

CCSCNE 2021 Program

The Consortium for Computing Sciences in Colleges

In cooperation with



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The Twenty-Fifth Annual
Consortium For Computing Sciences in Colleges
Northeastern Conference
April 16 - April 17, 2021 hosted virtually by
Ramapo College of New Jersey
Mahwah, New Jersey

CCSCNE 2021 Chair's Welcome

Welcome to the Twenty Fifth Annual Consortium for Computing Sciences in Colleges Northeast Region Conference. This year's conference is being held virtually. 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 an outstanding invited speaker, 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.

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.

The past year has been a rough time for all of us. The 2020 conference had to be cancelled. For this year's conference, out of 12 paper submissions, 7 were accepted for an acceptance rate of 58.3%.

We hope that you enjoy the conference and find it informative and engaging. We look forward to seeing you in 2022 at Pace University in Pleasantville, NY.

CCSCNE-2021 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

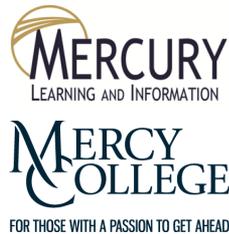
Platinum



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**, SUNY 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**, SUNY 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
Vendors Chair, **Kevin McCullen**, SUNY Plattsburgh

Due to this year's virtual format, the Student Unconference, Encores, and Programming Contest were not ultimately included as part of the conference.

CCSCNE 2021 Conference Program

About our virtual format: The entire conference was run through a single Zoom meeting with breakout rooms. The welcome address, invited speaker, awards announcement, and membership meeting used the main room. For concurrent sessions, participants joined breakout rooms. Plus several social rooms serves as our "hallways" for socialization. For poster sessions, each poster was in its own breakout room. Attendees were able to move among breakout rooms. Of course, we would all have preferred to meet in person. We hope that this virtual conference format still provided an interesting, engaging, informative, and enjoyable experience.

The conference proceedings will appear in the ACM Digital Library as an issue of the Journal of Computing Sciences in Colleges. Until that process is complete, you can find full papers and abstracts for submissions in other formats [here](#).

Friday, April 16

Pre-conference Workshops (9:30 AM - 12:30 PM)

Workshop 1

Turing Ballroom Breakout Room

Building and hacking an exploitable WiFi environment for your classroom – even for remote participants

Ahmed Ibrahim, University of Pittsburgh

Workshop 2

Hopper Auditorium Breakout Room

How to Create, Host, and Successfully Run a High School Programming Contest (2020 Workshop Submission)

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

NSF Mini Workshop**von Neumann Lodge Breakout Room**

Paul Tymann, National Science Foundation

9:30 AM -11:00 AM: *NSF Merit Review System and Grant Writing*

What is the NSF merit review process and what does it take to ensure that reviewers find merit in your NSF proposal? Join me for an inside look as we analyze the NSF proposal process from solicitation to award or decline. Learn to identify key components and address intellectual merit and broader impact. This session leads participants through each component by introducing related issues, engaging participants in group exercises designed to explore and share their understanding of the issues and providing guidance on these issues. Approaches for volunteering to review and the elements of a good review are covered, along with resources, Helpful Hints and Fatal Flaws.

Welcome to CCSCNE (1:00 PM - 1:15 PM) Main Zoom Meeting

Larry D'Antonio, CCSCNE 2021 Co-chair, Ramapo College of New Jersey

Invited Speaker (1:15 PM - 2:15 PM) Main Zoom Meeting

Session chair: Michael Gousie, CCSCNE 2021 Speakers Co-Chair

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.

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

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

Concurrent Session 1A (Papers)

Turing Ballroom Breakout Room

Session Chair: Ali Erkan

vWaterLabs: A Virtual Testbed for Industrial Control Systems Cybersecurity Education

Stuart Steiner, Eastern Washington University

Matthew J. Kirkland, University of Idaho

Daniel Conte de Leon, University of Idaho

Game On: Teaching Cybersecurity to Novices Through the Use of a Serious Game

Devorah Kletenik, Brooklyn College, City University of New York

A Web-Based Toolkit for Exploring Cryptography

Mikel Gjergji, University of Rhode Island

Edmund Lamagna, University of Rhode Island

Concurrent Session 1B (Panel)

Hopper Auditorium Breakout Room

Pedagogical Best Practices for Teaching Foundational Computer Science Courses in Alignment with Employer Technical Interviews

Robert Domanski, City of New York

Eva Sofianos, Lehman College (CUNY)

Steven Fulakeza, Lehman College (CUNY)

Nikolai Avteniev, Senior Staff Software Engineer at LinkedIn

Concurrent Session 1C (Tutorial) von Neumann Lodge Breakout Room

Supporting Computing Accessibility Education Using Experiential Learning Labs

Saad Khan, Rochester Institute of Technology

Samuel Malachowsky, Rochester Institute of Technology

Daniel Krutz, Rochester Institute of Technology

Concurrent Session 1D (Vendor Session)

Google Breakout Room

Programming with the Cloud

Laurie White, Google

While there's a lot to learn about cloud computing, the cloud can also be used in classes as fundamental as programming courses with little change to the material being taught. The cloud can provide a uniform programming environment for students regardless of the computers they use to access it remotely. It can provide computing resources beyond what some students may have on their own computers. And there are even some cloud services that can be used to make even the simplest programming assignments more interesting.

And yes, everything this workshop will include is available at no cost to regionally accredited colleges and universities in the US.

Concurrent Session 1E (Vendor Session)

zyBooks Breakout Room

Customizable Interactive Educational Material

Russ Miller, SUNY-Buffalo and zyBooks

We consider student performance and best-practices with zyBooks. We focus on customizing zyBooks textbooks, including reconfiguring the book to align with a syllabus, creating custom material (sections, chapters, paragraphs), monitoring student engagement and progress, providing programming assignments that are auto-graded, discourage plagiarism, utilize time-gated programming assignments, and more.

Dr. Russ Miller is a Distinguished Professor, Dept. of Comp. Sci. & Eng., SUNY-Buffalo, and a Consultant at zyBooks, A Wiley Brand.

Faculty Poster "Setup" (3:45-3:50)

Faculty Posters and Social Hour (3:50 PM - 4:35 PM)

Please see the list of faculty poster titles and authors, starting on Page 14. You can also browse posters that were submitted in advance by authors on the [conference website](#), under the "Faculty Posters" tab.

Undergraduate Poster "Setup" (4:35-4:45 PM)

Undergraduate Student Poster Session (4:45 PM - 5:45 PM)

Please see the list of undergraduate student poster titles and authors, starting on Page 16, and complete abstracts in the [separate poster abstract document](#). You can also browse the posters on the [conference website](#), under the "Student Posters" tab.

Friday Wrap Up and Awards Announcement (5:45 PM - 6:00 PM)

Saturday, April 17

Concurrent Session 2 (9:00 AM - 10:15 AM)

Concurrent Session 2A (Papers)

Turing Ballroom Breakout Room

Session Chair: Adita Kulkarni

Students' Consistency in Computational Modeling and Their Academic Success

Elena Izotova, University of Massachusetts Lowell

Jason Kiesling, University of Massachusetts Lowell

Fred Martin, University of Massachusetts Lowell

The Effects of Mixed Reality Immersion on Users' Performance and Perception of Multitasking While Performing Concurrent Real World Tasks

Sarah North, Kennesaw State University

Max North, Kennesaw State University

David Garofalo, Kennesaw State University

Durgesh Prajapati, Kennesaw State University

Real-World Assignments at Scale to Reinforce the Importance of Algorithms and Complexity (2020 paper)

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 2B (Tutorial) Hopper Auditorium Breakout Room

Short modules for introducing heterogeneous computing

David Bunde, Knox College

Apan Qasem, Texas State University

Philip Schielke, Concordia University Texas

Concurrent Session 2C (Tutorial) von Neumann Lodge Breakout Room

From Drawing to Coding: Teaching Programming with Processing (2020)

Mihaela Malita, St. Anselm College

Ethel Schuster, Northern Essex Community College

Break (10:15 AM - 10:30 AM)

Membership Meeting (10:30 AM - 11:00 AM) Main Zoom Meeting

All members (if you registered for this year's conference, you're a member) are welcome to join the regional board and conference committee to share your thoughts about CCSCNE and find out more about the organization.

Concurrent Session 3 (11:00 AM - 12:15 PM)

Concurrent Session 3A (Papers/Lightning Talk) Turing Ballroom Breakout Room

Session Chair: Susan Imberman

Introducing Programming using Previewing

Chris Alvin, Furman University

Short Courses in Computer Science

Chris Healy, Furman University

Andrea Tartaro, Furman University

Bryan Catron, Furman University

Want your students to participate in Open Source? Join us in LibreFoodPantry!
(2020 lightning talk)

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 3B (Tutorial) Hopper Auditorium Breakout Room

Computer Science and Robotics using Single Board Computers

Kevin McCullen, SUNY Plattsburgh
Michael Walters, SUNY Plattsburgh

Concurrent Session 3C (Papers/Lightning Talk) von Neumann Lodge Breakout Room

Session Chair: Yana Kortsarts

Dealing with Uncertainty: a PiecewiseGrid Agent for Reconnaissance Blind Chess
(2020 paper)

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

Student-made Online Discrete Math Drills (lightning talk)

Sebastian Joosten, Dartmouth College

Board Meeting (12:30 PM - 2:00 PM)

Main Zoom Meeting

The Keynote Speaker

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 for the 2020 or 2021 conferences, as appropriate. PDFs of the posters submitted by authors are available on the [conference website](#).

2021 Posters

COVID Data Analysis Applied to Computer Science Courses

Kehan Gao, Eastern Connecticut State University

Sarah Tasneem, Eastern Connecticut State University

Cybersecurity Virtual Summer Workshop For Secondary School Teachers: An Experience Report

Sarbani Banerjee, SUNY Buffalo State College

Neal Mazur, SUNY Buffalo State College

Exploring Direct Simulation Monte-Carlo Techniques for Science Applications

Vladimir Riabov, Rivier University

2020 Posters being presented

Integrating Cloud Computing across existing Computer and Information Science Courses

Ruth Kurniawati, Westfield State University

Jupyter Notebooks in Education

Jeremiah Johnson, University of New Hampshire

Karen Jin, University of New Hampshire

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

Undergraduate Student Posters

Abstracts are included in the separate abstract booklet for the 2020 or 2021 conferences, as appropriate. PDFs of the posters submitted by authors are available on the [conference website](#).

2021 Posters

Enabling Effective Visualization Creation in High School Teachers & Students
Matthew Spaulding, Rhode Island College

Developing a Control Room in Virtual Reality (VR) to Improve Underwater Remotely Operated Vehicle (ROV) Piloting
Amy Phung, Cameron Wierzbowski, Erika Lu, Everardo Gonzalez,
Nathan Shuster, Olin College of Engineering

Deep Learning API with Python
Salah Zahran, SUNY Buffalo State

Person Re-Identification: Tracking the World
Mac Johnson, SUNY Buffalo State

Vehicle Dash Cameras with Artificial Intelligence
Matthew M. Stranz, SUNY Buffalo State

Quick Browse
Pa Reh, SUNY Buffalo State

Traffic Light Control with Reinforcement Learning
Devanshi Malaviya, SUNY Buffalo State

Analyzing Communications on Twitter after a Year into the COVID-19 Pandemic
Matthew Morgan, SUNY Brockport

Comparison Performance Study of Round Robin Variations for CPU Scheduling
Joshua Marquis, Eastern Connecticut State University

A Ruff Day for a Dog Salon, a Way to Collect Data

Alexander Wagner, SUNY Buffalo State

What to Trust When Searching for Health-Related Symptoms on Google

Nina Sachdev, Wellesley College

Are those Ants?

Karanveer Gill, SUNY Buffalo State

Accessibility in the Classroom

Mark Sternefeld, Saad Khan, Heather Moses, Su Thit Thazin, Rochester Institute of Technology

Phorcys

Connor Blanchfield-Tomaszewski, Andrew Mahr, Jordan Zimmitti, Samuel Zurowski, University of New Haven

Differentially Private Machine Learning for Breast Cancer Classification

Melinda Goda, Concord University

Hyperpass - A Unified Password Manager

Myles Trevino, Wheaton College

New Haven Admissions Robot (NHAR)

Robert Boutillier, Meghan Cichon, Erica Maggiore, Marcus Novoa, Jacob Sanchez, University of New Haven

Smart Home Energy Services

Alex Socha, Andrew Demarco, Chris Dowd, Ehis Ekore, University of New Haven

aChord: Generating Chord Voicings for User-Defined String Instruments

Ben Bingham, Caleb Braddick, Jackson Reed, James Stratton, Wheaton College

Academic Support Seeking Behaviors Differ by Gender in Coding Bootcamps

Rachel Beaulieu, Simmons University

How to Train Your Data Scientist

Meghan VanSchalkwyk, Rhode Island College

2020 Posters

Rove Photo

Emma Theberge, Merrimack College

Applying mindfulness techniques to a smartphone app to manage screen time

Zoe Beals, Skidmore College

Improving Acronym Searches on PubMed

Kevin Williams, Eastern Connecticut State University

We would like to thank our reviewers

Chris Alvin, Furman University
Kailash Chandra, Pittsburg
Jami Cotler, Siena College
Lawrence D'Antonio, Ramapo College
Dan DiTursi, Siena College
Martin Gagne, Wheaton College
Alessio Gaspar, University of South Florida Polytechnic
Michael Gousie, Wheaton College (MA)
Scott Harrison, St. John Fisher College
Delbert Hart, SUNY Plattsburgh
Ahmed Ibrahim, University of Pittsburgh
William Joel, Graphics Research Group / WCSU
Jeremiah Johnson, University of New Hampshire
Zach Kissel, Merrimack College
Devorah Kletenik, City University of New York
Daniel Krutz, Rochester Institute of Technology
Ting Liu, Siena College
Sriharsha Mallapuram, Plymouth State University
Christopher Martinez, University of New Haven
Robert McCloskey, University of Scranton
Kevin McCullen, SUNY Plattsburgh
Pat Ormond, Utah Valley University
Greta Pangborn, Saint Michael's College
Sofya Poger, Felician University
Christine Reilly, Skidmore College
Daniel Rogers, SUNY Brockport
Tania Roy, New College of Florida
Christelle Scharff, Pace University
Gurmukh Singh, SUNY at Fredonia, NY
Marc Waldman, Manhattan College
Yang Wang, La Salle University