

NERCCS 2018: First Northeast Regional Conference on Complex Systems



April 11 (Pre-Conference Event), 12–13 (Main Conference), 2018 Binghamton, NY

Conference Program

NERCCS 2018:

First Northeast Regional Conference on Complex Systems

April 11, 2018 (Young Researchers Pre-Conference Event)

April 12 – 13, 2018 (Main Conference)

Innovative Technologies Complex

Binghamton University, Binghamton, NY, USA

Sponsors:

Center for Collective Dynamics of Complex Systems (CoCo), Binghamton University

Center for Leadership Studies (CLS), Binghamton University

SUNY Conversations-in-the-Disciplines Program



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Thomas J. Watson School of Engineering and Applied Science, Binghamton University
Department of Systems Science and Industrial Engineering, Binghamton University

Organizing Committee:

General Chair: Hiroki Sayama (Binghamton University)

Program Chair: Alfredo Morales (New England Complex Systems Institute / MIT Media Lab)

Poster Session Chair: Changqing Cheng (Binghamton University)

Sponsorship Chair: Andreas Pape (Binghamton University)

Logistics Chair: Shelley Dionne (Binghamton University)

School Chair: Evelyn Panagakou (Northeastern University)

Publications Chair: Georgi Georgiev (Assumption College / Worcester Polytechnic Institute)

Special Thanks to:

Marianne Ferry, Ximeng Chen, Tammy Lindow, Amanda Padwa, Ryan Hogoboom,

Monica Lavis, Jessica Horton, Michelle Gardner, Cassie Green

Cover photo by Jonathan Cohen

NERCCS 2018 Program Overview

Wednesday April 11

Young researchers pre-conference event (ES)

Organizers:
Evelyn Panagakou and Brennan
Klein

9:00-9:30AM
Introduction

9:30AM
Opening

Morning session:
Learning complex systems

Lunch panel:
Teaching complex systems

Afternoon session:
Learning complex systems
Doing complex systems

Around 6:00PM
Social hour and dinner

Locations:

(SH): Symposium Hall
(TH): Tree House
(RT): Rotunda
(ES): Engineering Science 2008

See back cover for map

Thursday April 12

Main conference: Day 1

8:30-9:00AM (RT)
Registration, light breakfast &
poster setup

9:00-9:10AM (SH)
Opening remarks by University
President Harvey Stenger

9:10-9:50AM (SH)
Keynote talk 1: Ciro Cattuto
Chair: Georgi Georgiev

9:50-10:15AM (SH)
Invited talk 1: Gourab Ghoshal
10:15-10:40AM (SH)
Invited talk 2: Esteban Moro
Chair: James Bagrow

Coffee break & posters (RT)

11:00AM-12:15PM (SH, TH)
Contributed talk sessions 1 & 2

Lunch break & posters (RT)

2:00-2:40PM (SH)
Keynote talk 2: Katie Bentley
Chair: Hiroki Sayama

2:40-3:05PM (SH)
Invited talk 3: Pamela Mischen
3:05-3:30PM (SH)
Invited talk 4: Jianxi Gao
Chair: Shelley Dionne

Coffee break & posters (RT)

3:50-5:05PM (SH, TH)
Contributed talk sessions 3 & 4

5:10-5:50PM (SH)
Keynote talk 3: Patrick Grim
Chair: Andreas Pape

6:00-7:00PM (RT)
Reception

Friday April 13

Main conference: Day 2

8:30-9:00AM (RT)
Registration & light breakfast

9:00-9:10AM (SH)
Morning remarks by Hiroki Sayama

9:10-9:50AM (SH)
Keynote talk 4: Hui Yang
Chair: Changqing Cheng

9:50-10:15AM (SH)
Invited talk 5: Sarah Muldoon
10:15-10:40AM (SH)
Invited talk 6: Kirstin Petersen
Chair: Hiroki Sayama

Coffee break & posters (RT)

11:00AM-12:30PM (SH, TH)
Contributed talk sessions 5 & 6

Lunch break & posters (RT)

2:00-2:40PM (SH)
Keynote talk 5: Yaneer Bar-Yam
Chair: Alfredo Morales

2:50-3:50PM (SH, TH)
Contributed talk sessions 7 & 8

4:00-4:15PM (SH)
Award announcements & closing
remarks

NERCCS 2018: Schedule of Contributed Talks

Each talk will be 15 minutes long, including Q&As and transitions.

Thursday April 12th

11:00am-12:15pm

Contributed Talks 1: Network Structure (Symposium Hall) Chair: Sarah Muldoon

1. Humphrey Mensah and Sucheta Soundarajan: Sampling Community Structure in Dynamic Social Networks
2. Ricky Laishram and Sucheta Soundarajan: Evaluation of Community Similarity based on Hierarchical Distance
3. Ryan Hartman, Seyed Mohammad Mahdi Seyednezhad, Diego Pinheiro, Josemar Faustino and Ronaldo Menezes: Characteristics of Community Detection Techniques Across Thematic Twitter Emoji Networks
4. Michael Vaiana and Sarah Muldoon: The Interlayer Coupling Resolution Limit in Multilayer Networks
5. Lawrence De Geest: Enforcement Networks in Environmental Protection

11:00am-12:15pm

Contributed Talks 2: Nonlinear Dynamics (Tree House) Chair: Jason Graham

1. Yiming Che and Changqing Cheng: Stability Analysis of Delayed Complex Systems Under Uncertainty
2. Rui Zhu and Hui Yang: Spatiotemporal Modeling of Nonlinear Dynamics in Cardiac Electrical Activities
3. Ruimin Chen, Farhad Imani and Hui Yang: Heterogeneous Recurrence Analysis of Vectorcardiogram Signals
4. Joanna Slawinska and Dimitrios Giannakis: Extraction and Classification of Convectively Coupled Equatorial Waves Through Eigendecomposition of Koopman Operators
5. Giridhar Nandikotkur: Investigating Inherent Timescales of Variability in Blazers Using Structure Functions

3:50pm-5:05pm

Contributed Talks 3: Data-Driven Approaches (Symposium Hall) Chair: Alfredo Morales

1. Mohammad A Al-Mamun and Shakib R Chowdhury: A Quantitative Image Analysis Method for Nuclei in Subcellular Microscopic Image
2. Maxwell Bassett, Blake Newton, Joseph Schlessinger, William Pulleyblank and Jonathan Roginski: Optimal Clustering
3. Jake Williams and Giovanni Santia: Is Space a Word, Too?
4. Kanika Bansal, Timothy Verstynen, Jean Vettel and Sarah Muldoon: Emergence of Synchrony and Chimera in Data-Driven Models of Brain Dynamics
5. Johan Nakuci, Javier O. Garcia, Nick Wasylyshyn, James C. Elliot, Mathew Cieslak, Barry Giesbrecht, Scott T. Grafton, Jean M. Vettel and Sarah F. Muldoon: Inter-Session Reproducibility of Brain Functional Network Structure in Resting and Task States

3:50pm-5:05pm

Contributed Talks 4: Network Dynamics (Tree House) Chair: Esteban Moro

1. Yanbing Mao, Emrah Akyol and Ziang Zhang: Strategic Topology Switching for Security of Multi-Agent Systems
2. Gang Yang, Jorge Zanudo and Reka Albert: Target Control in Logical Models Using the Domain of Influence of Nodes
3. Babak Ravandi, Forough Sheikhsari and Fatma Mili: Heuristics for Identifying and Using Driver Nodes in Complex Networks
4. Vítor V. Vasconcelos and Flávio L. Pinheiro: From Consensus to Polarization of Opinions in Complex Contagion
5. Alireza Fazli Khalaf and Yong Wang: A Possibilistic Programming Approach to Handle Dynamics of Global Supply Chain Network

Friday April 13th

11:00am-12:30pm

Contributed Talks 5: Social Networks (Symposium Hall) Chair: Simon Garnier

1. Leila Hedayatifar, Foroogh Hassanibesheli and G. Reza Jafari: Stable and Unstable Frustrations in Aged Social Networks
2. Sarah Shugars: Complex Networks of Collaborative Reasoning
3. James Headrick, Jenny Liang and Emrah Akyol: On the Impact of Network Connectivity in Colonel Blotto Games
4. Daniel Trembley and Samuel Heiserman: Fault Tolerance of a Culper Spy Ring Network: How Decentralization, Optimization, and Resilience Fought in the American Revolution
5. Dane Taylor: Centrality Analysis of Temporal and Multiplex Networks using Eigenvectors
6. Matthew Dabrowski, Bradley Dreher, Chukwudi Kanu, Jake Lewis and Eli Shirk: NetSciDraw Application

11:00am-12:30pm

Contributed Talks 6: Self-Organization & Collective Behavior (Tree House) Chair: Georgi Georgiev

1. P. Adrian Frazier: What Do (Biological) Complex Systems Want?
2. Tianqi Chen, Gayatri Phadke, Jennifer Satterwhite-Warden, Dilip Kondepudi, James Dixon and James Rusling: Collective Self-Motion of Multiple Benzoquinone Particles at the Air-Water Interface
3. Maurici Felip and Jams Dixon: Moving from Individual to Collective Complex Coordination Dynamics: Theoretical and Methodological Challenges
4. Ashwin Vaidya and Bong Jae Chung: Self-Organization in Fluid-Solid Interacting Systems Far from Thermodynamic Equilibrium
5. Andrew Gallup, Nicola Anderson, Daniil Vasilyev and Alan Kingstone: Contagious Yawning in Virtual Reality: The Influence of Social Presence Within and Behind the Scenes
6. Malgorzata Wisniewska, Nicole Dykstra Dykstra, Lisa O'Bryan, Simon Garnier, Andrew King, Guy Cowlshaw and Gareth Russell: Teasing Apart Environmental and Social Influences on the Movement of Individuals in Group Living Species – Proof of Concept

2:50-3:50pm

Contributed Talks 7: Social Dynamics (Symposium Hall) Chair: Andrew Gallup

1. Mark Sellers, Andreas Pape and Hiroki Sayama: Is Systems Thinking a Competitive Strategy?
2. Brennan Klein, Michael Cavanagh, Ginetta Salvalaggio, Kay Strong and Ange-Lionel Toba: Dynamics of the Opioid Crisis in the United States
3. Hugo Barbosa, Marcos Oliveira, Diogo Pacheco, Ronaldo Menezes and Gourab Ghoshal: The Influence of the Circadian and Ultradian Rhythms to Human Mobility: Empirical Evidences from Location-Based Check-Ins
4. Chandler Squires, Nikhi Kunapuli, Alfredo Morales and Yaneer Bar-Yam: Multi-Scale Patterns of Self-Identification

2:50-3:50pm

Contributed Talks 8: Information (Tree House) Chair: Dane Taylor

1. Ryan James, Bahti Zakirov, Blanca Daniela Masante and James Crutchfield: Modes of Information Flow
2. Subash K. Ray, Gabriele Valentini, Abid Haque and Simon Garnier: Information Transfer in the Contractile Membrane of Slime Mold Physarum Polycephalum During Decision-Making
3. James Bagrow and Lewis Mitchell: Information Flow Reveals Prediction Limits in Online Social Activity
4. Brennan Klein and Erik Hoel: Quantifying the Causal Structure of Networks

NERCCS 2018 Accepted Posters

#	Authors	Title
1	Muhammad Haris Aziz and Summyia Qamar	Collaborative Learning in Complex Adaptive Team Structure
2	Joe A. Wasserman	Give Me the BITSTS: A Battery of Integrated Tests of Systems Thinking Skills
3	Kameron Grubaugh and Jonathan Roginski	Resiliency Preparedness: Using Multi-layer Networks to Assist in Disaster Response Processes
4	Anca Radulescu	Nonlinear Network Dynamics Under Perturbations of the Underlying Graph
5	Zeinab S. Jalali and Chilukuri K. Mohan	LSTM Based Time-Series Link Prediction
6	Kayla Sale-Hale and Surendra Hazarie	Ecological Network Structure and Data Resolution
7	Canceled	
8	Fatemehossadat Miri and David Schaffer	Event-driven Simulation of Spiking Neural Network for Pattern Recognition
9	Neil Maclaren, Yiding Cao, Ankita Kulkarni, Francis Yammarino, Michael Mumford, Shelley Dionne, Hiroki Sayama, Shane Connelly, Tyler Mulhearn, Robert Martin, Erin Todd and Frank Bosco	Agent-Based Model Parameter Estimation and Variable Reduction Using metaBUS: An Application to a Collective Leadership Model
10	Summyia Qamar, Muhammad Haris Aziz, Mohammad T Khasawneh and Chanchal Saha	Resource-Price-Demand Dynamics Model for Cloud Manufacturing
11	Benjamin De Bari, James Dixon, Bruce Kay and Dilip Kondepudi	Physical Predictions from Dynamical Systems Modeling of an Electrodynamical Dissipative Structure
12	Abid Haque, Subash Ray, Simon Garnier and Gregory Weber	Long Range Synchrony Can Be Achieved Through Reaction-Diffusion Processes in Physarum polycephalum
13	Patrick Grim, Jared Stolove, Natalia Jenuwine, Jaikishan Prasad, Paulina Knoblock, Callum Hutchison, Chengxi Li, Kyle Fitzpatrick, Chang Xu and Catherine Ming	How Rankings Go Wrong: Structural Bias in Ranking Systems Viewed as Complex Systems
14	Hayford Kofi Adjavor and Yong Wang	Application of Multi-Depot Multi-TSP Model to Humanitarian Logistics in Times of Disaster
15	Hamed Kianmehr, Nasim S.Sabounchi, Leon E. Cosler, Karenbeth H. Bohan and Shabnam Seyedzadeh Sabounchi	Antibiotic Stewardship in Outpatient Setting Between 1997 and 2015 in the US: Patients' and Doctors' Relationships
16	Shabnam Seyedzadeh Sabounchi, Nasim S.Sabounchi, A.Serdar Atav and Leon Cosler	Dynamics of Characteristics Associated with Dental Opioid Prescription Patterns in Emergency Departments
17	Bing Yao and Hui Yang	Numerical Simulation of the Conduction and Propagation of Spatiotemporal Electrodynamics on the Heart Surface
18	Farhad Imani, Bing Yao, Ruimin Chen, Prahalada Rao and Hui Yang	Fractal Pattern Recognition of Image Profiles for Manufacturing Process Monitoring and Control
19	Lina Begdache, Maher Chaar, Nasim S.Sabounchi and Hamed Kianmehr	A Causal Modeling Approach for the Study of Association Among Food Intake, Exercise, And Mental Distress
20	Howard Blair	Heterotic Complex Systems
21	Dieudonne Ouedraogo and Azadeh Ahkamiraad	An Agent Based Model on Schelling's Segregation by Languages
22	Jonathan Roginski	Educating Tomorrow's Leaders in the Science of Connections: The USMA Network Science Minor
23	Kathryn Dula and Jonathan Roginski	Promoting Obesity Prevention Policy: How Counties Can Diffuse Innovative Preventative Health Policies
24	Jordan Isham and Jonathan Roginski	Agent-Based Network Modeling as a Method for Testing Counter-Terrorism Strategy
25	Mohsen Bahrami, Yasin Findik, Burcin Bozkaya and Selim Balcisoy	Twitter Reveals: Using Twitter Analytics to Predict Public Protests
26	Katchaguy Areekijseree and Sucheta Soundarajan	The Effect of Network Structural Properties on the Performance of Crawling Approaches
27	Shivanand Venkanna Sheshappanavar, Mohan Chilukuri and David Chandler	LSTM based Soil Moisture Prediction
28	Hang Yin, Chilukuri Mohan and Utpal Roy	Modified Neural Network Based Approach for Dynamic Collision-free Trajectory Generation
29	Pivithuru Wijegunawardana and Sucheta Soundarajan	Locating People of Interest in Social Networks
30	Canceled	
NSH1	Ewa Sulicz, Juwairiyah Shaikh, Carol Reynolds and Hiroki Sayama	Does it really matter where you go to college? A network-based analysis of educational outcomes of universities in the United States
NSH2	Chris Vincens, Danyal Shah, Carol Reynolds and Hiroki Sayama	How will the transfer of using alternatives to fossil fuels affect trade networks and economic interconnectedness?
NSH3	Harrison Barnes, Joyce Zhu, Carol Reynolds and Hiroki Sayama	Music intervals connecting music of different culture

Publication Information

The abstracts/papers of accepted presentations are available from the conference website at: <http://coco.binghamton.edu/nerccs/NERCCS2018-abstracts-papers.pdf>

As an option for post-conference publication, authors can submit their work to the Northeast Journal of Complex Systems (NEJCS):

<https://orb.binghamton.edu/nejcs/>


Best Student Paper / Best Poster Awards

NERCCS 2018 will offer the Best Student Paper and Best Poster Awards. The winners will be selected from accepted student papers and posters by the judge panel, which will be recognized with a certificate at the end of the conference.

Our sponsor publishers, Hindawi and MDPI, will offer prizes for these awards (publication fee waiver of Complexity for the Best Student Paper Award, and publication fee waiver of Systems for the Best Poster Award).



systems

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Local Logistics

Registration desk – Registration will open at 8:30am on each day. Its location will be inside ES 2008 on April 11, and near the Rotunda on April 12 and 13. Please pick up your registration materials before going to sessions. You are required to always wear your name tag while you participate in the conference.

WiFi – You can use Binghamton University’s WiFi by connecting to **Welcome2Bing** and following directions. You can also connect to **eduroam** if you have an account.

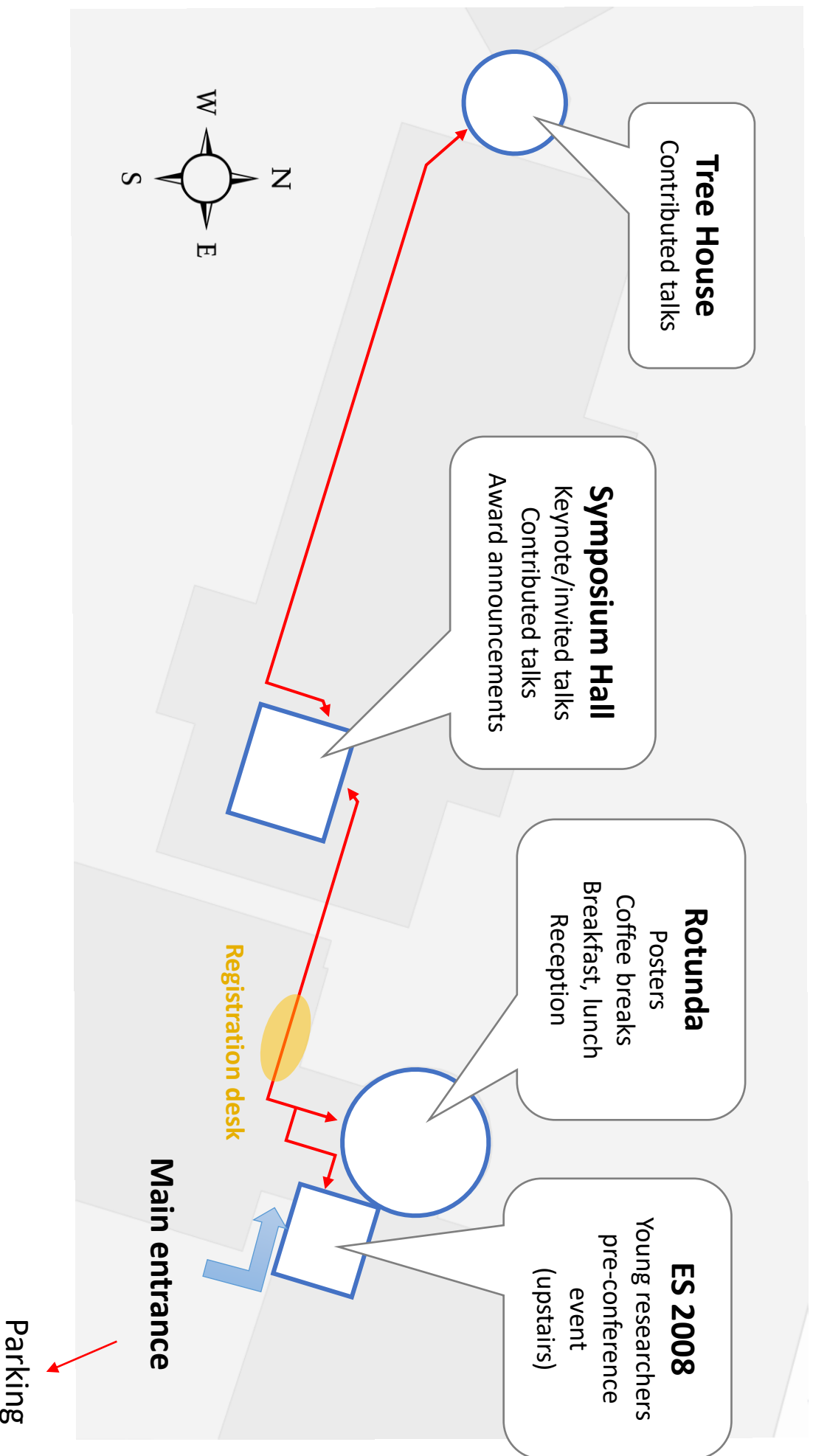
Social media – We encourage participants to spread their conference experience on social media. The conference’s official hashtag is **#NERCCS2018**.

Parking – Conference participants are required to print out and put the NERCCS 2018 parking permit to the dashboard. If you need one, please come to the registration desk. Please park your vehicle in designated areas.

Transportation – There is a free shuttle bus service that connects the Innovative Technologies Complex and the University’s main campus (about 5-minute ride). Please ride together with Binghamton University students/employees to have access to the transportation.

Emergency contact information – In case of emergency (medical, fire, etc.) call the University Police at 607-777-2222 or call 911.

NERCCS 2018 Map



<http://coco.binghamton.edu/nerccs/>

Conference hashtag: #NERCCS2018