CCSCNE 2019

The Consortium for Computing Sciences in Colleges

In cooperation with

The Twenty-Fourth Annual
Consortium For Computing Sciences in Colleges
Northeastern Conference
April 12 - April 13, 2019 at

The University of New Haven
West Haven, Connecticut

Conference Locations

http://www.newhaven.edu/about/campus-locations/

Friday, April 12

University of New Haven
West Haven campus (also called the Main campus)

300 Boston Post Road
West Haven, CT 06516

Parking lot is at Boston Post Rd. (Rte. 1) and Hoffman St.

Saturday, April 13

University of New Haven
Orange Campus

584 Derby Milford Road
Orange, CT 06477

Please note: a bridge reconstruction project in this area affects travel for persons coming from I-95.

CCSCNE 2019 Chair's Welcome

Welcome to West Haven, Connecticut and the University of New Haven, for the Twenty-Fourth Annual Consortium for Computing Sciences in Colleges Northeast Region Conference. The conference is held in cooperation with the ACM SIGCSE and Upsilon Pi Epsilon Honor Society.

Our program features two distinguished invited speakers, Pete Wurman, Vice President of Engineering at Cogitai and Jia Chen, Offering Leader of Blockchain Solutions for Healthcare and Life Sciences at IBM's Innovation and Solution Incubation Team. The conference has a diverse and engaging program that includes paper presentations, lightning and encore talks, workshops, tutorials, and faculty and student research poster presentations. On Friday morning, we are hosting our traditional programming contest. On Friday afternoon, we have two student-focused sessions: a student "unconference" and a programming problems discussion session to allow participants and organizers of the programing contest to review and analyze problem solutions.

Our thanks go to a remarkable conference committee and highly invested board. Their inspiring and diligent work has ensured the success of this conference. We are also very fortunate to have worked with dedicated and thorough reviewers, enthusiastic session chairs, and outstanding student and staff volunteers at University of New Haven. The conference continues to be selective; we accepted 9 of 23 papers for an acceptance rate of 39%. This continues to ensure the high-quality program of a widely recognized regional conference.

We hope you find the conference informative and engaging, meet new colleagues, and get new ideas to contribute to computing education in Northeastern Region. If you are interested in volunteering for our conference, we encourage you to attend the CCSCNE Business Meeting on Saturday afternoon. We also look forward to seeing you next year at Ramapo College of New Jersey.

Alice Fischer, University of New Haven
Mark Hoffman, Quinnipiac University
Conference Co-chairs

We would like to thank our sponsors

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Conference Committee

Conference co-Chair, **Alice Fischer**, University of New Haven
Conference co-Chair, **Mark Hoffman**, Quinnipiac University
Program Chair, **Ed Harcourt**, St. Lawrence University
Papers co-Chair, **Ali Erkan,** Ithaca College
Papers co-Chair, **Yana Kortsarts**, Widener University
Panels Chair, **Susan Imberman,** The City University of New York
Lightning Talks 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
Student Unconference co-Chair, **Jacob Aguillard**, 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, **Jim Teresco,** Siena College
Undergraduate Posters co-Chair, **Aparna Mahadev,** Worcester State University
Registration co-Chair, **Mark Hoffman,** Quinnipiac University
Registration co-Chair, **Stefan Christov,** Quinnipiac University
Programming Contest co-Chair, **Frank Ford,** Providence College
Programming Contest co-Chair, **Del Hart**, SUNY Plattsburgh
Programming Contest co-Chair, **Benjamin Fine**, Ramapo College
Programming Contest co-Chair, **Christopher Martinez**, University of New Haven
Career Fair co-Coordinator, **Tim Chadwick,** University of New Hampshire
Vendors Chair, **Kevin McCullen,** SUNY Plattsburgh
K-12 Coordinator, **David Benedetto,** New Hampshire Department of Education

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 2C

CCSCNE 2019 Conference Program

Friday April 12 (Main Campus, West Haven)

Registration (7:30 AM - 4:00 PM) **Buckman 210**

Poster dropoff and setup (8:00 AM - Noon) **German Club**

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

7:45AM	Continental Breakfast	**Buckman 210**
8:40AM	Pre-contest Instructions	**Buckman 239**
9:00AM	Contest	**Buckman 226, 232, 239**
12:00PM	Lunch and contest discussion	**Buckman 210/Kaplan 109**

Pre-conference Workshop (Friday April 12, 9AM - Noon)

Workshop 1 **Buckman 307**

Low Code App Development

Meg Fryling, Siena College

~~**Workshop 2**~~ ~~**Lee College 102**~~

~~*NSF Proposal Writing*~~

~~Paul Tymann, The National Science Foundation and the Rochester Institute of technology~~ **~~(CANCELLED)~~**

Concurrent Session 1 (1:00PM - 2:15PM)

Concurrent Session 1A (Papers) **Kaplan 109**

Session Chair: Aparna Mahadev, Worcester State University

Teaching Neural Networks in the Deep Learning Era

Jeremiah Johnson, UNH at Manchester

Student Generation of an Optimal Decision Procedure using Guess Who?
Chris Alvin, Furman University

Demystifying Blockchain by Teaching It in Computer Science
Alan Labouseur, Marist College
Thomas Magnusson, Marist College
Matthew Johnson, Marist College

Concurrent Session 1B (Panel) **Kaplan 203**

Interdisciplinary Programs
Yana Kortsarts, Widener University
William Joel, Western Connecticut State University
Adam Fischbach, Widener University
Ting Liu, Siena College

Concurrent Session 1C (NSF Vendor) **Kaplan 202**
Session chair: Adrian Ionescu, Wagner College

Developing Educational Accessibility Labs for Computing Education
Dr Daniel Krutz, Rochester Institute of Technology

Collaborating Across Boundaries to Engage undergraduates in Computational Thinking
Dr. Monisha Pulimood, New Jersey Institute of Technology,

Concurrent Session 1D - Student Unconference

1:00-1:30pm Planning and voting on sessions. **Buckman 239**
During this time, the group will collectively develop and vote on the six sessions for the Student Unconference.

1:45-2:15pm Session 1D-a **Buckman 239**
Session 1D-b **Buckman 226**

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

Concurrent Session 2A (Papers) **Kaplan 203**

Session Chair: Del Hart, SUNY Plattsburgh

Top-10 Suggestions from a Decade of Managing Undergraduate Software Teams

Weiqi Feng, Wheaton College (Massachusetts)
Mark LeBlanc, Wheaton College (Massachusetts)

Applying Social Media Analysis to Real World Business Problems: A Course Project

Richard Shang, Long Island University (Brooklyn, NY)

Factors Influencing Women Entering the Software Development Field through Coding Bootcamps vs. Computer Science Bachelor's Degrees

Sherry Seibel, Simmons University
Nanette Veilleux, Simmons University

Concurrent Session 2B - Sponsor Tutorial **Kaplan 109**

Cloud Computing and Running your code on Google Cloud

Wesley Chun, Google

Concurrent Session 2C - Student Unconference

2:30-3:00pm	Session 2C-a	**Buckman 239**
	Session 2C-b	**Buckman 226**
3:15-3:45pm	Session 2C-c	**Buckman 239**
	Session 2C-d	**Buckman 226**

Break (3:45PM - 4:15PM) **German Club Ballroom**

Poster Session (4:15 PM - 5:30 PM)

Faculty Posters **German Club Stage**

Student Posters **German Club Ballroom**

Welcome Address (5:45 PM - 6:00PM) **Bucknall**

Welcome to the University of New Haven, Dr. Ali Golbazi

Invited Speaker (6:00PM - 7:00PM) **Bucknall Theater**

Dr. Pete Wurman, Vice-President of Engineering at Cogitai

How Kiva Robots Disrupted Warehousing

Kiva Systems introduced swarms of agile robots into an industry dominated by stationary conveyor systems. The path from concept through successful startup and eventual acquisition involved challenges on all fronts. In this talk I'll explain the business problem that motivated the innovation, Kiva technology and the benefits it brought to customers, and the future of applications of robotics in warehouses.

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

German Club Ballroom

Saturday, April 13 (Orange Campus, Orange CT)

Registration (7:30 AM - 10:00 AM) **Orange M 133**

Continental Breakfast (8:00 AM - 9:00 AM) **Atrium / M133**

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

Concurrent Session 3A (Tutorial) **Orange M 146**

Using NSFCloud Testbeds for Research

D. Cenk Erdil, Sacred Heart University

Concurrent Session 3B (Encore) **Orange Atrium**

Session Chair: Susan Imberman, College of Staten Island, CUNY

The Interpreter In An Undergraduate Compilers Course (An Encore Presentation from SIGCSE 2015)

John Lasseter, Hobart and William Smith Colleges

Map-based Algorithm Visualization with METAL Highway Data (An Encore Presentation from SIGCSE 2018)

Jim Teresco, Siena College

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

Dr. Jia Chen IBM Healthcare Solutions

Transform the Era of Health with Blockchain

Today's healthcare system faces several systemic challenges, including complex/inefficient processes, lack of interoperability, data silos, fraud and lack of transparency. Blockchain technology has the potential to bring industry wide transformation to the healthcare ecosystem by reducing costs and frictions, bringing more trust and transparency to multiparty transactions, and even unlocking new sources of revenue for various constituents. We'll discuss examples of leveraging blockchain technology to enhance the fluidity of healthcare information among key stakeholders, leveraging smart contract to reduce administrative costs for value based payment models, and the formation of an open network to drive digital transformation in the industry.

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

Concurrent Session 4A (Papers) **Orange M 146**

Session Chair: Mark Hoffman, Quinnipiac University

Introducing Students to Computer Science and Programming using Data Analytics

Jorge Silveyra, Muhlenberg College

Course Redesign to Improve Retention: Finding the Optimal Mix of Instructional Approaches

Sotirios Kentros, Manish Wadhwa, Komalpreet Kaur, Lakshmidevi Sreeramareddy, Marc Ebenfield, Allan Shwede
Salem State University

Puzzling Through Discrete Mathematics

Ed Lamagna, University of Rhode Island

Concurrent Session 4B (Lightning Talks) **Orange Atrium**

Session Chair: Karl Wurst, Worcester State University

Networking and Distributed Computing in One Course

Robert Montante, Bloomsburg University of Pennsylvania

Autism At Work: Creating Opportunities in Tech For Young Adults On The Spectrum

Darlene Bowman, City University of New York

Partnership with Industry Professionals in the Design of Computer Information Science Course

Nina Dini, Springfield College
Elham Mahdavy, ISO New England

A Web Based Block Language for Modeling Dynamic Data Structure Algorithms

Robert Ravenscroft, Rhode Island College

Curriculum design for Introduction to Data Informatics *(a new data-related undergraduate course at USC)*

Saty Raghavachary, University of Southern California

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

Board Meeting (1:45 PM - 3:45 PM) **Orange M 133**

The Keynote Speakers

Dr. Pete Wurman, Vice-President of Engineering at Cogitai

Pete Wurman is currently Vice-President of Engineering at Cogitai, an AI startup delivering reinforcement learning as a service. Pete is best known for his work as a technical co-founder of Kiva Systems, the Boston-based company that pioneered the use of mobile robotics in warehousing. In May of 2012, Kiva was acquired by Amazon, and has subsequently deployed more than 150,000 robots to Amazon distribution centers. Prior to joining Kiva, Pete was an Associate Professor of Computer Science at North Carolina State University. Pete earned his Ph.D. in Computer Science from the University of Michigan, and his B.S. in Mechanical Engineering from M.I.T.

Dr. Jia Chen IBM Healthcare Solutions

Jia Chen is an Offering Leader of Blockchain solutions for Healthcare and Life Sciences at IBM's Innovation and Solution Incubation team. She serves on the IBM Academy of Technology Leadership team. She previously led technical strategy at IBM Watson Health Innovation, with a focus on data and AI. Prior to that, Dr. Chen was the global leader of Watson Experience Centers at IBM, responsible for Watson AI client experiences across all Watson group. She held leadership positions for Innovation and client engagement at IBM Corporate Headquarters as well as emerging markets. She was formerly the Director of Health Solutions for Smarter Cities at IBM, and the Director of Technical Sales & Innovation for IBM's Growth Market Units. She led the identification, structuring and execution of first of a kind technology and business initiatives that provide innovative and sustainable differentiation for IBM's clients. Dr. Chen received her Ph.D. in Physics from Yale University. She was named as one of the top 35 technology innovators under the age of 35 worldwide by MIT's Technology Review in 2005, the Best Researcher of the Year by Small Times magazine in 2006 and one of the top 26 tech women innovators at IBM in 2015. She serves on the Yale Graduate School Alumni Association Board.

Faculty Posters

Developing And Managing Interdisciplinary Programs
Adam Fischbach, Widener University,
Yana Kortsarts, Widener University
Suk-Chung Yoon, Widener University

Teaching Computer Architecture Using Single-Board Computers
D. Cenk Erdil, Sacred Heart University

Teaching Online Computer Science Classes By Grouping Students For a More Individualized Approach
Sofya Poger, Felician University
Songmei Yu, Felician University

Using Jupyter Notebooks In A Big Data Programming Course
Roland DePratti, Central Connecticut State University

The Use Of Virtual Desktop Infrastructures In A Graduate Computer Science Curriculum
David Pitts, Rivier University
Vladimir V. Riabov, Rivier University

A Survey Of Several Advanced Mathematical Concepts Implemented In Students' Computer Science Projects
Vladimir V. Riabov, Rivier University

DDS: A Web Based Tool For Modeling Dynamic Data Structures
Robert A. Ravenscroft, Jr., Rhode Island College

Open Source As An Extracurricular Activity
Gregory W. Hislop, Drexel University
Joanna Klukowska, Courant Institute New York University
Lori Postner, Nassau Community College

Identifying Skill Sets For Bioinformatics Graduate Students – A Text Mining Approach
Richard Shang, Long Island University Brooklyn
Mohammed Ghriga Long Island University Brooklyn

Faculty Posters (continued)

Challenges And Successes Of Offering Computer Science Courses In Urban High Schools: Perspective Of Principals And Administrators

Sarbani Banerjee, State University of New York at Buffalo State
Neal Mazur, State University of New York at Buffalo State
Christopher Shively, State University of New York at Buffalo State
Joseph Zawicki, State University of New York at Buffalo State

Making (And Keeping) It Simple: Learning To Find Initial Problem Simplifications For Incremental Development In A First Programming Course

John H. E. Lasseter, Hobart & William Smith Colleges

Students' Misconceptions Of Gradient Descent Algorithm In A Machine Learning Course

Karen Jin, University of New Hampshire

Lessons Learned From Integrating Pogil Into A CS1 Course

Michael Jonas, University of New Hampshire Manchester

Developing a Robotics Course for Undergraduate Curriculum

Benjamin T. Fine, Ramapo College of New Jersey

We would like to thank our reviewers

Yang Baldwin, Wallace University
Suhaib Obeidat, Bloomfield College
Seth Freeman, Capital Community College
Bradley Kjell, Central Connecticut State University
Muath Obaidat, City University of New York
Joan Lucas, College at Brockport, SUNY
Sofya Poger, Felician University
Chris Alvin, Furman University
Joo Tan, Kutztown University
Zach Kissel, Merrimack College
Thomas Rogers, Millersville University
Stefan Robila, Montclair State University
Benjamin Fine, Ramapo College of New Jersey
Qian Liu, Rhode Island College
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