

# CCSCNE 2020 *Final Program*

The Consortium for Computing Sciences in Colleges

In cooperation with



The Twenty-Fifth Annual  
Consortium For Computing Sciences in Colleges  
Northeastern Conference  
April 17 - April 18, 2020 at

Ramapo College of New Jersey

Mahwah, New Jersey

## CCSCNE 2020 Pandemic Cancellation

CCSCNE 2020 was unable to be held as planned at Ramapo College. It was just one of many events that had to be cancelled due to the global COVID-19 pandemic. This document represents our plans for the conference at the time when it became clear we would not be able to gather in person this year. It would have been distributed in hard copy to all attendees. All presentations of accepted submissions, vendor presentations, plenary sessions, and other events, are listed in what would have been their time slots. Some information, such as session chair and room assignments, were never finalized, so remain here as “TBD”. As usual, undergraduate student posters are listed in a separate booklet, also available on the conference web site.

All accepted papers and the abstracts for faculty posters, panels, tutorials, lightning talks, and workshops, are published as planned in *The Journal of Computing Sciences in Colleges*, Vol. 35, No. 8, available on the CCSC web site and in the ACM Digital Library. In addition, authors were given the opportunity to submit links to videos of their planned talks or PDFs of their posters. Those are available on the CCSCNE 2020 web site. It is our intent to offer all authors of accepted submissions the opportunity to present their work in person at CCSCNE 2021. We hope to see you then!

I would like to offer thanks here, as I would have expressed at the banquet, to all of our regional board members, the CCSCNE 2020 conference committee, and the reviewers whose volunteer service make CCSCNE so successful every year. And of course to the authors, whose submissions form the core of our conference.

Jim Teresco, Siena College  
CCSCNE 2020 Program Chair

## CCSCNE 2020 Chair's Welcome

Welcome to Ramapo College of New Jersey. This is the Twenty Fifth Annual Consortium for Computing Sciences in Colleges Northeast Region Conference. We'd like to thank everyone who has been involved with this conference since its inception at the University of Hartford in April 1996.

This year our program features two outstanding invited speakers, Alberto Cairo, University of Miami and Julia Stoyanovich of New York University. A variety of topics will be covered by the paper presentations, workshops, panels, tutorials, lightning talks, and faculty and student research posters. On Friday morning, April 17<sup>th</sup>, we will host a student programming contest. Also, on Friday afternoon there is a student "unconference".

A special thanks goes out to the many volunteers who have worked on our conference, this includes the conference committee, the CCSCNE board, and the conference reviewers. You will find their names listed below. Out of 33 paper submissions, 21 were accepted for an acceptance rate of 63%.

We are pleased to host this anniversary conference on the lovely campus of Ramapo College of New Jersey in northern Bergen County. Ramapo will celebrate its 50<sup>th</sup> anniversary this April. The College has 5600 undergraduates and 600 graduate students.

We hope that you enjoy the conference and find it informative and engaging. We look forward to seeing you in 2021 at Pace University in Pleasantville, NY.

CCSCNE-2020 Conference Co-Chairs

*Lawrence D'Antonio*, Ramapo College of New Jersey

*Benjamin Fine*, Ramapo College of New Jersey

We would like to thank our CCSC National Partners

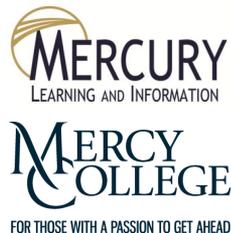
Platinum



Silver



Bronze



# Conference Committee

Conference co-Chair, **Larry D'Antonio**, Ramapo College of New Jersey  
Conference co-Chair, **Benjamin Fine**, Ramapo College of New Jersey  
Program Chair, **Jim Teresco**, Siena College  
Papers co-Chair, **Ali Erkan**, Ithaca College  
Papers co-Chair, **Yana Kortsarts**, Widener University  
Lightning Talks Chair, **Susan Imberman**, The City University of New York  
Panels Chair, **Joan DeBello**, St. John's University  
Tutorials and Workshops co-Chair, **Bonnie MacKellar**, St. John's University  
Tutorials and Workshops co-Chair, **Ting Liu**, Siena College  
Faculty Posters Chair, **Daniel Rogers**, The College at Brockport  
Speakers co-Chair, **Ingrid Russell**, University of Hartford  
Speakers co-Chair, **Mike Gousie**, Wheaton College (Massachusetts)  
Student Unconference co-Chair, **Karl Wurst**, Worcester State University  
Encore Chair, **Darren Lim**, Siena College  
Undergraduate Posters co-Chair, **Sandeep Mitra**, The College at Brockport  
Undergraduate Posters co-Chair, **Liberty Page**, University of New Haven  
Undergraduate Posters co-Chair, **Stefan Christov**, Quinnipiac University  
Undergraduate Posters co-Chair, **Aparna Mahadev**, Worcester State University  
Registration co-Chair, **Mark Hoffman**, Quinnipiac University  
Registration co-Chair, **Rick Kline**, Pace University  
Programming Contest co-Chair, **Frank Ford**, Providence College  
Programming Contest co-Chair, **Del Hart**, SUNY Plattsburgh  
Programming Contest co-Chair, **Sourav Dutta**, Ramapo College of New Jersey  
Career Fair Coordinator, **Scott Frees**, Ramapo College of New Jersey  
Vendors Chair, **Kevin McCullen**, SUNY Plattsburgh

# **The Student Unconference, For Students by Students**

Do you want to ...

- Discuss the programming contest problems and solutions?
- Demo your new favorite tool or programming language?
- Learn about new tools or programming languages?
- Discuss job interview questions?
- Talk about your favorite games?
- Present on a topic you are passionate about?

**See Sessions 1D and 2D**

# CCSCNE 2020 Conference Program

## Friday, April 17

Registration (7:30 AM - 4:00 PM) TBD

Poster dropoff and setup (8:00 AM - Noon) TBD

### Programming Contest (7:45 - 12:45 PM)

7:45AM Continental Breakfast TBD

8:40AM Pre-contest Instructions TBD

9:00AM Contest TBD

12:00PM Lunch and contest discussion TBD

### Pre-conference Workshop (Friday, April 17, 9AM - Noon)

**Workshop 1** **TBD**

*Real-World Data, Interactive Games and Visualizations in Early CS Courses Using BRIDGES*

Kalpathi Subramanian, University of North Carolina at Charlotte

Erik Saule, University of North Carolina at Charlotte

Jamie Payton, Temple University

**Workshop 2** **TBD**

*How to Create, Host, and Successfully Run a High School Programming Contest*

Darren Lim, Siena College

Daniel DiTursi, Siena College

Robin Flatland, Siena College

Ira Goldstein, Siena College

James Matthews, Siena College

Scott Vandenberg, Siena College

Pauline White, Siena College

**Welcome Address (1:00 PM - 1:15 PM)**

**TBD**

Welcome to Ramapo College of New Jersey, TBD

**Invited Speaker (1:15 PM - 2:15 PM)**

**TBD**

*Dr. Alberto Cairo, The University of Miami*

***What You Design Is Not What People See—How Visualizations Mislead Us and How They Can Tell the Truth Instead***

Visualizations such as charts, maps, and infographics are ubiquitous nowadays. They are useful because they can reveal patterns and trends in data. Good visualizations make us smarter—if we know how to read them. However, visualizations can also deceive us by displaying incomplete or inaccurate data, suggesting misleading patterns, and concealing uncertainty. They are also frequently misunderstood. Many of us are ill-equipped to interpret the visuals that politicians, journalists, advertisers, and even our employers present each day. We are in need of expanding the notion of literacy to include numeracy (numerical literacy) and graphicacy (graphical literacy).

**Break (2:15 PM - 2:30 PM)**

**Concurrent Session 1 (2:30 PM - 3:45 PM)**

**Concurrent Session 1A (Papers: AI and Data)**

**TBD**

Session Chair: TBD

*An Overview of Data Analytics: Spreadsheet Modeling, Visualization, and Supervised and Unsupervised Learning*

Carolyn Matheus, Marist College

*An Interdisciplinary Approach to Detecting Empathy Through Emotional Analytics and Eye Tracking*

Jami Cotler, Siena College

Luis Villa, Siena College

Zachary Bult, Siena College

Garrison Grant, Let's Chat About It  
Dmitry Burshteyn, Siena College  
Michael Tanski, dumbstruck.com  
Anthony Parente, dumbstruck.com

*Jupyter Notebooks in Place of a Textbook in a Big Data Course*  
Roland DePratti, Central Connecticut State University

**Concurrent Session 1B (Papers: Games, Plus Lightning Talk) TBD**  
Session Chair: TBD

*Simple Agent Analyses for CS1 using BritishSquare*  
Courtney Brown, Furman University  
Lori Alvin, Furman University  
John Harris, Furman University  
Chris Alvin, Furman University

*Using Gamification to Encourage Student Success*  
Patricia Morreale, Kean University  
Nohelia Diplan, Kean University

*Animated Hints Help Novices Complete More Levels in an Educational Programming Game*  
Michael Lee, New Jersey Institute of Technology  
Joseph Chiou, New Jersey Institute of Technology

*Want your students to participate in Open Source? Join us in LibreFoodPantry!*  
(Lightning talk, will run to 3:55 PM)  
Karl Wurst, Worcester State University  
Stoney Jackson, Western New England University  
Darci Burdge, Nassau Community College  
Lori Postner, Nassau Community College  
Heidi Ellis, Western New England University

**Concurrent Session 1C (Vendor Hands-on Workshop) TBD**

*Hands on with Cloud Computing*  
Wesley Chun, Google

Please see the details in the handout provided in your registration packet.

## **Concurrent Session 1D - Student Unconference**

2:30 - 3:00 PM Planning and voting on sessions. **TBD**  
*During this time, the group will collectively develop and vote on the six sessions for the Student Unconference.*

3:00 - 3:45 PM Session 1D-a **TBD**  
Session 1D-b **TBD**

## **Break (3:45 PM - 4:15 PM)**

## **Concurrent Session 2 (4:15 PM - 5:40 PM)**

### **Concurrent Session 2A (Papers: Course curriculum) TBD**

Session Chair: TBD

#### *Activity Based Learning for Cloud Computing*

Michalina Hendon, Bloomsburg University

Loreen Powell, Bloomsburg University

#### *Creation of a Virtual Machine for a Database Class*

Christine Reilly, Skidmore College

#### *Learning Assembly Language through Visual Simulation*

Kamen Kanev, Shizuoka University

Mokhtar Aboelaze, York University

Reneta Barneva, SUNY Fredonia

### **Concurrent Session 2B (Papers: Games and Algorithms) TBD**

Session Chair: TBD

#### *(Re)Engaging Novice Online Learners in an Educational Programming Game*

Michael Lee, New Jersey Institute of Technology

*Dealing with Uncertainty: a PiecewiseGrid Agent for Reconnaissance Blind Chess*

Timothy Highley, La Salle University  
Brendan Funk, La Salle University  
Laureen Okin, La Salle University

*Real-World Assignments at Scale to Reinforce the Importance of Algorithms and Complexity*

Jason Strahler, The University of North Carolina at Charlotte  
Matthew McQuaigue, The University of North Carolina at Charlotte  
Alec Goncharow, The University of North Carolina at Charlotte  
David Burlinson, The University of North Carolina at Charlotte  
Kalpathi Subramanian, The University of North Carolina at Charlotte  
Erik Saule, The University of North Carolina at Charlotte  
Jamie Payton, Temple University

**Concurrent Session 2C (Tutorial)**

**TBD**

Session Chair: TBD

*Using Subgoal Labeling in Teaching Introductory Programming*

Adrienne Decker, University at Buffalo  
Briana Morrison, University of Nebraska at Omaha  
Lauren Margulieux, Georgia State University

**Concurrent Session 2D - Student Unconference**

4:15 - 4:45 PM	Session 2D-a	<b>TBD</b>
	Session 2D-b	<b>TBD</b>
4:45 - 5:15 PM	Session 2D-c	<b>TBD</b>
	Session 2D-d	<b>TBD</b>

**Poster Session (5:45 PM - 7:00 PM)**

**Faculty Posters**

**TBD**

Please see the list of faculty poster titles and authors on Page 18.

**Student Posters****TBD**

Please see the list of undergraduate student poster titles, authors, and abstracts in the separate poster abstract booklet.

**Dinner Banquet and Awards (7:15 PM - 9:15 PM)****TBD**

# Saturday, April 18

Registration (7:30 AM - 10:00 AM) TBD

Continental Breakfast (8:00 AM - 9:00 AM) TBD

## Concurrent Session 3 (9:00 AM - 10:15 AM)

Concurrent Session 3A (Papers: First Year) TBD

Session Chair: TBD

### *Teaching Database for Freshmen: A Two-Thread Model*

Yang Wang, La Salle University  
Margaret McCoey, La Salle University  
Thomas Blum, La Salle University

### *Integrative Learning in CS1: Programming, Sustainability, and Reflective Writing*

Jeffrey Stone, The Pennsylvania State University  
Laura Cruz, The Pennsylvania State University

### *Cohorting Incoming Students in a CS1 Course: Experiences and Reflections from the First Year of Implementation*

Adrienne Decker, University at Buffalo  
Christopher Egert, Rochester Institute of Technology  
Erin Cascioli, Rochester Institute of Technology

Concurrent Session 3B (Papers: Meta-learning) TBD

Session Chair: TBD

### *Experiential Learning Framework for Smaller Computer Science Programs*

Zachary Kissel, Merrimack College  
Christopher Stuetzle, Merrimack College

### *Workforce and Career Readiness for Computing and Technology Students*

Jean Chu, Kean University

Patricia Morreale, Kean University  
Mike Press, techdata.com

*Cooperative Learning in Computer Science: Jigsaw Activity.*

Anastasia Kurdia, Tulane University

**Concurrent Session 3C (Tutorial)**

**TBD**

Session Chair: TBD

*From Drawing to Coding: Teaching Programming with Processing*

Mihaela Malita, St. Anselm College

Ethel Schuster, Northern Essex Community College

**Concurrent Session 3D (Panel)**

**TBD**

*Strategies for Maximizing the Value of Industry Adjuncts: The Tech-in-Residence Corps Model*

Robert Domanski, NYC Tech Talent Pipeline

Susan Imberman, City University of New York

Shermane Austin, Medgar Evers College CUNY

Ross Dakin, New Jersey Office of Innovation

**Invited Speaker (10:15 AM - 11:15 AM)**

**TBD**

***Dr. Julia Stoyanovich, New York University***

***Teaching Responsible Data Science: A Quest for Balance***

Dr. Stoyanovich will discuss her experience in developing and teaching a "Responsible Data Science" course at New York University. Although numerous technology ethics courses are available, pedagogical approaches employed in these courses rely exclusively on texts rather than on software development or data analysis. Technical students often consider these courses unimportant and a distraction from the "real" material. To develop instructional materials and methodologies that are thoughtful and engaging, we must strive for balance: between texts and coding, between critique and solution, and between cutting-edge research and practical applicability. Finding such balance is particularly difficult in the nascent field of responsible data science, where we

are only starting to understand how to interface between the intrinsically different methodologies of engineering and social sciences. All "Responsible Data Science" course materials are publicly available on the course website.

## **Concurrent Session 4 (11:30 AM - 12:45 PM)**

### **Concurrent Session 4A (Papers: Tools and Techniques)**

**TBD**

Session Chair: TBD

*Project-Based App Programming: Tools and Techniques for a Successful Novice-Focused App Development Course*

Michael Makutonin, Saint Bonaventure University

Samuel Chen, Upstate Medical University

*Automatic Programming Assignment Assessment Beyond Black-box Testing*

Karen Jin, University of New Hampshire

Michel Charpentie, University of New Hampshire

*Oh the Robots that You can Choose: A Technical Review of Mobile Robot Platforms*

Benjamin Fine, Ramapo College of New Jersey

Jory Denny, University of Richmond

Nate Dix, University of Richmond

Ashley Frazier, University of Richmond

### **Concurrent Session 4B (Tutorial)**

**TBD**

Session Chair: TBD

*Tutorial on Open Educational Resources and Creative Commons License*

Susan Imberman, City University of New York

Ann Fiddler, City University of New York

### **Concurrent Session 4C (Panel)**

**TBD**

*Bringing Industry into the University Experience*

Adrienne Decker, University at Buffalo

Peter DePasquale, New York University  
Rajendra K Raj, Rochester Institute of Technology  
Matt Jadud, Applied Research in Acoustics

**Concurrent Session 4D (Vendor Presentation)**

**TBD**

*Cloud Computing and Google Cloud Overview*  
Wesley Chun, Google

Please see the details in the handout provided in your registration packet.

**Post-Conference Meetings**

**Membership Meeting (1:15 PM - 1:45 PM)**

**TBD**

All are invited to share your thoughts about CCSCNE.

**Board Meeting (1:45 PM - 3:45 PM)**

**TBD**

## The Keynote Speakers

### ***Dr. Alberto Cairo, The University of Miami***

Alberto Cairo is a journalist and designer, and the Knight Chair in Visual Journalism at the School of Communication of the University of Miami (UM). He is also the director of the visualization program at UM's Center for Computational Science. He has been head of information graphics at media publications in Spain and Brazil.

The author of several textbooks, Cairo currently consults with companies and institutions like Google and the Congressional Budget Office, and has provided visualization training to the European Union, Eurostat, the Centers for Disease Control and Prevention, the Army National Guard, and many others. He lives in Miami, Florida.

### ***Dr. Julia Stoyanovich, New York University***

Julia Stoyanovich is an Assistant Professor in the Department of Computer Science and Engineering at the Tandon School of Engineering, and the Center for Data Science, New York University.

Her research focuses on responsible data management and analysis practices: on operationalizing fairness, diversity, transparency, and data protection in all stages of the data acquisition and processing lifecycle. She established the Data, Responsibly consortium, and serves on the New York City Automated Decision Systems Task Force (by appointment by Mayor de Blasio). In addition to data ethics, she works on management and analysis of preference data, and on querying large evolving graphs. Dr. Stoyanovich received her M.S. and Ph.D. degrees in Computer Science from Columbia University, and a B.S. in Computer Science and in Mathematics and Statistics from the University of Massachusetts at Amherst.

## Faculty Posters

Abstracts are included in the conference proceedings JCSC issue.

### *Integrating Cloud Computing across existing Computer and Information Science Courses*

Ruth Kurniawati, Westfield State University

### *The Low-Budget Experimental Computer Lab Boosts Students' Research*

Vladimir Riabov, Rivier University

David Pitts, Rivier University

### *Integrating Personalized Online Practice Into an Introductory Programming Course*

Yana Kortsarts, Widener University

Kamil Akhuseyinoglu, University of Pittsburgh

Jordan Barria-Pineda, University of Pittsburgh

Peter Brusilovsky, University of Pittsburgh

### *Becoming Lifelong Learners: CS Learners' Autonomy*

Ruiqi Shen, New Jersey Institute of Technology

Joseph Chiou, New Jersey Institute of Technology

Michael J. Lee, New Jersey Institute of Technology

### *Jupyter Notebooks in Education*

Jeremiah Johnson, University of New Hampshire

Karen Jin, University of New Hampshire

### *End-to-End Machine Learning Project Design for Undergraduate Classrooms*

Karen Jin, University of New Hampshire

### *Applying Three Machine Learning Algorithms to Three Breast Cancer Diagnosis Datasets*

Lilly Shelomyanov, Felician University

Sofya Poger, Felician University

*Differentiating Computer Science Courses in Undergraduate and Graduate Level*

Songmei Yu, Felician University  
Sofya Poger, Felician University

*Capstone: Transitioning a Successful Undergraduate Research Program to a Multi-Research Model*

Michael Jonas, University of New Hampshire at Manchester

*What Makes Students' Capstone Projects Successful?*

Vladimir Riabov, Rivier University

*Assessment of Computer Science Courses in the Context of a Global Knowledge Economy*

Viktoria Popova, Felician University  
Sofya Poger, Felician University

*Integrating Industry Certifications into Academic Curriculum*

Paul-Marie Moulema Douala, Western New England University  
Sriharsha Mallapuram, Plymouth State University

*LibreFoodPantry: Developing a Multi-Institutional, Faculty-Led, Humanitarian Free and Open Source Software Community*

Karl Wurst, Worcester State University  
Stoney Jackson, Western New England University  
Heidi Ellis, Western New England University  
Darci Burdge, Nassau Community College  
Lori Postner, Nassau Community College

*Student Reflections on Learning in HFOSS*

Gregory Hislop, Drexel University  
Heidi Ellis, Western New England University  
Becka Morgan, Western Oregon University

*Comparing Methods of Python Education*

Kevin McCullen, SUNY Plattsburgh

## **We would like to thank our reviewers**

Chris Alvin, Furman University  
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Mary Courtney, Pace University  
Lawrence D'Antonio, Ramapo College of New Jersey  
Garrett Dancik, Eastern Connecticut State University  
Elise Deitrick, Codio  
Dan DiTursi, Siena College  
Peter Drexel, Plymouth State University  
Benjamin Fine, Ramapo College of New Jersey  
Alice Fischer, University of New Haven  
Robin Flatland, Siena College  
Timothy Fossum, Rochester Institute of Technology  
Seth Freeman, Capital Community College  
Martin Gagne, Wheaton College  
Alessio Gaspar, University of South Florida Polytechnic  
Micheal Gousie, Wheaton College  
Nadeem Hamid, Berry College  
Scott Harrison, St. John Fisher College  
Delbert Hart, SUNY Plattsburgh  
Michalina Hendon, Bloomsburg University  
Mark Hoffman, Quinnipiac University  
Karen Jin, University of New Hampshire  
William Joel, Graphics Research Group/WCSU  
Erin Johnson, CodeCrew  
Jeremiah Johnson, University of New Hampshire  
Sotirios Kentros, Salem State University  
Bo Kim, Southern New Hampshire University  
Zach Kissel, Merrimack College  
Bradley Kjell, Central Connecticut State University  
Devorah Kletenik, City University of New York  
Daniel Krutz, Rochester Institute of Technology  
David Levine, St. Bonaventure University  
Jingsai Liang, Westminster College

Yi Liu, University of Massachusetts Dartmouth  
Mihaela Malita, Saint Anselm College  
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Daniel Rogers, The College at Brockport  
Nicholas Rosasco, Valparaiso University  
Christopher Stuetzle, Merrimack College  
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Songmei Yu, Felician University  
Junxiu Zhou, Northern Kentucky University