <i>University of Helsinki</i>
<b>Testing: Improving Quality of Student Testing</b> Chair: Ahmad Noor, <i>Northern Virginia Community College</i> <b>Room: 2503A ▶</b>	<b>Can the Security Mindset Make Students Better Testers?</b> Sara Hooshangi, <i>The George Washington University</i> ; Richard Weiss, <i>The Evergreen State College</i> ; Justin Cappos, <i>New York University</i>	<b>An Empirical Study of Iterative Improvement in Programming Assignments</b> Raymond S. Pettit, John D. Homer, Roger Gee, Adam Starbuck, <i>Abilene Christian University</i> ; Susan Mengel, <i>Texas Tech University</i>	<b>Reconsidering Automated Feedback: A Test-Driven Approach</b> Kevin Buffardi, <i>California State University, Chico</i> ; Stephen H. Edwards, <i>Virginia Tech</i>
<b>Beyond CS2: OS/Virtualization</b> Chair: Steven Andrianoff, <i>St. Bonaventure University</i> <b>Room: 3501E ▶</b>	<b>MC-Live: A Portable Computing Environment for Computer Science Students</b> Lee Wittenberg, <i>Maryville College</i>	<b>Teaching Virtualization by Building a Hypervisor</b> Abhinand Palicherla, <i>Tintri, Inc.</i> ; Tao Zhang, Donald E. Porter, <i>Stony Brook University</i>	<b>MiniOS: An Instructional Platform for Teaching Operating Systems Projects</b> Rafael Roman Otero, Alex Aravind, <i>University of Northern British Columbia</i>

## SPECIAL SESSIONS AND PANELS: 1:45 PM - 3:00 PM

<b>Special Session</b>	<b>Achieving a Shared Goal with AP Computer Science A and AP Computer Science Principles</b> Lien Diaz, <i>College Board</i> ; Paul T. Tymann, <i>Rochester Institute of Technology</i> ; Fran P. Trees, <i>Rutgers University</i> ; Lester Wainwright, <i>Charlottesville High School</i> ; Richard Kick, <i>Newbury Park High School</i> ; Sandy Czajka, <i>Riverside Brookfield High School</i> ; Andrew Kuemmel, <i>Madison West High School</i>	<b>Room: 3501G</b>
<b>Special Session</b>	<b>Towards Grand Challenges in Computing Education Across Disciplines</b> Lecia J. Barker, <i>University of Texas at Austin</i> ; Stephen Cooper, <i>Stanford University</i> ; Andrew McGettrick, <i>University of Strathclyde</i> ; Jason Thatcher, <i>Clemson University</i> ; Heikki Topi, <i>Bentley College</i>	<b>Room: 3501H</b>
<b>Google Supporter Session</b>	<b>Building and Sustaining Communities of Practice</b> Karen Parker, <i>Moderator</i> ; Rick Adrion, <i>University of Massachusetts Amherst</i> ; Padmaja Bandaru, <i>AMSA Charter School</i> ; Jen Rosato, <i>College of St. Scholastica</i> ; Jeff Gray, <i>University of Alabama</i> (See page 27 for session description)	<b>Room: 2504A</b>

3:00 pm - 3:45 pm	<b>Break, Exhibits &amp; Demos</b>	<b>Exhibit Hall</b>
3:00 pm - 3:45 pm	<b>Demo Sessions:</b> Michael E. Casperen, <i>Chair</i> <b>Exploring Computer Science Topics with Programmable Smartwatches</b> Shuo Niu, Andrey Esakia, Scott McCrickard, <i>Virginia Tech</i> <b>ENGAGE: A Game-based Learning Environment for Middle School Computational Thinking</b> 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, <i>North Carolina State University</i>	<b>Exhibit Hall</b>
3:00 pm - 5:00 pm	<b>Poster Sessions</b> (See pages 32-33 for a complete listing of Poster Sessions)	<b>Lobby 2500</b>
3:00 pm - 4:30 pm	<b>NSF Showcase #4</b> (See page 29 for a complete listing of NSF Showcases)	<b>Exhibit Hall</b>
3:45 pm - 5:00 pm	<b>Lightning Talks:</b> Stephen H. Edwards, <i>Chair</i> (See page 36 for a complete list of Lightning Talks)	<b>Room: 3501D</b>

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

<b>Paper Sessions</b>	<b>3:45 pm</b>	<b>4:10 pm</b>	<b>4:35 pm</b>
<b>CS Education Research</b> Chair: Sohum Sohoni, <i>Arizona State University</i> <b>Room: 2502A</b> ▶	<b>Correlation of Topic Model and Student Grades Using Comment Data Mining</b> Shaymaa Sorour, <i>Kafr Elsheikh University (Egypt)</i> & <i>Kyushu University</i> ; Kazumasa Goda, <i>Kyushu Institute of Information Science</i> ; Tsunenori Mine, <i>Kyushu University</i>	<b>Bats, Balls, and Lures: Cognitive Style in CS Education</b> Barry Wittman, Jean Pretz, <i>Elizabethtown College</i>	<b>SOLO Taxonomy for Assessing Novices' Algorithmic Design</b> David Ginat, Eti Menashe, <i>Tel-Aviv University</i>
<b>Focus on K-12: Engaging Students</b> Chair: Ravi Gandham, <i>Seattle Colleges</i> <b>Room: 3501C</b> ▶	<b>What Does It Take to Do Computer Programming?</b> Antti-Jussi Lakanen, Ville Isomöttönen, <i>Mathematical Information Technology, University of Jyväskylä</i>	<b>Engaging High School Students in Modeling and Simulation through Educational Media</b> David Musicant, <i>Carleton College</i> ; S. Selcen Guzely, <i>Purdue University</i>	<b>An Analysis of User Engagement in Relation to Computing Workshop Activities</b> Rachel Menzies, Michael Crabb, Daniel Herron, Karen Petrie, Craig Stewart, Mark Zarb, <i>University of Dundee</i>

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

Paper Sessions	3:45 pm	4:10 pm	4:35 pm
<b>Testing: Tools &amp; Techniques</b> Chair: Joan M. Lucas, <i>The College at Brockport, State University of New York</i> <b>Room: 3501E ▶</b>	<b>Unci: a C++-based Unit-testing Framework for Intro Students</b> Don Blaheta, <i>Longwood University</i>	<b>Bug Infestation! A Goal-plan Analysis of CS2 Students' Recursive Search Tree Solutions</b> Laurie Murphy, <i>Pacific Lutheran University</i> ; Sue Fitzgerald, <i>Metropolitan State University</i> ; Scott Grissom, <i>Grand Valley State University</i> ; Renée McCauley, <i>College of Charleston</i>	<b>Ante Up</b> Michael K. Bradshaw, <i>Centre College</i>
<b>Soft Skills: Teamwork</b> Chair: Ruth E. Anderson, <i>University of Washington</i> <b>Room: 2503A ▶</b>	<b>On the Evaluation of Student Team Software Development Projects</b> Anya Tafliovich, <i>University of Toronto Scarborough</i> ; Andrew Petersen, <i>University of Toronto Mississauga</i> ; Jennifer Campbell, <i>University of Toronto</i>	<b>An Experience Report at Teaching a Group Based Agile Software Development Project Course</b> Craig Anslow, Frank Maurer, <i>University of Calgary</i>	<b>An Experience Report: Using Mobile Development To Teach Software Design</b> Jennifer Campbell, <i>University of Toronto</i> ; Anya Tafliovich, <i>University of Toronto Scarborough</i>

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

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

5:10 pm - 5:55 pm	<b>SIGCSE Business Meeting</b>	Room: 2505A
5:30 pm - 6:30 pm	<b>Thank Greenfoot It's Friday! Greenfoot Reborn: A First Look</b>	Room: 2502B
6:00 pm - 6:55 pm	<b>CCSC Business Meeting</b>	Room: 2505A
6:00 pm - 7:00 pm	<b>NCWIT Academic Alliance Reception, sponsored by Microsoft Research</b>	Count Basie C

## FRIDAY WORKSHOPS: 7:00 pm - 10:00 pm

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

For a full list of workshops and descriptions visit: <http://sigcse2015.sigcse.org/attendees/SIGCSE2015-workshop-descriptions.pdf>

7:00 am - 8:15 am	<b>AppInventor Breakfast</b>	Room: 2502B
9:00 am - 10:15 am	<b>Student Research Competition: Semi-finalist Presentation (Undergraduate)</b> <b>Student Research Competition: Semi-finalist Presentation (Graduate)</b> (See page 35 for a complete listing of the Student Research Competition)	Room: 2502B Room: 2503B



## SATURDAY SESSIONS: 9:00 am - 10:15 am

Paper Sessions	9:00 am	9:25 am	9:50 am
<b>Testing: Student Programming Errors</b> Chair: Andrew J. Grover, <i>Thiel College</i> <b>Room: 2502A ▶</b>	<b>37 Million Compilations: Investigating Novice Programming Mistakes in Large-Scale Student Data</b> Amjad Altadmri, Neil C. C. Brown, <i>University of Kent</i>	<b>Looking Glass</b> Scott Alexander Turner, <i>UNC Pembroke</i>	<b>Checked Coverage and Object Branch Coverage: New Alternatives for Assessing Student-Written Tests</b> Stephen H. Edwards, Zalia Shams, <i>Virginia Tech</i>
<b>Focus on K-12: Elementary</b> Chair: Joseph Kendall-Morwick, <i>Capital University</i> <b>Room: 3501C ▶</b>	<b>Using SOLO to Classify the Programming Responses of Primary Grade Students</b> Linda Seiter, <i>John Carroll University</i>	<b>Floors and Flexibility: Designing a Programming Environment for 4th-6th Grade Classrooms</b> Charlotte Hill, Hilary A. Dwyer, Tim Martinez, Danielle Harlow, Diana Franklin, <i>UC Santa Barbara</i>	<b>Getting Started in Teaching and Researching Computer Science in the Elementary Classroom</b> Diana Franklin, Charlotte Hill, Hilary Dwyer, Ashley Iveland, Alexandria Killian, Danielle Harlow, <i>UC Santa Barbara</i>
<b>Non-majors/ Interdisciplinary</b> Chair: Evan Barba, <i>Georgetown University</i> <b>Room: 2503A ▶</b>	<b>Improving Non-CS Major Performance in CS1</b> Victor T. Norman, Joel C. Adams, <i>Calvin College</i>	<b>Can We “Flip” Non-Major Programming Courses Yet?</b> Douglas Baldwin, <i>SUNY Geneseo</i>	<b>Evaluating Pair-Programming for Non-Computer Science Major Students</b> Clem O'Donnell, Jim Buckley, Abdulhussain Mahdi, John Nelson, Michael English, <i>University of Limerick</i>
<b>Focus on K-12: Outreach/Summer Camps</b> Chair: Christine Moore, <i>College of Charleston</i> <b>Room: 3501D ▶</b>	<b>From 9 to 90: Engaging Learners of All Ages</b> Allison Sauppé, Daniel Szafir, Chien-Ming Huang, Bilge Mutlu, <i>University of Wisconsin-Madison</i>	<b>A Socio-Cognitive Analysis of Summer Camp Outcomes and Experiences</b> Chulakorn Aritajati, Mary Beth Rosson, Joslenne Pena, Dana Cinque, <i>The Pennsylvania State University</i> ; Ana Segura, <i>University of Houston-Downtown</i>	<b>Computational Bead Design: A Pilot Summer Camp in Computer Aided Design and 3D Printing for Middle School Girls</b> Courtney Starrett, Marguerite Doman, Chlotia Garrison, Merry Sleigh, <i>Winthrop University</i>

## SPECIAL SESSIONS AND PANELS: 9:00 am - 10:15 am

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

10:15 am - 10:45 am	<b>Break, Exhibits &amp; Demos</b>	Exhibit Hall
10:15 am - 10:45 am	<b>Demo Sessions:</b> Michael E. Casperen, <i>Chair</i> <b>JavaTutor: An Intelligent Tutoring System that Adapts to Cognitive and Affective States during Computer Programming</b> Joseph B. Wiggins, Kristy Elizabeth Boyer, Alok Baikadi, Aysu Ezen-Can, Joseph F. Grafsgaard, Eun Young Ha, James C. Lester, Christopher M. Mitchell, Eric N. Wiebe, <i>North Carolina State University</i> <b>MIST, The Mathematical Image Synthesis Toolkit</b> Eileen Fordham, Halley Freger, Amanda Hinchman-Dominguez, Alexander Mitchell, Daniel Rebelsky, Victoria Tsou, Earnest Wheeler, Zoe Wolter, Samuel A. Rebelsky, <i>Grinnell College</i>	Exhibit Hall
10:15 am - 11:45 am	<b>NSF Showcase #5</b> (See page 29 for a complete listing of NSF Showcases)	Exhibit Hall

## SATURDAY SESSIONS: 10:45 am - 12:00 pm

Paper Sessions	10:45 am	11:10 am	11:35 am
<b>Teaching Practices</b> Chair: John Cigas, <i>Park University</i> <b>Room: 2502A ▶</b>	<b>Insights into Teaching and Learning: Reflections on MOOC Experiences</b> Janet Burge, <i>Wesleyan University</i>	<b>What Influences CS Faculty to Adopt Teaching Practices?</b> Lecia J. Barker, Jane Gruning, <i>University of Texas at Austin</i> ; Christopher Lynny Hovey, <i>Northeastern University</i>	<b>Personalized Attention @ Scale</b> Dirk Grunwald, Elizabeth Boese, Rhonda Hoenigman, Andy Sayler, Judith Stafford, <i>University of Colorado, Boulder</i>
<b>Focus on K-12: Miscellaneous Topics</b> Chair: Adrian German, <i>Indiana University Bloomington</i> <b>Room: 3501C ▶</b>	<b>Transferring Skills at Solving Word Problems from Computing to Algebra Through Bootstrap</b> Emmanuel Schanzer, <i>Harvard University</i> ; Kathi Fisler, <i>WPI</i> ; Shriram Krishnamurthi, <i>Brown University</i> ; Matthias Felleisen, <i>Northeastern University</i>	<b>A Practical Guide to Developing and Validating Computer Science Knowledge Assessments with Application to Middle School</b> Philip Sheridan Buffum, Eleni V. Lobene, Megan Hardy Frankosky, Kristy Elizabeth Boyer, Eric N. Wiebe, James C. Lester, <i>North Carolina State University</i>	<b>Reactive Game Engine Programming for STEM Outreach</b> Alan Cleary, <i>Montana State University</i> ; Lucas Vandenberg, John Peterson, <i>Western State Colorado University</i>
<b>Computers &amp; Society</b> Chair: Rachelle Hippler, <i>Bowling Green State University</i> <b>Room: 2503A ▶</b>	<b>Building CS Research Capacity in sub-Saharan Africa by Implementing a Doctoral Training Program</b> Mikko Apiola, Jarkko Suhonen, Erkki Sutinen, <i>University of Eastern Finland</i> ; Abbi Nangawe, <i>College of Business Education</i>	<b>Engaging Non-Traditional Students in Computer Science through Socially-Inspired Learning and Sustained Mentoring</b> Jennifer Burg, Victor Paul Pauca, William Turkett, Errin Fulp, Samuel S. Cho, Peter Santago, Daniel Canas, H. Donald Gage, <i>Wake Forest University</i>	<b>How Much Impact Can Be Made In a Week? Designing Effective International Service Learning Projects for Computing</b> Grace Ngai, <i>Hong Kong Polytechnic University</i> ; Stephen C.F. Chan, <i>Hong Kong Polytechnic University and Office of Service Learning</i>
<b>Beyond CS2: Networking/Security</b> Chair: Faisal Kaleem, <i>Metropolitan State University</i> <b>Room: 3501D ▶</b>	<b>Lowering the Barrier to Systems-level Networking Projects</b> Joel Sommers, <i>Colgate University</i>	<b>A Simple Laboratory Environment for Real-World Offensive Security Education</b> Maxim Timchenko, David Starobinski, <i>Boston University</i>	<b>KENSv2: An Educational Networking Framework for Full Layer Implementation and Testing</b> Keunhong Lee, Joongi Kim, Sue Moon, <i>KAIST</i>

## SPECIAL SESSIONS AND PANELS: 10:45 am - 12:00 pm

<b>Special Session</b>	<b>The CS Concept Inventory Quiz Show</b> Nafeesa Dewji, Steven A Wolfman, <i>University of British Columbia</i> ; Geoffrey L Herman, <i>University of Illinois at Urbana-Champaign</i> ; Leo Porter, <i>University of California, San Diego</i> ; Cynthia Taylor, <i>Oberlin College</i> ; Jan Vahrenhold, <i>Westfälische Wilhelms-Universität Münster</i>	<b>Room: 3501G</b>
<b>Panel Session</b>	<b>Bringing Grades K-5 to the Mainstream of Computer Science Education</b> 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	<b>Room: 2505A</b>
<b>Special Session</b>	<b>Nifty Assignments</b> Nick Parlante, Julie Zelenski, Marty Stepp, Stanford University; Suzanne J. Matthews, David R. Raymond, United States Military Academy; Mark Sherriff, Luther Tychonievich, Ryan Layer, University of Virginia; Allison Obourn, University of Washington; Peter-Michael Osera, University of Pennsylvania; Stuart Reges, University of Washington; Josh Hug, University of California, Berkeley	<b>Room: 3501H</b>
<b>Gradescope Supporter Session</b>	<b>Gradescope: Grade More Efficiently, with Better Feedback</b> Pieter Abbeel, UC Berkeley Computer Science (See page 28 for session description)	<b>Room: 2505B</b>

## KEYNOTE SESSION

12:00 pm - 2:00 pm	<b>Luncheon: Connected, Committed and Social? The Consequences of Computing for Relationships</b> Keith Hampton, <i>Associate Professor, Rutgers University</i>	<b>Room: 2501AB</b>
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## SATURDAY WORKSHOPS: 3:00 pm - 6:00 pm

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

## SATURDAY WORKSHOPS: 3:00 pm - 6:00 pm

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

For a full list of workshops and descriptions visit: <http://sigcse2015.sigcse.org/attendees/SIGCSE2015-workshop-descriptions.pdf>

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# SUPPORTER SESSIONS

THURSDAY, MARCH 5

*Presented courtesy of Microsoft*

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

► 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.

*Presented courtesy of Teradata University*

## Engage your Students with the Power of Data

► 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.

*Presented courtesy of Google*

## CS Speed Dating with Google

► 1:45 pm - 3:00 pm

Room: 2504A

Speakers: Christine Stephenson, Kevin O'Malley, Karen Parker, Neil Fraser, Phil Wagner, JamieSue Goodman, Cameron Fadjo, *Google*

Conference attendees are invited up close and personal with Google's suite of computer science education tools and funding programs. The interactive "speed dating" rotation format will allow attendees to meet Google's CS Education team in short and informative bursts. Blockly, CS4HS, CS First, Exploring Computational Thinking, Engage CSedu, and Google Recruiting managers will facilitate interactive chats on issues of deep importance to high school and post-secondary computer science educators. Come learn how to access programs and funding as you share your own perspectives and insights! Learn more about Google CS Education at [www.google.com/edu](http://www.google.com/edu).

*Presented courtesy of Oracle Academy*

## Database Design and Database Programming with SQL

► 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 Lockett, *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.

## SUPPORTER SESSIONS

### FRIDAY, MARCH 6

Presented courtesy of **zyBooks**

#### 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

Presented courtesy of **GitHub**

#### 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.

Presented courtesy of **Gradescope**

#### 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 SHOWCASE

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 DuBow, *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 - Perspectives 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*

# BIRDS OF A FEATHER

## 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 Sherriff, *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 Peltsverger, *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*

# BIRDS OF A FEATHER

## FLOCK #2: THURSDAY, MARCH 5

6:30 pm - 7:20 pm • Located in the Marriott Tower

### 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 Reblsky, *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*

### 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*



# POSTER SESSIONS

## 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

Yeşem Kurt-Peker, Lydia Ray, Rania Hodhod, 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 McCarley, *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*

### 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 Dhariwal, *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*

# POSTER SESSIONS

## 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 Ramnath, *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**

Ama 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 HadoopPI: 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**

Eileen Fordham, Halley Freger, Amanda Hinchman-Dominguez, Alexander Mitchell, Daniel Rebelsky, Victoria Tsou, Earnest Wheeler, Zoe Wolter, Samuel A. Rebelsky, *Grinnell College*

### **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*



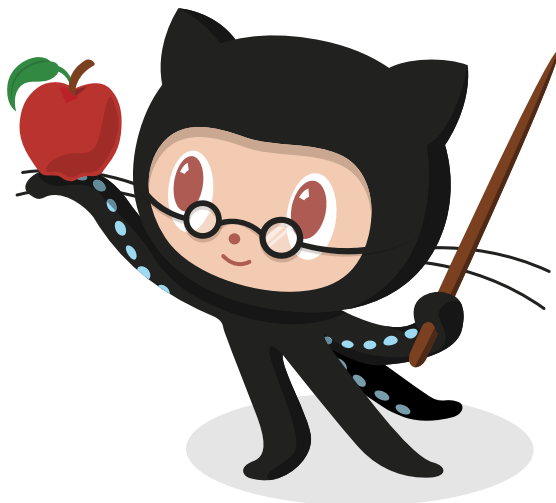
## Join the Oracle Academy

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[www.oracle.com/academy](http://www.oracle.com/academy)

## GitHub Education



[education.github.com](http://education.github.com)

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

**piazza**

Free online  
Class Q&A

# STUDENT RESEARCH COMPETITION

## 2015 ACM SIGCSE STUDENT RESEARCH COMPETITION

### First Round of Competition

Thursday, March 5  
1:45 pm - 5:00 pm

Location **2500 Lobby Level**

### 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 participates 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

Darrion 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*



# LIGHTNING TALKS

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*

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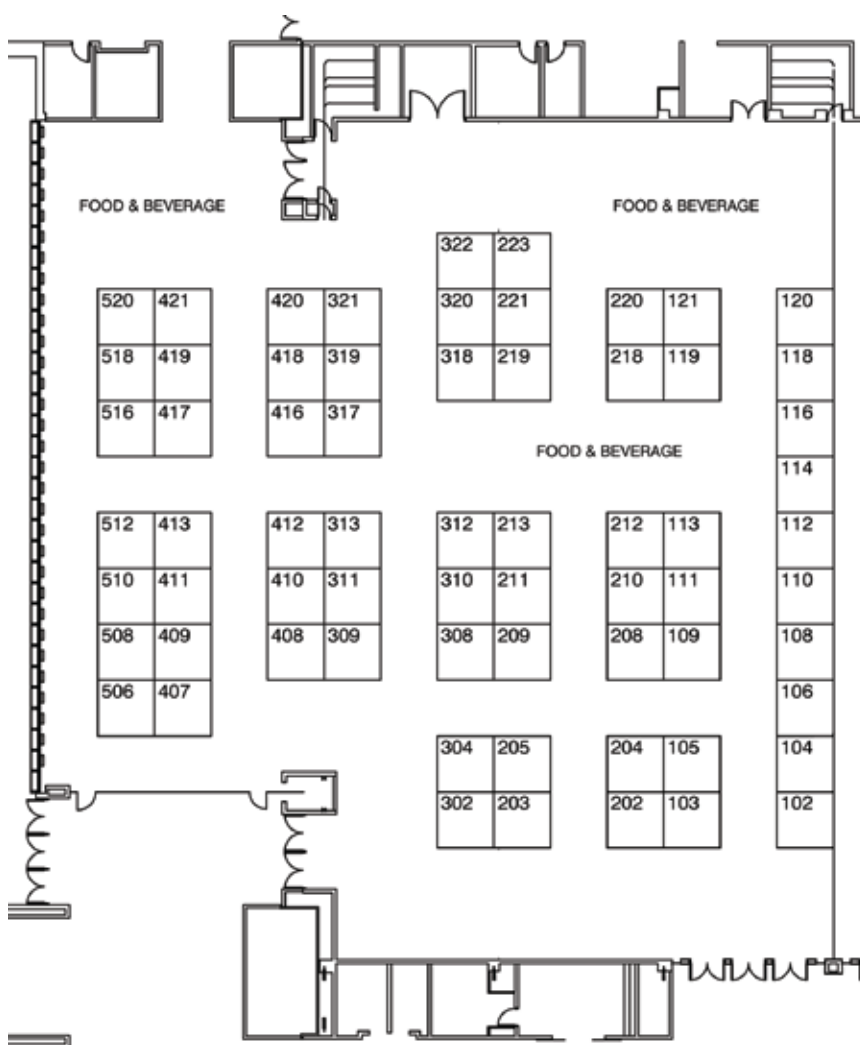
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# EXHIBIT HALL, 2501CD

## KANSAS CITY CONVENTION CENTER



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Serving computing education communities since 1991, the ACM Committee for Computing Education in Community Colleges (CCECC) is devoted to advocacy and resources for computing education at associate-degree granting colleges and similar post-secondary institution throughout the world. Stop by our booth and enter to win a Kindle Fire or Raspberry Pi.

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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  
(ASSET)**

**Booth 219**

Center for IT  
University of Massachusetts Boston  
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Boston, MA 02125  
617-287-7295 • [www.batec.org](http://www.batec.org)

Advancing the Successful IT Student through Enhanced Computational Thinking (ASSET) 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.

**Auburn University - jGRASP****Booth 210**

Computer Science and Software  
Engineering  
3101 Shelby Center  
Auburn, AL 36849-5347  
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Minorities and People with  
Disabilities in IT)**

**Booth 219**

P.O. Box 10358  
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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.

## **CodeWorkout/Web-CAT**

### **Booth 112**

Virginia Tech, Dept. of Computer Science  
2202 Kraft Drive  
Blacksburg, VA 24060  
540-321-5723 • [edwards@cs.vt.edu](mailto: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 on-line quizzes. CodeWorkout is produced by the Web-CAT team, so learn about automated program grading as well.

## **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](http://www.cra-w.org)  
[www.cdc-computing.org](http://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)**

### **Booth 116**

2 Penn Plaza, Suite 701  
New York, NY 10121  
212-626-0507 • [www.csta.acm.org](http://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, NJ 13856 • [www.ccsc.org](http://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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## **CS Teaching Tips**

### **Booth 322**

Harvey Mudd College  
301 Platt Blvd.  
Claremont, CA 91711  
[www.csteachingtips.org](http://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](http://CSTeachingTips.org) and on Twitter @CSTeachingTips.

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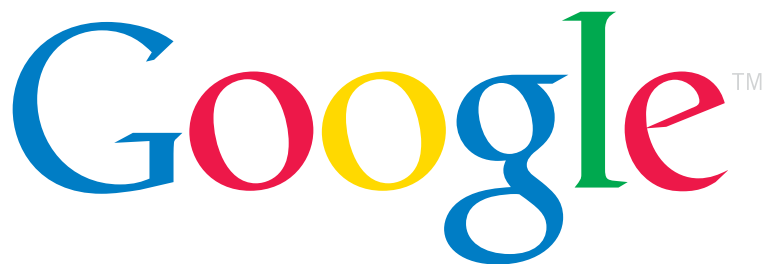
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