

**WEDNESDAY 8:30 AM - 5:00 PM**  
**Pre-Symposium Events (room: TBA in Convention Center)**

**WEDNESDAY 7:00 PM - 10:00 PM**  
**Workshops**

- Workshop #1: CReST-Security Knitting Kit: Ready to Use Teaching Resources to Embed Security Topics into Upper Division CS Courses (room: L1)  
*Ambareen Siraj, Tennessee Tech University*  
*Sheikh Ghafoor, Tennessee Tech University*
- Workshop #2: Making Music with Computers: Creative Programming in Python (room: L2-L3)  
*Bill Manaris, College of Charleston*  
*Tobias Kohn, ETH Zürich*
- Workshop #3: A Web-Based IDE for Teaching with Any Language (room: L5-L6)  
*Dan Armendariz, Harvard University*  
*David Malan, Harvard University*  
*Nikolai Onken, Cloud9*
- Workshop #4: High Yield in the Short Term: Planning Strategically to Get Women into your Major (room: L8)  
*Lecia Barker, University of Texas at Austin*  
*Leisa Thompson, University of Virginia*
- Workshop #5: Guiding Students to Discover CS Concepts and Develop Process Skills using POGIL (room: L9)  
*Clifton Kussmaul, Muhlenberg College*  
*Helen Hu, Westminster College*  
*Chris Mayfield, James Madison University*
- Workshop #6: Engage, Energize and Empower Your Students with Team-Based Learning (room: L10)  
*Lenore Horowitz, University at Albany*  
*George Berg, University at Albany*  
*Kimberly Van Orman, University at Albany*
- Workshop #7: Teaching Parallel Computing Concepts with OpenMP (room: L11-L12)  
*Joel Adams, Calvin College*  
*Richard Brown, St. Olaf College*  
*Elizabeth Shoop, Macalester College*

Workshop #8: Using OpenDSA eTextbooks in Your Class (room: L13-L14)

*Clifford Shaffer, Virginia Tech*

*Thomas Naps, University of Wisconsin--Oshkosh*

*Susan Rodger, Duke University*

Workshop #9: Reading and Writing like Computer Scientists: How to Promote Critical Thinking and Student Engagement (room: River Bluff)

*Mark Hoffman, Quinnipiac University*

*Jerod Weinman, Grinnell College*

Workshop #10: Lego-based Case Studies for Teaching Software Engineering Concepts throughout the Curriculum (room: Sultana)

*Stan Kurkovsky, Central Connecticut State University*

Workshop #11: Peer Instruction in Computing: a Focus on Student Learning (room: Mississippi)

*Daniel Zingaro, University of Toronto Mississauga*

*Leo Porter, University of California, San Diego*

*Quintin Cutts, University of Glasgow*

*John Glick, University of San Diego*

*Joe Hummel, University of Illinois at Chicago*

*Cynthia Lee, Stanford University*

*Jaime Spacco, Knox College*

Workshop #12: How to launch a STARS Computing Corps cohort to improve retention and broaden participation in computing (room: Cotton Row)

*Jamie Payton, University of North Carolina at Charlotte*

*Tiffany Barnes, North Carolina State University*

**THURSDAY 8:30 AM - 10:00 AM**  
**Plenary Session - John Sweller - UNSW Australia**

**THURSDAY 10:00 AM - 10:45 AM**  
**Break, Exhibits & Demos**

Demos (room: Exhibit Hall)

Thu 10:00 AM - 10:45 AM

OpenDSA: An Interactive eTextbook for Computer Science Courses

*Clifford Shaffer, Virginia Tech*

OSBLE+: A next-generation learning management and analytics environment for computing education

*Daniel Olivares, Washington State University*

*Christopher Hundhausen, Washington State University*

NSF Showcase (room: Exhibit Hall)

Thu 10:00 AM - 11:30 AM

CrowdGrader: Peer Grading with Incentives

*Luca de Alfaro, UC Santa Cruz*

Project MLExAI: An Innovative Model for Teaching Core AI Concepts

*Ingrid Russell, College of Staten Island*

*Zdravko Markov, College of Staten Island*

*Susan Imberman, College of Staten Island*

Computing in the Arts: Community Building and Curriculum Development

*Jennifer Burg, Wake Forest Univ.*

C5 - Catalyzing Computing and Cybersecurity in Community Colleges

*Melissa Jane Dark, Purdue*

*Beth Hawthorne, Purdue*

*Corrinne Sande, Purdue*

**THURSDAY 10:45 AM - 12:00 PM****Papers: Data Structures (room: L11-L12)****Thu 10:45 AM - 12:00 PM**

- 10:45 AM      Paper vs. Computer-based Exams: A Study of Errors in Recursive Binary Tree Algorithms  
*Scott Grissom, Grand Valley State University*  
*Laurie Murphy, Pacific Lutheran University*  
*Renée McCauley, College of Charleston*  
*Sue Fitzgerald, Metropolitan State University*
- 11:10 AM      Stay on These Roads: Potential Factors Indicating Students' Performance in a CS2 Course  
*Holger Danielsiek, Westfälische Wilhelms-Universität Münster*  
*Jan Vahrenhold, Westfälische Wilhelms-Universität Münster*
- 11:35 AM      BRIDGES: A System to Enable Creation of Engaging Data Structures Assignments with Real-World Data and Visualizations  
*David Burlinson, The University of North Carolina at Charlotte*  
*Mihai Mehedint, The University of North Carolina at Charlotte*  
*Chris Grafer, The University of North Carolina at Charlotte*  
*Kalpathi Subramanian, The University of North Carolina at Charlotte*  
*Jamie Payton, The University of North Carolina at Charlotte*  
*Michael Youngblood, Xerox A PARC company*  
*Robert Kosara, Tableau Software*  
*Paula Goolkasian, The University of North Carolina at Charlotte*

**Papers: Computational Thinking (room: L13-L14)****Thu 10:45 AM - 12:00 PM**

- 10:45 AM      Investigating Differences in Wiki-based Collaborative Activities between Student Engagement Profiles in CS1  
*Adam Eck, University of Nebraska-Lincoln*  
*Leen-Kiat Soh, University of Nebraska-Lincoln*  
*Duane Shell, University of Nebraska-Lincoln*
- 11:10 AM      A Study on the Impact of Multidisciplinary Collaboration on Computational Thinking  
*S. Monisha Pulimood, The College of New Jersey*  
*Kim Pearson, The College of New Jersey*  
*Diane C. Bates, The College of New Jersey*
- 11:35 AM      Computational Thinking as Liberal Studies  
*Dave Mason, Ryerson University*  
*Irfan Khan, Ryerson University*  
*Vadim Farafontov, Ryerson University*

**Papers: Research on Learning (room: L5-L6)****Thu 10:45 AM - 12:00 PM**

- 10:45 AM      An Examination of Layers of Quizzing in Two Computer Systems Courses  
*Cindy Norris, Appalachian State University*
- 11:10 AM      Subgoals Help Students Solve Parsons Problems  
*Briana Morrison, Georgia Institute of Technology*  
*Lauren Margulieux, Georgia Institute of Technology*  
*Barbara Ericson, Georgia Institute of Technology*  
*Mark Guzdial, Georgia Institute of Technology*
- 11:35 AM      As CS Enrollments Grow, Are We Attracting Weaker Students?: A Statistical Analysis of Student Performance in Introductory Programming Courses Over Time  
*Mehran Sahami, Stanford University*  
*Chris Piech, Stanford University*

**Papers: Professional Development (room: L2-L3)****Thu 10:45 AM - 12:00 PM**

- 10:45 AM      Implementation and Outcomes of a Three-Pronged Approach to Professional Development for CS Principles  
*Chrystalla Mouza, University of Delaware*  
*Lori Pollock, University of Delaware*  
*Kathleen Pusecker, University of Delaware*  
*Kevin Guidry, University of Delaware*  
*Ching-Yi Yeh, University of Delaware*  
*James Atlas, University of Delaware*  
*Terry Harvey, University of Delaware*
- 11:10 AM      Deploying Exploring Computer Science Statewide  
*Helen Hu, Westminster College*  
*Cecily Heiner, Southern Utah University*  
*Jay McCarthy, University of Massachusetts Lowell*
- 11:35 AM      TEALS: Teacher Professional Development Using Industry Volunteers  
*Nathaniel Granor, Microsoft/TEALS*  
*Leigh Ann DeLyser, CSNYC*  
*Kevin Wang, Microsoft/TEALS*

**Panel (room: Cotton Row)****Thu 10:45 AM - 12:00 PM**

- Engaging CS Alumni from Afar  
*Christine Shannon, Centre College*  
*James Kiper, Miami University*  
*Samuel Rebelsky, Grinnell College*  
*Janet Davis, Whitman College*

**Panel (room: Steamboat)****Thu 10:45 AM - 12:00 PM**

Rediscovering the Passion, Beauty, Joy, and Awe: Making Computing Fun Again, part 8

*Daniel Garcia, UC Berkeley**Josh Caldwell, code.org**Pamela Fox, Khan Academy**Jeremy Keeshin, CodeHS***Special Session (room: Mississippi)****Thu 10:45 AM - 12:00 PM**

The Micro-Cluster Showcase: 7 Inexpensive Beowulf Clusters for Teaching PDC

*Joel Adams, Calvin College**Jacob Caswell, St. Olaf College**Suzanne Matthews, U.S. Military Academy**Charles Peck, Earlham College**Elizabeth Shoop, Macalester College**David Toth, Centre College**James Wolfer, Indiana University, South Bend***Supporter Session (room: River Bluff)****Thu 10:45 AM - 12:00 AM**

Piazza Supporter Session

**Supporter Session (room: Sultana)****Thu 10:45 AM - 12:00 AM**

Teradata Supporter Session - Leveraging the Teradata University Network for Data Management Courses

**THURSDAY 12:00 PM - 1:45 PM****LUNCH: FirstTimer's - SIGCSE Award for Lifetime Service to the Computer Science Education Community - Barbara Boucher Owens - Southwestern University**

**THURSDAY 1:45 PM - 5:00 PM****Student Research Competition Poster Session (room: Exhibits Hall)**

Applying Formal Models of Instructional Design to Measurably Improve Learning in Introductory Computing

*Austin Cory Bart, Virginia Tech*

Learning to Program Using Online Forums, A Comparison of Links Posted on Reddit and Stack Overflow

*Caroline D. Hardin, University of Wisconsin-Madison*

Open Sourcing the Classroom

*Mike Izbicki*

A Wavelet Transform Module for a Speech Recognition Virtual Machine

*Euisung Kim, Minnesota State University, Mankato*

Monitoring - An Intervention to Improve Team Results in Software Engineering Education

*Maira Marques*

Pair Programming for Teaching Mobile Development

*Mohammed Seyam*

Community and Collaboration in an All-female Immersive Computer Science Program

*Jeff Stern*

Implementing K-Means Clustering and Collaborative Filtering to Enhance Sustainability of Project Repositories

*Matthew Steuerer, The College of New Jersey*

Web-based Visual Programming for Media Computation using Blockly

*Jake Trower*

An Evaluation of Cluster 3.0 as a General Tool for Principal Component Analysis

*Alex Bender, Eastern Mennonite University*

Detecting Insider Attacks with Video Websites using Distributed Image Steganalysis

*Christopher Francis-Christie, Kennesaw State University*

Programming by Voice to Support Hour of Code for Children with Motor Disabilities

*Caitlin Hanley, University of Alabama*

The Role of Chronology in Analyzing Introductory Programming Assignments

*Kayla Holcomb, Abilene Christian University*

*Nevan Simone, Abilene Christian University*

A Simple Line Game With Real-Time Visualization of the Internal Data Structure

*John Huff*

3D-Printed Animatronic Hand with Wireless Mirroring Glove and Precision Control

*Cyrus Xiyuan Liu, Wake Forest University*

Robotic Navigation Through Gesture Based Control

*Nickolas McCarley*

Advances in Phylogenetic-based Stemma Construction

*Andrew Miller*

*Nathan Gould*

Syntactic hint generation for Introductory Programming Problems

*Aayush Mudgal,*

Novel Logical Reasoning Tutor

*Matthew Pfister*

Loop Invariants: Learning to Help Teach

*Caleb Priester*

Mobile Security via Reverse Tether

*Donna Young*



**THURSDAY 1:45 PM - 3:00 PM****Papers: Pair Programming (room: L11-L12)****Thu 1:45 PM - 3:00 PM**

- 1:45 PM      Teaching Mobile Development with Pair Programming  
*Mohammed Seyam, Virginia Tech*  
*D. Scott McCrickard, Virginia Tech*
- 2:10 PM      Observations of Pair Programming: Variations in Collaboration Across Demographic Groups  
*Omar Ruvalcaba, California State University, Northridge*  
*Linda Werner, University of California, Santa Cruz*  
*Jill Denner, Education, Training, and Research*
- 2:35 PM      Three Years of Student Pair Programming – Action Research Insights And Outcomes  
*Ian McChesney, Ulster University*

**Papers: Engagement and Diversity (room: L13-L14)****Thu 1:45 PM - 3:00 PM**

- 1:45 PM      Enhancing Engagement by Blending Rigor and Relevance  
*Sarnath Ramnath, St Cloud state U*  
*John Hoover, St Cloud state U*
- 2:10 PM      Understanding How Research Experiences for Undergraduate Students May Foster Diversity In The Professorate  
*Burcin Tamer, Computing Research Association*  
*Jane Stout, Computing Research Association*
- 2:35 PM      Applying the Communal Goal Congruity Perspective to Enhance Diversity and Inclusion in Undergraduate Computing Degrees  
*Bo Brinkman, Miami University*  
*Amanda Diekman, Miami University*

**Papers: CS Ed Research 1 (room: L5-L6)****Thu 1:45 PM - 3:00 PM**

- 1:45 PM      An Effective Approach to Enhancing Compiler Error Messages  
*Brett A. Becker, University College Dublin*
- 2:10 PM      Automatic Inference of Programming Performance and Experience from Typing Patterns  
*Juho Leinonen, University of Helsinki*  
*Krista Longi, University of Helsinki*  
*Arto Klami, University of Helsinki*  
*Arto Vihavainen, University of Helsinki*

2:35 PM      A (Updated) Review of Empiricism at the SIGCSE Technical Symposium  
*Ahmed Al-Zubidy, University of Alabama*  
*Jeffrey Carver, University of Alabama*  
*Sarah Heckman, North Carolina State University*  
*Mark Sheriff, University of Virginia*

**Papers: CS0 (room: L2-L3)****Thu 1:45 PM - 3:00 PM**

1:45 PM      CS0 for Computer Science Majors at Ohio University  
*Cindy Marling, Ohio University*  
*David Juedes, Ohio University*

2:10 PM      Security Injections 2.0: Increasing Ability to Apply Secure Coding Knowledge  
 using Segmented and Interactive Modules in CS0  
*Sagar Raina, Towson University*  
*Siddharth Kaza, Towson University*  
*Blair Taylor, Towson University*

2:35 PM      Combining “Big Data” and “Thick Data” Analyses for Understanding Youth  
 Learning Trajectories in a Summer Coding Camp  
*Deborah Fields, Utah State University*  
*Lisa Quirke, University of Toronto*  
*Janell Amely, Utah State University*  
*Jason Maughan, Utah State University*

**Special Session (room: Cotton Row)****Thu 1:45 PM - 3:00 PM**

Training Teachers to Integrate Computational Thinking into K-12 Teaching  
*Rania Hodhod, Columbus State University*  
*Shamim Khan, Columbus State University*  
*Yesem Kurt-Peker, Columbus State University*  
*Lydia Ray, Columbus State University*

**Special Session (room: Steamboat)****Thu 1:45 PM - 3:00 PM**

Demystifying Computing with Magic, part III  
*Daniel Garcia, UC Berkeley*  
*David Ginat, Tel-Aviv University*

**Panel (room: Mississippi)****Thu 1:45 PM - 3:00 PM**

Uncommon Teaching Languages  
*Mark Lewis, Trinity University*  
*Douglas Blank, Bryn Mawr College*  
*Kim Bruce, Pomona College*  
*Peter-Michael Osera, Grinnell College*

Supporter Session (room: Sultana)

Thu 1:45 PM - 3:00 PM

Google Supporter Session - Up Close and Personal with Google CS Programs

**THURSDAY 3:00 PM - 3:45 PM**  
**Break, Exhibits & Demos****Demos (room: Exhibit Hall)****Thu 3:00 PM - 3:45 PM**

The Speech Recognition Virtual Kitchen Toolkit

*Rebecca Bates, Minnesota State University, Mankato**Sung Kim, Minnesota State University, Mankato*

The Sensorian Shield: Transforming the Raspberry Pi into an IoT Platform

*Qusay Mahmoud, UOIT**Dhimiter Qendri, UOIT**Michael Lescisin, UOIT***NSF Showcase (room: Exhibit Hall)****Thu 3:00 PM - 4:30 PM**

Bringing Real-World Data And Visualizations Into Data Structures Courses Using BRIDGES

*Kalpathi Subramanian, UNC Charlotte**Jamie Payton, UNC Charlotte**David Burlinson, UNC Charlotte**Mihai Mehedint, UNC Charlotte*

Software Tutors for Introductory Programming: Epplets, Codelets and Problets

*Amruth N. Kumar, Ramapo College of New Jersey*

Customizable Visualizations for Introducing Database Concepts to Many Majors

*Suzanne W. Dietrich, Arizona State Univ.**Don Goelman, Villanova Univ.*

Transforming Computer Science Education Research Through Use of Appropriate Empirical

Research Methods: Mentoring and Tutorials

*Jeffrey Carver, Univ. of Alabama**Sarah Heckman, NC State Univ.**Mark Sherriff, Univ. of Virginia*

**THURSDAY 3:45 PM - 5:00 PM****Papers: Big Data (room: L11-L12)****Thu 3:45 PM - 5:00 PM**

- 3:45 PM      VisMap: Exploratory Visualization Support for Introductory Data Science and Visualization  
*Dugald Hutchings, Elon University*  
*Megan Squire, Elon University*
- 4:10 PM      A Practical and Sustainable Model for Learning and Teaching Data Science  
*Bina Ramamurthy, University at Buffalo*
- 4:35 PM      Teaching Big Data with a Virtual Cluster  
*Joshua Eckroth, Stetson University*

**Papers: Teaching with Teams (room: L13-L14)****Thu 3:45 PM - 5:00 PM**

- 3:45 PM      Teaching Global Software Engineering by Simulating a Global Project in the Classroom  
*Yang Li, Technische Universität München*  
*Stephan Krusche, Technische Universität München*  
*Christian Lescher, Technische Universität München*  
*Bernd Brügge, Technische Universität München*
- 4:10 PM      Evaluating Student Teams: Do Educators Know What Students Think?  
*Anya Tafliovich, University of Toronto Scarborough*  
*Andrew Petersen, University of Toronto Mississauga*  
*Jennifer Campbell, University of Toronto*
- 4:35 PM      Exploring Lightweight Teams in a Distributed Learning Environment  
*Stephen MacNeil, University of North Carolina at Charlotte*  
*Celine Latulipe, University of North Carolina at Charlotte*  
*Bruce Long, University of North Carolina at Charlotte*  
*Aman Yadav, Michigan State University*

**Papers: Program Design (room: L5-L6)****Thu 3:45 PM - 5:00 PM**

- 3:45 PM      Modernizing Plan-Composition Studies  
*Kathi Fisler, WPI*  
*Shriram Krishnamurthi, Brown University*  
*Janet Siegmund, Universität Passau*
- 4:10 PM      On the Interplay Between Bottom-Up and Datatype-Driven Program Design  
*Francisco Enrique Vicente Castro, Worcester Polytechnic Institute*  
*Kathi Fisler, Worcester Polytechnic Institute*

4:35 PM Can Students Design Software? The Answer Is More Complex Than You Think  
*Chenglie Hu, Carroll University*

Papers: Scratch (room: L2-L3)

Thu 3:45 PM - 5:00 PM

3:45 PM ITCH: Individual Testing Of Computer Homework For Scratch Assignments  
*David Johnson, University of Utah*

4:10 PM Multi-Track Programming Competitions with Scratch  
*Jason Arnold, Marquette University*  
*Heather Bort, Marquette University*  
*Ryan Naugle, Marquette University*  
*Casey O'Hare, Marquette University*  
*Dennis Brylow, Marquette University*

4:35 PM Initialization in Scratch: Seeking Knowledge Transfer  
*Diana Franklin, University of Chicago*  
*Charlotte Hill, University of California, Santa Barbara*  
*Hilary Dwyer, University of California, Santa Barbara*  
*Alexandria Hansen, University of California, Santa Barbara*  
*Ashley Iveland, University of California, Santa Barbara*  
*Danielle Harlow, University of California, Santa Barbara*

Special Session (room: Cotton Row)

Thu 3:45 PM - 5:00 PM

Special Session: ACM Joint Task Force on Cybersecurity Education  
*Diana Burley, George Washington University*  
*Matt Bishop, University of California, Davis*  
*Elizabeth Hawthorne, Union County College*  
*Siddharth Kaza, Towson University*  
*Lynn Fatcher, Nelson Mandela Metropolitan University*  
*Scott Buck, Intel*

Panel (room: Steamboat)

Thu 3:45 PM - 5:00 PM

Technology We Can't Live Without!, revisited  
*Daniel Garcia, UC Berkeley*  
*Leslie Aaronson, Forshay Learning Center*  
*Shawn Kenner, Sharon High School*  
*Colleen Lewis, Harvey Mudd College*  
*Susan Rodger, Duke University*

**Panel (room: Mississippi)****Thu 3:45 PM - 5:00 PM**

igniteCS: Addressing Undergraduate CS Retention

*Erin Cannon, Google**Priya Chawla, University of Cincinnati**Katherine Lo, University of California, Irvine**Haley Adams, Rhodes College***Special Session (room: L10)****Thu 3:45 PM - 5:00 PM**

Instructional Design is to Teaching as Software Engineering is to Programming

*Austin Cory Bart, Virginia Tech**Clifford Shaffer, Virginia Tech***Supporter Session (room: Sultana)****Thu 3:45 PM - 5:00 PM**

Oracle Supporter Session - Solve it with SQL - Use SQL to Solve a Mystery

**THURSDAY 5:30 PM - 7:30 PM****Birds of a Feather Flock 1****Thu 5:30 PM - 6:20 PM**

Universal Access to Computing Education (room: Heritage 1, Sheraton)

*Richard Ladner, University of Washington*

*Brianna Blaser, University of Washington*

*Andreas Stefik, University of Nevada Las Vegas*

*Daniela Marghitu, Auburn University*

Updates to the ABET Computing Accreditation Criteria (room: Heritage 2, Sheraton)

*Allen Parrish, The University of Alabama*

*Stan Thomas, Wake Forest University*

Fostering Computational Creativity through Computing in the Arts: A Community of Educators  
(room: Heritage 3, Sheraton)

*Susan Reiser, UNC Asheville*

*Rebecca Bruce, UNC Asheville*

*Jennifer Burg, Wake Forest University*

*Bill Manaris, College of Charleston*

Birds of Feather: Teaching with Alice (room: Heritage 4, Sheraton)

*Donald Slater, Carnegie Mellon University*

*Wanda Dann, Carnegie Mellon University*

*Stephen Cooper, Stanford University*

Small Department Initiative (room: St. Louis, Sheraton)

*Cathy Bareiss, Olivet Nazarene University*

Researching Programming Education with Blackbox (room: Natchez, Sheraton)

*Neil Brown, University of Kent*

*Amjad Altadmri, University of Kent*

Mentoring Student Teaching Assistants for Computer Science (room: Beale, Sheraton)

*Charles Garrod, Carnegie Mellon University*

*Jeffrey Forbes, Duke University*

*Colleen Lewis, Harvey Mudd College*

*Peter-Michael Osera, Grinnell College*



Practical Methods for Broadening Participation Through Student Engagement in CS1/CS2 Courses  
(room: Memphis, Sheraton)

*Beth Quinn, University of Colorado at Boulder*

*Alvaro Monge, California State University, Long Beach*

*Lecia Barker, University of Texas at Austin*

*Leo Porter, University of California, San Diego*

*Daniel Zingaro, University of Toronto, Mississauga*

A Town Meeting: SIGCSE Committee on Expanding the Women-in-Computing Community (room:  
Knoxville, Sheraton)

*Gloria Townsend, DePauw University*

SIGCSE Reads: Time for Book Discussion (room: Chattanooga, Sheraton)

*Rebecca Bates, Minnesota State University, Mankato*

*Valerie Summet, Emory University*

Teaching Track Faculty in CS (room: Jackson, Sheraton)

*Mark Sherriff, University of Virginia*

*Dan Garcia, University of California, Berkeley*

POGIL in Computer Science for Beginners and Experts (room: Oxford, Sheraton)

*Chris Mayfield, James Madison University*

*Clif Kussmaul, Muhlenberg College*

*Saturnino Garcia, University of San Diego*

*Helen Hu, Westminster College*

*Tammy Pirmann, School District of Springfield Township*

Preparing to Teach Humanitarian Open Source (room: Gatlinburg, Sheraton)

*Heidi Ellis, Western New England University*

*Stoney Jackson, Western New England University*

*Gregory Hislop, Drexel University*

*S. Monisha Pulimood, The College of New Jersey*

*Gina Likins, Red Hat - University Outreach*

CS Ed PhD Students Unite! (room: Azelea, Sheraton)

*Briana Morrison, Georgia Institute of Technology*

*Jennifer Tsan, North Carolina State University*

*Rachel Harsley, University of Illinois at Chicago*

*Francisco Enrique Vicente Castro, Worcester Polytechnic Institute*

Defining Concepts, Practices, and Standards for K-12 CS (room: L11-12, Convention Center)

*Pat Yongpradit, Code.org*

Industry Strength Tools for Software Engineering: What Works, What is OverKill? (room: L13-14, Convention Center)  
*Bonnie MacKellar, St John's University*  
*Karen Jin, University of New Hampshire at Manchester*

**Birds of a Feather Flock 2****6:30 PM - 7:30 PM**

How Do You Teach Debugging? Resources and Strategies for Better Student Debugging (room: Heritage 1, Sheraton)  
*Colleen Lewis, Harvey Mudd College*  
*Chris Gregg, Tufts University*

Teaching CS to Students of Color (room: Heritage 2, Sheraton)  
*Jakita Thomas, Spelman College*  
*Shaundra Daily, University of Florida*  
*Mikala Streeter, Mikala Streeter Preparatory School*

Current Initiatives and Future Directions of the Computer Science Teachers Association (CSTA) (room: Heritage 3, Sheraton)  
*David Reed, Creighton University/CSTA*  
*Mark Nelson, Computer Science Teachers Association (CSTA)*

Web Programming (room: Heritage 4, Sheraton)  
*Marty Stepp, Stanford University*  
*Allison Obourn, University of Washington*  
*Jessica Wolk, Microsoft Research*  
*Victoria Kirst, Google*

Mathematical Reasoning in Computing Education: Connecting Math We Teach with Writing Correct Programs Birds-of-a-Feather (room: St. Louis, Sheraton)  
*John Dougherty, Haverford College*  
*Joseph Hollingsworth, Indiana University Southeast*  
*Joan Krone, Denison University*  
*Murali Sitaraman, Clemson University*

Exploring Learning Analytics for Computing Education (room: Natchez, Sheraton)  
*Chris Hundhausen, Washington State University*  
*Adam Carter, Washington State University*

Handling Very Large Lecture Courses: Keeping the Wheels on the Bus II (room: Beale, Sheraton)  
*Josh Hug, UC Berkeley*  
*Daniel D. Garcia, UC Berkeley*

Setting Quantifiable Goals for Broadening Participation in Computing (room: Memphis, Sheraton)

*Kate Lockwood, University of St. Thomas*

*Maureen Doyle, Northern Kentucky University*

Computer Science Summer Camps: Making Summer Programs Fun and Sustainable (room: Knoxville, Sheraton)

*David Johnson, University of Utah, School of Computing*

Leveraging CS Teachable Moments in the Maker Movement (room: Chattanooga, Sheraton)

*Jennifer (Ginger) Alford, Trinity Valley School/Fort Worth Museum of Science and History*

*Erik Brunvand, University of Utah*

Brainstorming Data Science as a Fluency Course for Non-Majors and as a New Specialization (room: Jackson, Sheraton)

*Lillian Cassel, Villanova University*

*Don Goelman, Villanova University*

*Darina Dicheva, Winston Salem State University*

*Heikki Topi, Bentley University*

Competency Based Education in Lower-Division Computer Science Taught at Community Colleges (room: Oxford, Sheraton)

*Amardeep Kahlon, Austin Community College*

*Linda Smarzik, Austin Community College*

*Mary Kohls, Austin Community College*

Assessment of Security Knowledge, Skills and Abilities using Hands-On Exercises in 2016 (room: Gatlinburg, Sheraton)

*Richard Weiss, The Evergreen State College*

*Jens Mache, Lewis & Clark College*

*Michael Locasto, University of Calgary*

*Blair Taylor, Towson University*

*Siddharth Kaza, Towson University*

*Ambareen Siraj, Tennessee Tech University*

*Elizabeth Hawthorne, Union County College*

Student ICTD Research and Service Learning Abroad (room: Azelea, Sheraton)

*Joseph Mertz, Carnegie Mellon University*

Increasing Programming Contest Participation for Fun and Profit (room: L11-12, Convention Center)

*Aaron Bloomfield, University of Virginia*

*Borja Sotomayor, University of Chicago*

Preliminary Program

## **SIGCSE 2016 Symposium**

Preliminary Program

Providing Impactful Professional Development Teachers Can Implement (room: L13-14,  
Convention Center)

*Kathy Menchaca Isbister, Stanford University*

**THURSDAY 7:30 PM - 9:30 PM**

**Reception (room: Ballroom A)**

**FRIDAY 8:30 AM - 10:00 AM****Plenary Session - SIGCSE Award for Outstanding Contribution to Computer Science Education - Jan Cuny - National Science Foundation****FRIDAY 10:00 AM - 10:45 AM****Break, Exhibits & Demos****Demos (room: Exhibit Hall)****Fri 10:00 AM - 10:45 AM**

Creating and Grading IPython/Jupyter Notebook Assignments with NbGrader

*Jessica Hamrick, University of California, Berkeley*

CodeSnaps: Block-Based Robotic Programming for the Low-Budget Classroom

*Jennifer Sabourin, SAS Institute, Inc**Lucy Kosturko, SAS Institute, Inc**Scott McQuiggan, SAS Institute, Inc***NSF Showcase (room: Exhibit Hall)****Fri 10:00 AM - 11:30 AM**

Integrating Mobile Computing and Security into a Computer Science Curriculum

*Xiaohong Yuan, NC A&T Univ.**Kenneth Williams, NC A&T Univ.**Jinsheng Xu, NC A&T Univ.**Kelvin Bryant, NC A&T Univ.*

CS1: Creative Computation in the Context of Art and Visual Media

*Dianna Xu, Bryn Mawr College**Ira Greenberg, Southern Methodist Univ.**Deepak Kumar, Bryn Mawr College**Aaron Cadle, Fort Worth Country Day School**Ursula Wolz, RiverSound Solutions*

Collaborative Education: Building a Skilled Software Verification and Validation User Community

*Sushil Acharya, Robert Morris Univ.**Priyadarshan Manohar, Robert Morris Univ.**Peter Wu, Robert Morris Univ.*

Supporting Student Learning in Humanitarian Free and Open Source Software (HFOSS) Projects

*Heidi J. C. Ellis, Western New England Univ.**Darci Burdge, Nassau Community College**Gregory W. Hislop, Drexel Univ.*

**FRIDAY 10:45 AM - 12:00 PM****Papers: Peer Techniques (room: L11-L12)****Fri 10:45 AM - 12:00 PM**

- 10:45 AM      Differences in the Learning Principles Dominating Student-Student vs. Student-Instructor Interactions while Working on Programming Tasks  
*Alessio Gaspar, University of South Florida*  
*Joni Torsella, University of Cincinnati*  
*Nora Honken, University of Cincinnati*  
*Sohum Sohoni, Arizona State University*  
*Colin Arnold, University of South Florida*
- 11:10 AM      The Effects of Peer- and Self-assessment on the Assessors  
*Joonsuk Park, Cornell University*  
*Kimberley Williams, Cornell University*
- 11:35 AM      The Sweep: Essential Examples for In-Flow Peer Review  
*Joe Gibbs Politz, Brown University*  
*Joseph Collard, UMass Amherst*  
*Arjun Guha, UMass Amherst*  
*Kathi Fisler, Worcester Polytechnic Institute*  
*Shriram Krishnamurthi, Brown University*

**Papers: Artistic Approaches (room: L13-L14)****Fri 10:45 AM - 12:00 PM**

- 10:45 AM      The MoveLab: Developing Congruence Between Students' Self-Concepts and Computing  
*Kayla DesPortes, Georgia Institute of Technology*  
*Monet Spells, Georgia Institute of Technology*  
*Betsy DiSalvo, Georgia Institute of Technology*
- 11:10 AM      Creative Computation in High School  
*Dianna Xu, Bryn Mawr College*  
*Aaron Cadle, Fort Worth Country Day School*  
*Darby Thompson, Sidwell Friends School*  
*Ursula Wolz, RiverSound Solutions*  
*Ira Greenberg, Southern Methodist University*  
*Deepak Kumar, Bryn Mawr College*
- 11:35 AM      Computational Art - Introducing High School Students to Computing via Art  
*Zoe Wood, California Polytechnic State University*  
*Paul Muhl, Santa Barbara High School*  
*Katelyn Hicks, California Polytechnic State University*

**Papers: Tests and Outcomes (room: L5-L6)****Fri 10:45 AM - 12:00 PM**

- 10:45 AM      Introducing and Evaluating Exam Wrappers in CS2  
*Michelle Craig, University of Toronto*  
*Diane Horton, University of Toronto*  
*Daniel Zingaro, University of Toronto Mississauga*  
*Danny Heap, University of Toronto*
- 11:10 AM      Measuring Effects of Modality on Perceived Test Anxiety for Computer Programming Exams  
*Robert Deloatch, University of Illinois Urbana Champaign*  
*Brian Bailey, University of Illinois Urbana Champaign*  
*Alex Kirlik, University of Illinois Urbana Champaign*
- 11:35 AM      Impact of Student Achievement Goals on CS1 Outcomes  
*Daniel Zingaro, University of Toronto Mississauga*  
*Leo Porter, University of California, San Diego*

**Papers: High School Diversity (room: L2-L3)****Fri 10:45 AM - 12:00 PM**

- 10:45 AM      Towards More Gender Diversity in CS through an Artificial Intelligence Summer Program for High School Girls  
*Marie Vachovsky, Stanford University*  
*Grace Wu, Stanford University*  
*Sorathan Chaturapruek, Stanford University*  
*Olga Russakovsky, Stanford University*  
*Richard Sommer, Stanford University*  
*Li Fei-Fei, Stanford University*
- 11:10 AM      Investigating the Role of Being a Mentor as a Way of Increasing Interest in Computer Science  
*Jody Clarke-Midura, Utah State University*  
*Vicki Allan, Utah State University*  
*Kevin Close, Utah State University*
- 11:35 AM      Sisters Rise Up 4 CS: Helping Female Students Pass the Advanced Placement Computer Science A Exam  
*Barbara Ericson, Georgia Institute of Technology*  
*Miranda Parker, Georgia Institute of Technology*  
*Shelly Engelman, SageFox Consulting Group*

**Panel (room: Cotton Row)****Fri 10:45 AM - 12:00 PM**

Future Directions of Block-based Programming

*Neil Brown, University of Kent**Jens Mönig, SAP Labs**Anthony Bau, Phillips Exeter Academy**David Weintrop, Northwestern University***Panel (room: Steamboat)****Fri 10:45 AM - 12:00 PM**

Why Don't Some CS0 Students Succeed? How Important Are Background, Experience, Culture, Aptitude, Habits and Attitude?

*Daniel Garcia, University of California, Berkeley**Stuart Reges, University of Washington**Colleen Lewis, Harvey Mudd College**Nathan Ensmenger, Indiana University***Panel (room: Mississippi)****Fri 10:45 AM - 12:00 PM**

Scrum and Agile Methods in Software Engineering Courses

*Jennifer Campbell, University of Toronto**Stan Kurkovsky, Central Connecticut State University**Chun Wai Liew, Lafayette College**Anya Tafliovich, University of Toronto Scarborough***Panel (room: L10)****Fri 10:45 AM - 12:00 PM**

How to Use Open Source Software in Education

*Judith Bishop, Microsoft Research**Carlos Jensen, Oregon State University**Walt Scacchi, University of California**Arfon Smith, GitHub Inc***Supporter Session (room: Sultana)****Fri 10:45 AM - 12:00 PM**

Vocareum Supporter Session - Assessment at scale: The next frontier for universal computing literacy

**Posters (room: Exhibit Hall)****Fri 10:45 AM - 12:00 PM**

Integrating Sustainability Concepts into Introductory Programming Courses

*Jeffrey Stone, Penn State University*



The Development of Internationalized Computational Thinking Curriculum in Hong Kong Primary Education

*Gary K. W. Wong, The Hong Kong Institute of Education*

*Kening Zhu, City University of Hong Kong*

*Xiaojuan Ma, The Hong Kong University of Science and Technology*

*John Huen, Koding Kingdom*

FunWithSound: A Music Composition and Synthesis Library for Processing

*David Hovemeyer, York College of Pennsylvania*

Exploring Computer Science in the Liberal Arts

*Gary Skuse, Rochester Institute of Technology*

*Daniel Walzer, University of Massachusetts at Lowell*

A Holistic Sequence of Programming Assignments for CS2

*Joanna Klukowska, Courant Institute of Mathematical Sciences, New York University*

*Stewart Weiss, Hunter College of the City University of New York*

Combating Perceptions of Computer Scientists: A Short-term Intervention

*Shaundra Daily, University of Florida*

*Alison Leonard, Clemson University*

*Sophie Jörg, Clemson University*

*Sabarish Babu, Clemson University*

*Nikeetha Dsouza, Clemson University*

*Dhaval Parmar, Clemson University*

*Kara Gundersen, University of Florida*

*Joseph Isaac, Clemson University*

Coding, Designing, and Logistics; How Modes Affect Equity In Computer Science Education

*Declan McClintock, Michigan State University*

*Niral Shah, Michigan State University*

Lights, Camera, but no Action: Exploring Affective Audio-Visual Features of Educational Videos

*Abhay Doke, Tata Research Development and Design Centre*

*Niranjan Pedanekar, Tata Research Development and Design Centre*

Increasing security awareness in undergraduate courses with labware

*Michael Weeks, Department of Computer Science, Georgia State University*

*Yi Pan, Department of Computer Science, Georgia State University*

*Yanqing Zhang, Department of Computer Science, Georgia State University*

## Visualizing Algorithm Analysis Topics

*Mohammed Farghally, Virginia Tech**Eric Fouh, Lehigh University**Sally Hamouda, Virginia Tech**Kyu Han Koh, Virginia Tech**Clifford Shaffer, Virginia Tech*

## The Impact on Student Learning and Satisfaction When a CS2 Course Became Interactive

*Steven Huss-Lederman, Beloit College*

## A Certification-Guided Course for Cloud Computing

*Dahai Guo, Florida Gulf Coast University**Anna Koufakou, Florida Gulf Coast University*

## Automated Analysis of Student Programmer Coding Behavior Patterns

*Clinton Staley, California Polytechnic State University, SLO**Corey Ford, California Polytechnic State University, SLO*

## SPOCK – A System for Encouraging Interaction in Small Private Online Courses

*Ryan Hardt, University of Wisconsin-Eau Claire**Grant Wuerker, University of Wisconsin-Eau Claire*

## Broadening the Path to Cybersecurity Profession in Predominantly Undergraduate and Liberal Arts Institutions

*Xenia Mountroudou, Wofford College**Xiangyang Li, Johns Hopkins University*

## Leveraging Context to Create Opportunistic Co-Located Learning Environments

*Stephen MacNeil, University of North Carolina at Charlotte**Celine Latulipe, University of North Carolina at Charlotte*

## Student Perceptions of Success in Computer Science Senior Capstone Projects

*Rick Parker, University of Colorado at Boulder*

## Using Small Whiteboards to Engage Students in Active Learning

*Victor Norman, Calvin College**Serita Nelesen, Calvin College*

## Design and Evaluation of a Course Module on Android Cipher Programming

*Jinsheng Xu, North Carolina A&T State University**Xiaohong Yuan, North Carolina A&T State University**Ashrith Velma, North Carolina A&T State University*

**Building Pre-Service Teacher Interest in Computer Science Education through Mentoring***Experiences**Kim Huett, University of West Georgia**Mary Alice Varga, University of West Georgia***Computing with a Community Focus: An App Inventor Summer Camp for Middle School Students***Lijun Ni, University of Massachusetts Lowell**Mark Sherman, University of Massachusetts Lowell**Diane Schilder, Evaluation Analysis Solutions**Fred Martin, University of Massachusetts Lowell***Exploring gamification to teach computer science to non-computer science related major***Lorena Martinez-Elizalde, ITESM**Monica Duarte-Dominguez, ITESM***Using Learning Analytics to Trace Academic Trajectories of CS and IT Students to Better Understanding Successful Pathways to Graduation***Huzefa Rangwala, George Mason University**Omaima Almatrafi, George Mason University**Aditya Johri, George Mason University**Jaime Lester, George Mason University***Promote Self-efficacy in Learning of Mobile App and Security with Real-World Relevant Laboratory***Kai Qian, Kennesaw State University**Dan Lo, Kennesaw State university***Data Science for All: An Introductory Course for Non-Majors, in Flipped Format***Lillian Cassel, Villanova University**Darina Dicheva, Winston Salem State University**Christo Dichev, Winston Salem State University**Don Goelman, Villanova University**Michael Posner, Villanova University***FRIDAY 12:00 PM - 1:45 PM****LUNCH: on your own**

**FRIDAY 1:45 PM - 3:00 PM****Papers: Problem Solving (room: L11-L12)****Fri 1:45 PM - 3:00 PM**

- 1:45 PM      Online CS1: Who Enrols, Why, and How Do They Do?  
*Diane Horton, University of Toronto*  
*Jennifer Campbell, University of Toronto*  
*Michelle Craig, University of Toronto*
- 2:10 PM      The Influence of Problem Solving Abilities on Students' Performance on Different Assessment Tasks in CS1.  
*Alex Lishinski, Michigan State University*  
*Aman Yadav, Michigan State University*  
*Richard Enbody, Michigan State University*  
*Jonathon Good, Michigan State University*
- 2:35 PM      A Course on Programming and Problem Solving  
*Swapneel Sheth, University of Pennsylvania*  
*Christian Murphy, University of Pennsylvania*  
*Kenneth Ross, Columbia University*  
*Dennis Shasha, New York University*

**Papers: Novel Learning Approaches (room: L13-L14)****Fri 1:45 PM - 3:00 PM**

- 1:45 PM      The Video Collaboratory as a Learning Environment  
*Vikash Singh, University of North Carolina at Charlotte*  
*Sarah Abdellahi, University of North Carolina at Charlotte*  
*Mary Lou Maher, University of North Carolina at Charlotte*  
*Celine Latulipe, University of North Carolina at Charlotte*
- 2:10 PM      Just-In-Time Learning for the Just Google It Era  
*Elizabeth Boese Boese, University of Colorado - Boulder*
- 2:35 PM      Hackathons as an Informal Learning Platform  
*Arnab Nandi, The Ohio State University*  
*Meris Mandernach, The Ohio State University*

**Papers: CS Ed Research 2 (room: L5-L6)****Fri 1:45 PM - 3:00 PM**

1:45 PM      A Multi-institutional Study of Peer Instruction in Introductory Computing  
*Leo Porter, University of California, San Diego*  
*Dennis Bouvier, Southern Illinois Univ.~Edwardsville*  
*Quentin Cutts, University of Glasgow*  
*Scott Grissom, Grand Valley State University*  
*Cynthia Lee, Stanford University*  
*Robert McCartney, University of Connecticut*  
*Daniel Zingaro, University of Toronto, Mississauga*  
*Beth Simon, University of California, San Diego*

2:10 PM      Development of a Concept Inventory for Computer Science Introductory Programming  
*Ricardo Caceffo, UNICAMP*  
*Steven Wolfman, University of British Columbia*  
*Kellogg Booth, University of British Columbia*  
*Rodolfo Azevedo, UNICAMP*

2:35 PM      A data-driven analysis of informatively hard concepts in introductory programming  
*Rudolf Wiegand, University of Central Florida*  
*Anthony Bucci, Independent Contractor*  
*Amruth Kumar, Ramapo College of New Jersey*  
*Jennifer Albert, The Citadel*  
*Alessio Gaspar, University of South Florida*

**Papers: K-8 Diversity (room: L2-L3)****Fri 1:45 PM - 3:00 PM**

1:45 PM      How Early Does the CS Gender Gap Emerge? A Study of Collaborative Problem Solving in 5th Grade Computer Science  
*Jennifer Tsan, North Carolina State University*  
*Kristy Boyer, University of Florida*  
*Collin Lynch, North Carolina State University*

2:10 PM      Differentiating for Diversity: Using Universal Design for Learning in Computer Science Education  
*Alexandria Hansen, University of California, Santa Barbara*  
*Eric Hansen, Hope Elementary School, Santa Barbara*  
*Hilary Dwyer, University of California, Santa Barbara*  
*Danielle Harlow, University of California, Santa Barbara*  
*Diana Franklin, University of Chicago*

2:35 PM      Empowering All Students: Closing the CS Confidence Gap with an In-School Intervention for Middle School Students  
*Philip Buffum, North Carolina State University*  
*Megan Frankosky, North Carolina State University*  
*Kristy Boyer, University of Florida*  
*Eric Wiebe, North Carolina State University*  
*Bradford Mott, North Carolina State University*  
*James Lester, North Carolina State University*

**Special Session (room: Cotton Row)****Fri 1:45 PM - 3:00 PM**

AP Computer Science and Service Learning with We.org  
*Lien Diaz, College Board*  
*Sandy Czajka, Riverside Brookfield High School*  
*Crystal Furman, College Board*

**Panel (room: Steamboat)****Fri 1:45 PM - 3:00 PM**

CS10K Teachers by 2017? Try CS1K+ students NOW! Coping with the Largest CS1 Courses in History  
*Daniel Garcia, UC Berkeley*  
*Jennifer Campbell, University of Toronto*  
*John DeNero, UC Berkeley*  
*Mary Lou Dorf, University of Michigan*  
*Stuart Reges, University of Washington*

**Special Session (room: Mississippi)****Fri 1:45 PM - 3:00 PM**

Updating Curricular Guidelines for Associate-Degree Computer Science Programs  
*Cara Tang, Portland Community College*  
*Cindy Tucker, Bluegrass Community and Technical College*  
*Elizabeth Hawthorne, Union County College*

**Supporter Session (room: Sultana)****Fri 1:45 PM - 3:00 PM**

Google Supporter Session - Surfacing Solutions to the Capacity Crunch

**FRIDAY 3:00 PM - 3:45 PM**  
**Break, Exhibits & Demos****Demos (room: Exhibit Hall)****Fri 3:00 PM - 3:45 PM**

OnRamp to Parallel and Distributed Computing: Web-portal for teaching parallel and distributed computing

*Samantha Foley, University of Wisconsin-La Crosse*

*Joshua Hursey, University of Wisconsin-La Crosse*

Education Modules for Networking, Cloud Computing and Security in Systems Courses

*Jay Aikat, UNC - Chapel Hill*

*Michael Reiter, UNC - Chapel Hill*

*Kevin Jeffay, UNC - Chapel Hill*

**NSF Showcase (room: Exhibit Hall)****Fri 3:00 PM - 4:30 PM**

Increasing Retention in Engineering and Computer Science with a Focus on At-Risk First Year and Sophomore Students

*Tammy VanDeGrift, Univ. of Portland*

Bolstering Security Education in Browser Security

*Wenliang Du, Syracuse Univ.*

*Li Yang, UT Chattanooga*

*Xiaohong Yuan, NC A&T Univ.*

On Beyond Sudoku: Pencil Puzzles as an Engaging Problem Domain for Intro CS

*Zack Butler, Rochester Institute of Technology*

*Ivona Bezakova, Rochester Institute of Technology*

Computational Creativity to Improve CS Education

*Leen-Kiat Soh, University of Nebraska*

*Duane Shell, University of Nebraska*

**FRIDAY 3:45 PM - 5:00 PM****Papers: Databases (room: L11-L12)****Fri 3:45 PM - 5:00 PM**

- 3:45 PM      Students' syntactic mistakes in writing seven different types of SQL queries and its application to predicting students' success  
*Alireza Ahadi, University of Technology Sydney*  
*Vahid Behbood, University of Technology Sydney*  
*Julia Prior, University of Technology Sydney*  
*Arto Vihavainen, University of Helsinki*  
*Raymond Lister, University of Technology Sydney*

**Fri 3:45 PM - 5:00 PM**

- 4:10 PM      chidb: Building a Simple Relational Database System from Scratch  
*Borja Sotomayor, University of Chicago - Department of Computer Science*  
*Adam Shaw, University of Chicago - Department of Computer Science*
- 4:35 PM      SQL: From Traditional Databases to Big Data  
*Yasin Silva, Arizona State University*  
*Isadora Almeida, Arizona State University*  
*Michell Queiroz, Arizona State University*

**Papers: International Perspectives (room: L13-L14)****Fri 3:45 PM - 5:00 PM**

- 3:45 PM      The Performance of Female Computer Science Students across Three Caribbean Islands  
*Daniel Fokum, The University of the West Indies, Mona*  
*Daniel Coore, The University of the West Indies, Mona*  
*Yewande Lewis-Fokum, The University of the West Indies, Mona*
- 4:10 PM      Piloting Computer Science Education Week in Mexico  
*Nora Escherle, Ph FHNW*  
*Silvia I. Ramirez-Ramirez, Department of Computer Science, Tecnológico de Monterrey*  
*Ashok Basawapatna, Dept. Mathematics, Computer & Information Science, SUNY, Old Westbury*  
*Dorit Assaf, School of Education, FHNW*  
*Alexander Repenning, School of Education, FHNW*  
*Carmine Maiello, School of Education, FHNW*  
*Yasko Endo, University of Colorado, Boulder*  
*Juan Nolasco-Flores, Department of Computer Science, Tecnológico de Monterrey*



- 4:35 PM Alice in the Middle East: An experience report from the formative phase  
*Saquib Razak, Carnegie Mellon University*  
*Huda Gedawy, Carnegie Mellon University*  
*Wanda Dann, Carnegie Mellon University*  
*Donald Slater, Carnegie Mellon University*

**Papers: Software Testing (room: L5-L6)****Fri 3:45 PM - 5:00 PM**

- 3:45 PM Testing Strategies for the Automated Grading of Student Programs  
*Chris Wilcox, Colorado State University*
- 4:10 PM A strategy to combine test-driven development and test criteria to improve learning of programming skills  
*Bruno Henrique Pachulski Camara, Faculdade Integrado, Federal University of Technology - Paraná*  
*Marco Aurélio Graciotto Silva, Federal University of Technology - Paraná*
- 4:35 PM Tool Design and Student Testing Behavior in an Introductory Java Course  
*Grant Braught, Dickinson College*  
*James Midkiff, Dickinson College*

**Papers: CS Principles (room: L2-L3)****Fri 3:45 PM - 5:00 PM**

- 3:45 PM An Experience Report Assessing A Professional Development MOOC For CS Principles  
*Jeff Gray, The University of Alabama*  
*Jonathan Corley, The University of Alabama*  
*Brian Eddy, University of West Florida*
- 4:10 PM Two Teachers, Two Perspectives on CS Principles  
*Jean Griffin, Temple University*  
*Tammy Pirmann, Gwynedd Mercy University*  
*Brent Gray, Carver Engineering and Science High School*
- 4:35 PM Lessons Learned from "BJC" CS Principles Professional Development  
*Thomas W. Price, NC State University*  
*Veronica Catete, NC State University*  
*Jennifer Albert, The Citadel*  
*Tiffany Barnes, NC State University*  
*Daniel D. Garcia, UC Berkeley*

**Papers: Beale St. Sampler (room: Cotton Row)****Fri 3:45 PM - 5:00 PM**

- 3:45 PM A Survey of Ethical Agreements in Information Security Courses  
*Benedict Chukuka, University of Calgary*  
*Michael Locasto, University of Calgary*

- 4:10 PM      Assessing the Tier-1 Core Learning Outcomes of CS2013  
*James McGuffee, Northern Kentucky University*  
*E, Palmer, MacMurray College*  
*Indira Guzman, Trident University International*
- 4:35 PM      Seeing Is Believing: Helping Students Visualize Multithreaded Behavior  
*Joel Adams, Calvin College*  
*Patrick Crain, Calvin College*  
*Christopher Dilley, Calvin College*  
*Serita Nelesen, Calvin College*  
*Javin Unger, Calvin College*  
*Mark Vander Stel, Calvin College*

Panel (room: Steamboat)	Fri 3:45 PM - 5:00 PM
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- Booming Enrollments – Survey Data  
*Tracy Camp, Colorado School of Mines*  
*Stu Zweben, The Ohio State University*  
*Duncan Buell, University of South Carolina*  
*Jane Stout, Computing Research Association*

Panel (room: Mississippi)	Fri 3:45 PM - 5:00 PM
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- Panel: Engage in Reasoning with Tools  
*Greg Kulczycki, Virginia Tech*  
*Murali Sitaraman, Clemson University*  
*Nigamanth Sridhar, Cleveland State University*  
*Bruce Weide, The Ohio State University*

Supporter Session (room: River Bluff)	Fri 3:45 PM - 5:00 PM
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- Turing's Craft Supporter Session - Creating Exercises and Engaging With Students

Lightning Talks (room: L10)	Fri 3:45 PM - 5:00 PM
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- Computational Making: What Does this Theory Mean for SIGCSE?  
*Jennifer Rode, Drexel University*  
*Andrea Marshall, Drexel University*  
*Houda El Mimouni, Drexel University*  
*Jennifer Booker, Drexel University*

- Complexity Tutor: developing an interactive tutoring system for computational complexity  
*Mark McCartin-Lim, University of Massachusetts Amherst*

A Body of Knowledge for Usable Security and Privacy Education

*Yousra Javed, UNC Charlotte*

*Heather Richter Lipford, UNC Charlotte*

U.S Army's Cyber Leader Development Program

*James Finocchiaro, Army Cyber Institute at West Point, NY*

Using Instant Chat for Fun and for Profit to Run a Large Class

*Michael Ball, UC Berkeley*

Crossing the Streams: Exploring the Interplay between Students' Online Social Activity and Programming Behavior

*Adam Carter, Washington State University*

*Christopher Hundhausen, Washington State University*

Social Network Analysis as a Tool for Understanding Student Interaction in Project-based Courses

*Bonnie MacKellar, St John's University*

Enhancing teaching of Big Data by using real world datasets

*Anurag Nagar, University of Texas at Dallas*

Raising the Awareness of Accessibility Needs in Block Languages

*Amber Wagner, Kennesaw State University*

*Jeff Gray, University of Alabama*

*Daniela Marghitu, Auburn University*

*Andreas Stefik, University of Nevada, Las Vegas*

Study Support Eliminates the Negative Impact of Gender Stereotypes on Women's Self-Concept

*Jane Stout, Computing Research Association*

*Burcin Tamer, Computing Research Association*

A "Grand Tour" of Computer Science: Re-Designing CS1 for Breadth and Retention

*Natalie Linnell, Santa Clara University*

*Nicholas Tran, Santa Clara University*

You wouldn't know it from SIGCSE proceedings, but we don't only teach CS1

*Colleen Lewis, Harvey Mudd College*

Poster Session (room: Exhibit Hall)

Fri 3:45 PM - 5:00 PM

Combining Flipped Learning with Gamification to Improve Student Performance in a Data Structures Course

*Darina Dicheva, Winston Salem State University*

Assessing the Effectiveness of Experiential-Learning-Based Teaching Tools in Cybersecurity Courses

*Xiaohong Yuan, North Carolina A&T State University*

*Jinsheng Xu, North Carolina A&T State University*

*Huiming Yu, North Carolina A&T State University*

*Junghee Kim, North Carolina A&T State University*

*Taehee Kim, North Carolina A&T State University*

Teaching and Learning in an Introductory Undergraduate Programming Class: A Reflective Autoethnography

*S. Zahra Atiq, Purdue University, West Lafayette*

18 hours of code with 5th grade students

*Katie Davis, California Polytechnic State University – San Luis Obispo*

*John Wilcox, Peabody Charter School*

*Zoë Wood, California Polytechnic State University – San Luis Obispo*

Multifaceted Efforts to Create an Inclusive Environment and Increase Diversity

*Perry Fizzano, Western Washington University*

*David Hartenstine, Western Washington University*

Clashroom: A Game to Enhance the Classroom Experience

*Shannon Duvall, Elon University*

*Dan Eagle, Credit Karma*

*Riese Narcisse, Credit Suisse*

*Thomas Price, NC State University*

Deepening Learning in High School Computer Science through Practices from the NGSS

*Marie Bienkowski, SRI International*

Replicating a Validated CS1 Assessment

*Miranda Parker, Georgia Institute of Technology*

*Mark Guzdial, Georgia Institute of Technology*

Assessing the Development of Computer Science Pedagogical Content Knowledge in the TEALS Program

*Yvonne Kao, WestEd*

*Leigh Ann DeLyser, CSNYC*

*Aleata Hubbard, WestEd*

A Curiosity-Driven System for Developing Coding Literacy

*Neeraj Chatlani, Rollins College*

*Daniel Myers, Rollins College*

## Teaching Software Engineering Skills in CS1.5: Incorporating Real-world Practices and Tools

*Sarah Heckman, NC State University**Jason King, NC State University*Designing and Refining of Questions to Assess Students' Ability to Mentally Simulate Programs  
and Predict Program Behavior*Ashish Aggarwal, University of Florida**Christina McCune, University of Florida**David Touretzky, Carnegie Mellon University*

## Megs and Gigs Educate (MaGE): A Curricular Peer Mentoring Program

*Heather Pon-Barry, Mount Holyoke College**Audrey St. John, Mount Holyoke College**Becky Packard, Mount Holyoke College**Barbara Rotundo, Mount Holyoke College*

## Pixels, Post-It's® and CS Principles

*Jeffrey Popyack, Drexel University**William Mongan, Drexel University*

## Adventures in K-5 STEM Outreach Using the NAO Robot

*Steven Hadfield, United States Air Force Academy**Christopher Coulston, Pennsylvania State University - Erie**Marissa Hadfield, Academy School District 20**Lillian Warner, United States Air Force Academy*

## Engaging School Counselors, Creating Computing Allies

*Sarah Hug, University of Colorado, Boulder**Jane Krauss, NCWIT*

## OnRamp to Parallel and Distributed Computing

*Samantha Foley, University of Wisconsin-La Crosse**Joshua Hursey, University of Wisconsin-La Crosse*

## Teaching Computational Thinking Through Bio-Design

*Johanna Okerlund, UNC at Charlotte**Orit Shaer, Wellesley College**Celine Latulipe, UNC at Charlotte*

**User Experience/Feedback - Rensselaer Polytechnic Institute Homework Submission Server**

*Andrea Wong, Rensselaer Polytechnic Institute*  
*Eric Tran, Rensselaer Polytechnic Institute*  
*Joe Jung, Rensselaer Polytechnic Institute*  
*Marina Espinoza, Rensselaer Polytechnic Institute*  
*Ben Shaw, Rensselaer Polytechnic Institute*  
*Beverly Sihsobhon, Rensselaer Polytechnic Institute*  
*Melissa Lindquist, Rensselaer Polytechnic Institute*  
*Samuel Breese, Rensselaer Polytechnic Institute*  
*Matthew Peveler, Rensselaer Polytechnic Institute*  
*Barbara Cutler, Rensselaer Polytechnic Institute*

**Guiding Career Development Prior to Capstone Experiences**

*Deborah Knox, The College of New Jersey*

**Autograding and Feedback for Snap!, a visual programming language**

*Michael Ball, UC Berkeley*  
*Daniel Garcia, UC Berkeley*

**Bigger Isn't Better When It Comes to Online Computer Science Teacher Communities**

*Mackenzie Leake, Stanford University*  
*Colleen Lewis, Harvey Mudd College*

**The Sol y Agua Project: Enhancing Middle School Education through Computing with an Emphasis on Simulation and Data Science**

*Ann Gates, University of Texas at El Paso*  
*Mary Roy, University of Texas at El Paso*  
*Monika Akbar, University of Texas at El Paso*  
*Florencia Larsen, Cyber-ShARE Center, University of Texas at El Paso*  
*Ivonne Lopez, Cyber-ShARE Center, University of Texas at El Paso*  
*Christian Murga, Cyber-ShARE Center, University of Texas at El Paso*  
*Angel Ortega, Cyber-ShARE Center, University of Texas at El Paso*  
*Jesus Tellez, Cyber-ShARE Center, University of Texas at El Paso*  
*Rebecca Urbina, Cyber-ShARE Center, University of Texas at El Paso*

**We Have Questions: Pedagogical, Technical, and Procedural Assistance Requests in a Large Computational Thinking Curriculum Research Project**

*Hilarie Nickerson, University of Colorado - Boulder*  
*Jeffrey Bush, University of Colorado - Boulder*  
*Yasko Endo, University of Colorado - Boulder*

An Expert System for the Prediction of Student Performance in an Initial Computer Science Course

*Michael Kuehn, University of North Dakota*

*Jarred Estad, University of North Dakota*

*Jeremy Straub, University of North Dakota*

*Tom Stokke, University of North Dakota*

A web-based environment for developing and utilizing teaching languages for novice computer science students

*Benjamin Kruger, Northeastern State University*

*Richard Matzen, Northeastern State University*

**FRIDAY 5:10 PM - 6:00 PM**  
**SIGCSE Business Meeting (room: Cotton Row)**

**FRIDAY 6:00 PM - 7:00 PM**  
**NCWIT Reception (room: Heritage Ballroom, Sheraton)**

**FRIDAY 6:00 PM - 8:00 PM**  
**CCECC Reception (room: Nashville, Sheraton)**

Fri 6:00 PM - 8:00 PM

**FRIDAY 6:10 PM - 7:00 PM**  
**CCSC Business Meeting (room: Cotton Row)**



**FRIDAY 7:00 PM - 10:00 PM**  
**Workshops**

Workshop #301: A Hands-On Introduction to the Internet of Things (room: L1)

*Bill Siever, Western Illinois University*

*Michael Rogers, Northwest Missouri State University*

Workshop #302: Introducing Secure Coding in CS0, CS1, and CS2 (room: L2-L3)

*Blair Taylor, Towson University*

*Siddharth Kaza, Towson University*

Workshop #303: Building on Blocks: Getting Started With Frames in Greenfoot 3 (room: L5-L6)

*Amjad Altadmri, University of Kent*

*Neil Brown, University of Kent*

Workshop #304: Rubricking Like a Boss: Writing and Using Rubrics for Faster, Fairer Grading of Student Programs (room: L8)

*Don Blaheta, Longwood University*

*Adrienne Decker, Rochester Institute of Technology*

Workshop #305: Permeating Data Visualization in CS Courses (room: L9)

*Aaron Cadle, Fort Worth Country Day School*

*Ira Greenberg, Southern Methodist University*

*Deepak Kumar, Bryn Mawr College*

*Dianna Xu, Bryn Mawr College*

*Ursula Wolz, RiverSound Solutions*

Workshop #306: Learn CS1/2 by Playing and Building Commercial Grade Casual Games: No Background Required (room: L10)

*Kelvin Sung, University of Washington Bothell*

*Rob Nash, University of Washington Bothell*

*Jason Pace, University of Washington Bothell*

Workshop #307: CSinParallel: Using WebMapReduce to teach parallel computing concepts, hands-on (room: L11-L12)

*Richard Brown Brown, St. Olaf College*

*Elizabeth Shoop, Macalester College*

*Joel Adams, Calvin College*

Workshop #308: MUzECS: Block-based Arduino Programming for Exploring Computer Science (room: L13-L14)

*Dennis Brylow, Marquette University*

Workshop #309: How to Plan and Run Summer Computing Camps - Logistics (room: River Bluff)

*Barbara Ericson, Georgia Institute of Technology*

*Kristine Nagel, Georgia Gwinnett College*

*Nannette Napier, Georgia Gwinnett College*

*Krishnendu Roy, Valdosta State University*

Workshop #310: K-12 Teacher Support for Computer Science Principles: An Introduction to the UTeach Course, Thriving in Our Digital World: AP (room: Sultana)

*Jeff Mickel, The UTeach Institute, The University of Texas at Austin*

*Alicia Beth, The UTeach Institute, The University of Texas at Austin*

Workshop #311: Conducting educational research in the computer science classroom: Choosing the appropriate research design to address your research questions. (room: Mississippi)

*Aman Yadav, Michigan State University*

Workshop #312: AP CS Principles and The Beauty and Joy of Computing Curriculum (room: Cotton Row)

*Daniel Garcia, UC Berkeley*

*Tiffany Barnes, NC State*

*Michael Ball, UC Berkeley*

*Emil Biga, Millard North High School*

*Josh Paley, Gunn High School*

*Marnie Hill, J. H. Rose High School*

*Nathan Mattix, Piedmont High School*

*Parisa Safa, Urban School of San Francisco*

*Sean Morris, Albany High School*

*Shawn Kenner, Sharon High School*

**SATURDAY 8:45 AM - 10:00 AM****Papers: Computer Engineering (room: L11-L12)****Sat 8:45 AM - 10:00 AM**

- 8:45 AM      Effects of a Program Integrating Course for Students of Computer Science and Engineering  
*Viggo Kann, KTH Royal Institute of Technology*  
*Anna-Karin Högfeldt, KTH Royal Institute of Technology*
- 9:10 AM      Undergraduate Assembly Language Instruction Sweetened with the Raspberry Pi  
*Jalal Kawash, University of Calgary*  
*Andrew Kuipers, University of Calgary*  
*Leonard Manzara, University of Calgary*  
*Robert Collier, Carleton University*
- 9:35 AM      Droning On: Reflections on Integrating UAV Technology into a Computer Engineering Design Laboratory  
*Meriel Huggard, Trinity College Dublin*  
*Ciarán Mc Goldrick, Trinity College Dublin*

**Papers: Out-of-school Activities (room: L13-L14)****Sat 8:45 AM - 10:00 AM**

- 8:45 AM      Meeting Graduate Employability Needs Through Open-source Collaboration with Industry  
*Matthew Forshaw, Newcastle University*  
*Ellis Solaiman, Newcastle University*  
*Oonagh McGee, Newcastle University*  
*Hugo Firth, Newcastle University*  
*Paul Robinson, Red Hat, Inc.*  
*Ryan Emerson, Red Hat, Inc.*
- 9:10 AM      Computer History on the Move  
*Graham Farr, Monash University*  
*Barbara Ainsworth, Monash University*  
*Chris Avram, Monash University*  
*Judy Sheard, Monash University*
- 9:35 AM      Agile Software Development: Study Away  
*Maureen Doyle, Northern Kentucky University*  
*Candace Gibson, Northern Kentucky University*  
*Michelle Melish, Northern Kentucky University*  
*Rees Storm, Northern Kentucky University*

Papers: Classroom Techniques (room: L5-L6)	Sat 8:45 AM - 10:00 AM
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| 8:45 AM | Animated Examples as Practice Content in Java Programming Course<br><i>Roya Hosseini, University of Pittsburgh</i><br><i>Teemu Sirkiä, Aalto University</i><br><i>Julio Guerra, University of Pittsburgh</i><br><i>Peter Brusilovsky, University of Pittsburgh</i><br><i>Lauri Malmi, Aalto University</i> |
| 9:10 AM | Improving Engagement in Introductory Courses with Homework Resubmission<br><i>Amanda Holland-Minkley, Washington &amp; Jefferson College</i><br><i>Thomas Lombardi, Washington &amp; Jefferson College</i>   |
| 9:35 AM | Memory Diagrams: A Consistant Approach Across Concepts and Languages<br><i>Toby Dragon, Ithaca College</i><br><i>Paul Dickson, Ithaca College</i>  |

Papers: Computing in Middle School (room: L2-L3)	Sat 8:45 AM - 10:00 AM
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| 8:45 AM | MyCS at 5: Assessing a Middle-years CS Curriculum<br><i>Brenda Castro, Harvey Mudd College</i><br><i>Terrence Diaz, Harvey Mudd College</i><br><i>Marissa Gee, Harvey Mudd College</i><br><i>Rebekah Justice, Harvey Mudd College</i><br><i>David Kwan, Harvey Mudd College</i><br><i>Preethi Seshadri, Harvey Mudd College</i><br><i>Zachary Dodds, Harvey Mudd College</i> |
| 9:10 AM | Factors Influencing Computer Science Learning in Middle School<br><i>Shuchi Grover, Stanford University/SRI International</i><br><i>Roy Pea, Stanford University</i><br><i>Stephen Cooper, Stanford University</i>   |
| 9:35 AM | "What Is A Computer?" What do Secondary School Students Think?<br><i>Shuchi Grover, SRI International</i><br><i>Daisy Rutstein, SRI International</i><br><i>Eric Snow, SRI Interntaional</i>   |

Papers: Games (room: Cotton Row)	Sat 8:45 AM - 10:00 AM
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| 8:45 AM | A Multidisciplinary, Multifaceted Approach to Improve the Computer Science based Game Design Education: Methodology and Assessment<br><i>Chang Yun, University of Houston</i><br><i>Hesam Panahi, University of Houston</i><br><i>Zhigang Deng, University of Houston</i> |
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- 9:10 AM      Design Insights into the Creation and Evaluation of a Computer Science Educational Game  
*Britton Horn, Northeastern University*  
*Christopher Clark, Northeastern University*  
*Oskar Strom, Northeastern University*  
*Hilery Chao, Brown University*  
*Amy Stahl, Northeastern University*  
*Casper Hartevelt, Northeastern University*  
*Gillian Smith, Northeastern University*
- 9:35 AM      Experiences from an Experiential Learning Course on Games Development  
*Stephan Krusche, Technische Universität München*  
*Barbara Reichart, Technische Universität München*  
*Paul Tolstoi, Technische Universität München*  
*Bernd Bruegge, Technische Universität München*

**Student Research Competition****Thu 8:45 AM - 10:00 AM**

Undergraduate Semi-finalist Presentations (room: L8)

Graduate Semi-finalist Presentations (room: L9)

**Special Session (room: Steamboat)****Sat 8:45 AM - 10:00 AM****Nifty Assignments**

*Nick Parlante, Stanford University*  
*Julie Zelenski, Stanford University*  
*Kevin Wayne, Princeton University*  
*John DeNero, University of California, Berkeley*  
*Baker Franke, Code.org*  
*Arvind Bhusnurmath, University of Pennsylvania*  
*Karen Her, University of Pennsylvania*  
*Kristen Gee, University of Pennsylvania*  
*Eric Manley, Drake University*  
*Timothy Urness, Drake University*  
*Marvin Zhang, University of California, Berkeley*

**Supporter Session (room: River Bluff)****Sat 8:45 AM - 10:00 AM**

Gradescope Supporter Session - Build an Autograder in 45 Minutes

**Supporter Session (room: Sultana)****Sat 8:45 AM - 10:00 AM**

GitHub Supporter Session - Classroom for GitHub: A Tool Designed for Educators

**SATURDAY 10:00 AM - 10:45 AM**  
**Break, Exhibits & Demos****Demos (room: Exhibit Hall)****Sat 10:00 AM - 10:45 AM**

Bringing Real-World Data And Visualizations Into Data Structures Courses Using BRIDGES

*Kalpathi Subramanian, The University of North Carolina at Charlotte**Jamie Payton, The University of North Carolina at Charlotte**David Burlinson, The University of North Carolina at Charlotte**Mihai Mehedint, The University of North Carolina at Charlotte*

ParseIT: A Tool for Teaching Parsing Techniques

*Amey Karkare, IIT Kanpur**Nimisha Agarwal, IIT Kanpur***NSF Showcase (room: Exhibit Hall)****Sat 10:00 AM - 11:30 AM**

Bringing a Rigorous CS Principles Course to the Largest School System in the U.S.

*Dan Garcia, UC Berkeley**Brian Harvey, UC Berkeley**Tiffany Barnes, NC State**June Mark, EDC**E. Paul Goldenberg, EDC*

Patternlets and TSGL: CSinParallel Tools for Visualizing Parallel Behavior

*Joel C. Adams, Calvin College**Richard Brown, St. Olaf College**Elizabeth Shoop, Mcalester College*

Computing in the Arts: Multidisciplinary I

*Susan Reiser, UNC Asheville**Rebecca Bruce, UNC Asheville*Collaborative Project: Building Virtual Research, Interactive, Service, and Experiential Learning  
Modules for Cyber Security Education*Feng Li, Purdue*

**SATURDAY 10:45 AM - 12:00 PM****Papers: Security (room: L11-L12)****Sat 10:45 AM - 12:00 PM**

- 10:45 AM      Facilitating a Battle Between Hackers: Computer Security Outside of the Classroom  
*Nathan Backman, Buena Vista University*
- 11:10 AM      A Reflective Approach to Assessing Student Performance in Cybersecurity Exercises  
*Richard Weiss, The Evergreen State College*  
*Michael Locasto, University of Calgary*  
*Jens Mache, Lewis and Clark College*
- 11:35 AM      The Teaching Privacy Curriculum  
*Serge Egelman, International Computer Science Institute*  
*Julia Bernd, International Computer Science Institute*  
*Gerald Friedland, International Computer Science Institute*  
*Daniel Garcia, University of California, Berkeley*

**Papers: Alternative Learning Experiences (room: L13-L14)****Sat 10:45 AM - 12:00 PM**

- 10:45 AM      A Programming Contest Strategy Guide  
*Aaron Bloomfield, University of Virginia*  
*Borja Sotomayor, University of Chicago*
- 11:10 AM      Teaching "Lawfulness" With Kodu  
*David Touretzky, Carnegie Mellon University*  
*Christina Gardner-McCune, University of Florida*  
*Ashish Aggarwal, University of Florida*
- 11:35 AM      Datathons: An Experience Report of Data Hackathons for Data Science Education  
*Craig Anslow, Middlesex University*  
*John Brosz, University of Calgary*  
*Frank Maurer, University of Calgary*  
*Mike Boyes, University of Calgary*

**Papers: CS Ed Research 3 (room: L5-L6)****Sat 10:45 AM - 12:00 PM**

- 10:45 AM      Retention of Flow: Evaluating a Computer Science Education Week Activity  
*Alexander Repenning, School of Education FHNW*  
*Ashok Basawapatna, SUNY Old Westbury*  
*Dorit Assaf, School of Education FHNW*  
*Carmine Maiello, School of Education FHNW*  
*Nora Escherle, School of Education FHNW*

- 11:10 AM      Students' Initial Course Motivation and Their Achievement and Retention in College CS1 Courses  
*Duane F. Shell, University of Nebraska-Lincoln*  
*Leen-Kiat Soh, University of Nebraska-Lincoln*  
*Abraham Flanigan, University of Nebraska-Lincoln*  
*Markeya Peteranetz, University of Nebraska-Lincoln*
- 11:35 AM      Towards a Common Framework for Evaluating Computing Outreach Activities  
*Adrienne Decker, Rochester Institute of Technology*  
*Monica M. McGill, Bradley University*  
*Amber Settle, DePaul University*

Papers: K-12 Teaching (room: L2-L3)	Sat 10:45 AM - 12:00 PM
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- 10:45 AM      CS Teacher Experiences with Educational Technology, Problem-Based Learning, and a CS Principles Curriculum  
*George Veletsianos, Royal Roads University*  
*Bradley Beth, The University of Texas at Austin*  
*Calvin Lin, The University of Texas at Austin*
- 11:10 AM      Contextualized Teaching in the Lower Secondary Education \* Long-term Evaluation of a CS Course from Grade 6 to 10  
*Arno Pasternak, TU Dortmund*
- 11:35 AM      Landscape of K-12 Computer Science Education in the U.S.: Perceptions, Access, and Barriers  
*Jennifer Wang, Google, Inc.*  
*Hai Hong, Google, Inc.*  
*Jason Ravitz, Google, Inc.*  
*Sepehr Moghadam, Google, Inc.*

Papers: Tools (room: Cotton Row)	Sat 10:45 AM - 12:00 PM
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- 10:45 AM      Supporting Active Learning by Introducing an Interactive Teaching Tool in a Data Structures and Algorithms Course  
*Tommy Färnqvist, Linköping University*  
*Fredrik Heintz, Linköping University*  
*Patrick Lambrix, Linköping University*  
*Linda Mannila, Åbo Akademi University*  
*Chunyan Wang, Linköping University*



- 11:10 AM      Incorporating Analogies and Worked Out Examples as Pedagogical Strategies in a Computer Science Tutoring System  
*Rachel Harsley, University of Illinois at Chicago*  
*Nick Green, University of Illinois at Chicago*  
*Mehrdad Alizedah, University of Illinois at Chicago*  
*Sabita Acharya, University of Illinois at Chicago*  
*Davide Fossati, Carnegie Mellon University in Qatar*  
*Barbara Di Eugenio, University of Illinois at Chicago*  
*Omar AlZoubi, Carnegie Mellon University in Qatar*
- 11:35 AM      SEURAT\_Edu: A Tool to Assist and Assess Student Decision-Making in Design  
*John Malloy, Miami University*  
*Janet Burge, Wesleyan University*

**Special Session (room: Steamboat)****Sat 10:45 AM - 12:00 PM**

Advanced Placement Computer Science Principles (APCSP): A Report from Teachers  
*Owen Astrachan, Duke University*  
*R. Brook Osborne, Code.org*

**Special Session (room: Mississippi)****Sat 10:45 AM - 12:00 PM**

Special Session: Helping Students to Develop Communication, Teamwork, and Other Process Skills with POGIL  
*Clifton Kussmaul, Muhlenberg College*  
*Helen Hu, Westminster College*  
*Tammy Pirmann, School District of Springfield Township*

**Supporter Session (room: River Bluff)****Sat 10:45 AM - 12:00 PM**

ZyBooks Supporter Session - Improving CS Teaching

**SATURDAY 12:00 PM - 2:00 PM****Luncheon - Karen Lee Ashcraft - University of Colorado Boulder**

**SATURDAY 3:00 PM - 6:00 PM**  
**Workshops**

Workshop #401: JavaScript Applications for CS0/CS1: Getting Hands-on with Code.org's App Lab (room: L1)

*Baker Franke, Code.org*

*Sarah Filman, Code.org*

*Brook Osborne, Code.org*

Workshop #402: Programming Web Services on the Cloud with Node.js (room: L2-L3)

*Ariel Ortiz, Tecnologico de Monterrey, Campus Estado de Mexico*

Workshop #403: Teaching Robotics Using ROS (room: L5-L6)

*Nathan Sprague, James Madison University*

*Ralph Grove, James Madison University*

Workshop #405: Advanced Placement Computer Science Principles Performance Task: Create – Applications from Ideas, Approaches to Programming Collaboratively. It's a Hackathon Workshop! (room: L9)

*Lien Diaz, College Board*

*Richard Kick, Newbury Park High School*

*Andrew Kuemmel, Madison West High School*

Workshop #406: Scaling up for CS10K: Teaching and Supporting New Computer Science High School Teachers (room: L10)

*Tiffany Barnes, North Carolina State University*

*Jamie Payton, University of North Carolina at Charlotte*

*Daniel Garcia, University of California and Berkeley*

Workshop #407: App Development for All! (room: L11-L12)

*David Hayes, Lane Tech College Prep High School (Chicago Public Schools)*

*Dale Reed, University of Illinois at Chicago*

Workshop #408: Mixing Code and 3D Printers with Madeup (room: L13-L14)

*Chris Johnson, University of Wisconsin, Eau Claire*

*Heather Amthauer, University of Wisconsin, Eau Claire*

*Ryan Hardt, University of Wisconsin, Eau Claire*

*Peter Bui, University of Notre Dame*

Workshop #409: Infusing Cooperative Learning into Early Computer Science Courses to Support Improved Engagement (room: River Bluff)

*Fran Trees, Rutgers University*

*Jeff Gray, University of Alabama*

*Owen Astrachan, Duke University*

Workshop #410: Solving the Cloud Computing Impasse with MBaaS (room: Sultana)

*Michael Rogers, Northwest Missouri State University*

*Bill Siever, Western Illinois University*

Workshop #411: Reviewing NSF Proposals: Learn about Effective Proposal Writing via the Review Process (room: Mississippi)

*Paul Tymann, The National Science Foundation*

*Michael Erlinger, The National Science Foundation*

Workshop #412: Transition to Java Using Alice 3 (room: Cotton Row)

*Donald Slater, Alice Project, Carnegie Mellon University*

*Wanda Dann, Alice Project, Carnegie Mellon University*