NERCCS 2019:
Second Northeast Regional Conference on Complex Systems

April 3–5, 2019 Binghamton, NY

Conference Program

NERCCS 2019:
Second Northeast Regional Conference on Complex Systems

April 3 – 5, 2019
Innovative Technologies Complex
Binghamton University, Binghamton, NY, USA

Sponsors:

Complex Systems Society US Northeast Chapter

Center for Collective Dynamics of Complex Systems (CoCo), Binghamton University
Bernard M. and Ruth R. Bass Center for Leadership Studies, Binghamton University
Data Science Transdisciplinary Area of Excellence, Binghamton University

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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 Chairs: Alfredo Morales (New England Complex Systems Institute / MIT Media Lab), Esteban Moro (MIT Media Lab / Universidad Carlos III de Madrid)
Poster Session Chairs: Changqing Cheng (Binghamton University), Ashwin Vaidya (Montclair State University)
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Education & Career Development Chairs: Sarah Muldoon (University at Buffalo), Dane Taylor (University at Buffalo)
Publications Chairs: Georgi Georgiev (Assumption College / Worcester Polytechnic Institute), Barney Ricca (St. John Fisher College)

Special Thanks to:
Marianne Ferry, Ximeng Chen, Lisa Gallagher, Hannah Ward, Ryan Hogoboom, Erin Hornbeck, Sarah Kane, Monica Lavis, Peggy Grassi, Caroline Pasquale, Mary Jo Kopyar, Cassie Green

NERCCS 2019 Program Overview

Wednesday April 3

8:30-9:00AM (RT)
Registration

Pre-conference school (SH)

9:00-9:20AM
Dane Taylor – Overview

9:20-10:10AM
Georgi Georgiev – Self-organization

10:10-11:00AM
Changqing Cheng – Time series

Short break (self)

11:20AM-12:10PM
Sarah Muldoon – Network models

12:10-1:00PM
Alfredo Morales – Data analytics

Lunch break (self)

Main conference: Day 1

2:30-2:40PM (SH)
Opening remarks

2:40-3:20PM (SH)
Keynote talk 1: Brooke Foucault Welles
3:20-3:45PM (SH)
Invited talk 1: Carl Lipo
3:45-4:10PM (SH)
Invited talk 2: Tracy Hookway
Chair: Hiroki Sayama

Coffee break (RT)

4:30-5:50PM (SH, ES)
Contributed talk sessions 1 & 2

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

Thursday April 4

Main conference: Day 2

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

9:00-9:10AM (SH)
Morning announcements

9:10-9:50AM (SH)
Keynote talk 2: Gino Biondini
9:50-10:15AM (SH)
Invited talk 3: Lisa Soros
10:15-10:40AM (SH)
Invited talk 4: J. David Schaffer
Chair: Sarah Muldoon

Coffee break (RT)

11:10AM-12:30PM (SH, ES)
Contributed talk sessions 3 & 4

Lunch break & posters (RT)

1:30-2:30PM (RT)
Poster session 1

2:40-3:20PM (SH)
Keynote talk 3: Germano Iannacchione
Chair: Georgi Georgiev

Coffee break (RT)

3:45-5:05PM (SH, ES)
Contributed talk sessions 5 & 6

5:15-5:55PM (SH)
Keynote talk 4: Chrystopher Nehaniv
Chair: Hiroki Sayama

6:00-7:00PM (SH, ES)
(SH) NSF funding information session by Germano Iannacchione
(ES) Student career development session by Sarah Muldoon and Dane Taylor

Friday April 5

Main conference: Day 3

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

9:00-9:10AM (SH)
Morning announcements

9:10-9:50AM (SH)
Keynote talk 5: Elisa Omodei
9:50-10:15AM (SH)
Invited talk 5: Asim Zia
10:15-10:40AM (SH)
Invited talk 6: [Springer Complexity Talk] Catherine Cramer
Chair: James Dixon

Coffee break (RT)

11:10AM-12:30PM (SH, ES)
Contributed talk sessions 7 & 8

Lunch break & posters (RT)

1:30-2:30PM (RT)
Poster session 2

2:40-3:20PM (SH)
Keynote talk 6: Elena Naumova
Chair: Alfredo Morales

3:20-3:45PM (SH)
Award announcements & closing remarks

Locations:
(SH): Symposium Hall
(ES): Engineering Science 2008
(RT): Rotunda

See back cover for map

NERCCS 2019: Schedule of Contributed Talks

Each talk will be 20 minutes long, including Q&As and transitions.

Wednesday April 3rd

4:30-5:50pm

Contributed Talks 1: Biological Systems (Symposium Hall) Chair: Elena Naumova

1. Cassandra Williams, Anca Rădulescu and Annalisa Scimemi: Complex Cell Geometry When Estimating Glutamate Transporter Density in Astrocytes
2. István Kovács and Albert-László Barabási: Complex Statistical Interaction in Biology
3. Brendan Case and Laurent Hébert-Dufresne: Exploring Spillback and Dilution Effects: A Unifying Framework Based on an Emergent Pathogen in Bumble Bees
4. Alexander Burnham, Samantha Alger, Humberto Boncristiani and Laurent Hébert-Dufresne: Flowers As Dirty Doorknobs: Virus Transmission Through Flowers Depends on Floral Diversity

4:30-5:50pm

Contributed Talks 2: Dynamical Systems (Engineering Science 2008) Chair: Barney Ricca

1. Katherine Rhodes and Ashwin Vaidya: Least Action Principle Applied to a Non-Linear Damped Pendulum
2. P. Adrian Frazier: On the Cusp: Bistability and Attractor Strength Predict Reaction Time Hurst Exponents
3. Joseph Pateras, Bong Jae Chung and Ashwin Vaidya: Entropy Production and Segré-Silberberg Effect
4. Ben De Bari and James Dixon: Coupled Dissipative Structures: A Physical Analog of a Coordinative Structure

Thursday April 4th

11:10am-12:30pm

Contributed Talks 3: Data Science Special Session I (Symposium Hall) Chair: Xingye Qiao

1. Kayvan Tirdad, Alex Dela Cruz, Hossein Rahnama and Alireza Sadeghian: Deep Learning Based Cancer Classification of Pathology Slides Using Cancer Cellularity Score of Pathology Patches
2. Ulgen Kilic, Michael Vaiana, Ethan M. Goldberg and Sarah F. Muldoon: Biomedical Image Analysis and Cell Localization via Persistent Homology
3. Daniel Trembley: Swarm Optimization in the Search of Extraterrestrials by Radio Signal Detection: Adaptive Strategies on Radio Telescope Data
4. Shadan Ghaffaripour, Kayvan Tirdad, Alex Dela Cruz, Hossein Rahnama and Alireza Sadeghian: A Data-Driven Neuro-Wavelet Approach to Electric Arc Furnace Modeling

11:10am-12:30pm

Contributed Talks 4: Brain & Neural Systems (Engineering Science 2008) Chair: J. David Schaffer

1. Kanika Bansal, Javier Garcia, Sarah Muldoon, Paul Sajda and Jean Vettel: Dynamics of Large Amplitude Fluctuations in Human EEG Differentiate Individual and Task-Dependent Variability
2. Maria Virginia Ruiz-Blondet, Carlos Martinez, Jourdan Pouliot and Vladimir Miskovic: Modeling Electrocortical Power Spectra in Major Depressive Disorder
3. Johan Nakuci, Mathew McGuire, Ferdinand Schweser, David Poulsen and Sarah F. Muldoon: Changes in Global Brain Connectivity Resulting from Traumatic Brain Injury
4. Simone Evans and Anca Rădulescu: Universality of the Configuration-Dynamics Relationship in Nonlinear Networks

3:45-5:05pm
Contributed Talks 5: Networks (Symposium Hall) Chair: James Bagrow

1. Dane Taylor: Eigenvector-Based Centralities for Multilayer Networks Are Tuned by the Topology of Interlayer Coupling
2. Leonid Bunimovich, David Passey, Dallas Smith and Benjamin Webb: The Specialization Model for Network Growth
3. Mitchell Sailsbery, Jacob Heiner, Connor Robertson, McKell Stauffer and Tyler Jarvis: Facility Location Using Markov Chains on Spatial Networks
4. Zhao Song and Dane Taylor: Spectrum Behavior of Laplacian for Multiplex Networks with General Coupling

3:45-5:05pm
Contributed Talks 6: Social Systems I (Engineering Science 2008) Chair: Brooke Foucault Welles

1. Lorraine Sugar and Christopher Kennedy: Dynamics of Urban Scaling
2. Magdalena Tywoniuk: CDS Central Counterparty Clearing Liquidation: Road to Recovery or Invitation to Predation?
3. Andreas Pape and Peter DiCola: The Emergence of Monitoring
4. Manqing Ma and Jianxi Gao: Iterated Function Analysis of Social Convention Changing Process

Friday April 5th

11:10am-12:30pm
Contributed Talks 7: Data Science Special Session II (Symposium Hall) Chair: Andreas Pape

1. Yingjun Dong and Hiroki Sayama: Optimizing Facial Feature Extraction for Emotion Detection on Mobile Devices
2. Yiming Che and Changqing Cheng: Multi-Fidelity Modeling in Sequential Design for Identification of Stability Region in Dynamic Time-Delay Systems
3. Abigail Hotaling and James Bagrow: Efficient Algorithms for Crowdsourcing Problems Introduce Bias
4. Andrew Becker and James Bagrow: UAFS: Uncertainty Aware Feature Selection for Missing Data Problems

11:10am-12:30pm
Contributed Talks 8: Social Systems II (Engineering Science 2008) Chair: Catherine Cramer

1. Kevin Andrew: Modeling the Cooperative and Adversarial Behaviors of Farmer and Regulator Agents in Vermont's Missisquoi Bay Area
2. Dobromir Dotov and Laurel Trainor: Collective Phenomena in Sensorimotor Synchronization: How the Collective Central Moment Stabilizes Group Drumming
3. Jason Marshall, Neil G. MacLaren, Siaki Tetteh-Nartey and Etka Topaloglu: Information Diffusion in Organizations: A Network Simulation
4. Yiding Cao, Yingjun Dong, Minjun Kim, Neil MacLaren, Ankita Kulkarni, Shelley Dionne, Francis Yammarino and Hiroki Sayama: Examining the Effects of Expertise Diversity on Collective Design and Innovation Using an Online Social Network Experiment and "Idea Geography" Visualization: An Initial Report

NERCCS 2019 Accepted Posters

#	Authors	Title
1	Yiming Che and Changqing Cheng	Identification of Early-Stage Atrial Fibrillation with Intrinsic Properties of RR Intervals
2	Megan Chiovaro and Alexandra Paxton	What the Buzz Is All About: *Apis mellifera* As a Model for Collective Intelligence
3	Jakob Zeitler, Chilukuri Mohan, Volker Weiss and Robert Haynes	Exploratory Study of the Application of Anomaly Detection Methodology to the Analysis of Fatigue Data
4	Bong Jae Chung	CFD Study to Identify Risk Factors of Cerebral Aneurysm Rupture
5	Anwesha Choudhury, Ankita Kulkarni, Shalini Kapali Kurumathur, Savisesh Malampallayil and Sriniwas Pandey	Leader Emergence and Collective Action During Crisis
6	Margaret Duris, Morgan Manganello, Cruz Torres, Megan Gauck, S. Li, D. Armstrong, T. Hopt, R. Spathis and Katherine Wander	Interpreting Biomarkers of Milk Immunity
7	Israr Bin M Ibrahim and Ramana Pidaparti	Inferring the Social Network of Cells from Estimation of Information Transfer and Graph Theory
8	Israr Bin M Ibrahim and Ramana Pidaparti	Network Characteristics of Bronchoconstriction in Lung Airways: A Computational Study
9	Todd Guilfoos and Emi Uchida	The Evolution of Poverty Traps: An Agent-Based Modeling Approach
10	Cameron Harwick	Cities in the Rise and Decline of Civilizations
11	Canceled	
12	Bao Huynh and Dane Taylor	Detectability of Heterogeneous Communities in Networks Using Matrix Eigenvectors
13	Canceled	
14	Hamed Kianmehr, Nasim Sabounchi, Saeed P. Langarudi and Shabnam S.Sabounchi	Utility Perceptions in System Dynamics Modeling for Prescribing Decisions
15	Silvia Salinas-Ayaviri	Spatiotemporal Dynamics of Housing Prices: A Bayesian Network Approach
16	Python Ndekou Tandong Paul, Ndekou William Françis and Haby Camara	Coupling of an Agent-Based Model of HIV Transmission Dynamics with a Mathematical Model of Intra-Host Dynamics of Viral Load
17	Ruimin Chen, Farhad Imani and Hui Yang	Heterogeneous Recurrence Analysis of Disease-Altered Spatiotemporal Patterns in Multi-Channel Cardiac Signals
18	Farhad Imani, Bing Yao, Ruimin Chen, Prahalada Rao and Hui Yang	Markov Decision Process and Multifractal Analysis for Image-Guided Additive Manufacturing
19	Shabnam Sabounchi, Hamed Kianmehr, Nasim S Sabounchi, Leon E.Cosler and A.Serdar Atav	Predicting Dental Opioid Prescribing Patterns in US Emergency Departments: A Comparison of Conventional and Machine Learning Methods
20	Joseph Pateras, Edward Steen and Ashwin Vaidya	A Game Theoretic Approach to Modeling Dynamics of Amyloid-β Aggregation along Competing Pathways
21	Dieudonne Ouedraogo	Importance of Network Metrics in Classification
22	Seyyedmilad Talebzadehhosseini, Chathika Gunaratne, Steven Scheinert and Ivan Garibay	Countries' Diversification and Transition to Green Economy
23	Mostafa Saeidi, Ramya Akula, Steven Scheinert, Anamaria Berea and Ivan Garibay	The Network of Occupation Space Needs for Economic Improvement
24	Canceled	
25	Steven Lundgren and Anca Rădulescu	A Pharmacokinetic Model of Lead-Calcium Interactions
26	Anca Rădulescu, Brandee Williams and Kelsey Butera	Template Iterations of Quadratic Maps and Hybrid Mandelbrot Sets
27	Victoria Kim, Matthew Dunn and Emrah Akyol	Colonel Blotto Games for Cyber-Physical Systems Security: Cooperative Games
28	Lorren Kay	Wildfire Regimes – Research in Complex Systems Science
29	Oleg Pavlov and Evangelos Katsamakas	Dynamics of Complex Service Systems
30	Carlos Augusto Jiménez Zarate	Emotive Impact on Facebook, in the Presidential Campaign of Mexico 2018
NSH1	Ashwath Ashok, Afzal Shah, Carol Reynolds and Hiroki Sayama	Interaction Between Temperature Fluctuation and Migratory Behaviors of Marine Species
NSH2	Catherine Deskur, Danyal Shah, Chris Vincens, Carol Reynolds and Hiroki Sayama	What Factors in a Society Affect Creativity the Most?
NSH3	Saavan Kaneria, Jaron Cui, John Guo, Carol Reynolds and Hiroki Sayama	Effects of Availability of Human Resources and Financial Resources on the Performance of Schools

Publication Information

The abstracts/papers of accepted presentations are available from the conference website at: http://coco.binghamton.edu/nerccs/NERCCS2019-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 Paper / Best Poster Awards

NERCCS 2019 will offer the Best Paper and Best Poster Awards. The winners will be selected from accepted 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 Paper Award, and publication fee waiver of Systems for the Best Poster Award).

Local Logistics

Registration desk – Registration will open at 8:30am on each day. Its location will be near the Rotunda. 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 instructions. You can also connect to **eduroam** if you have an account.

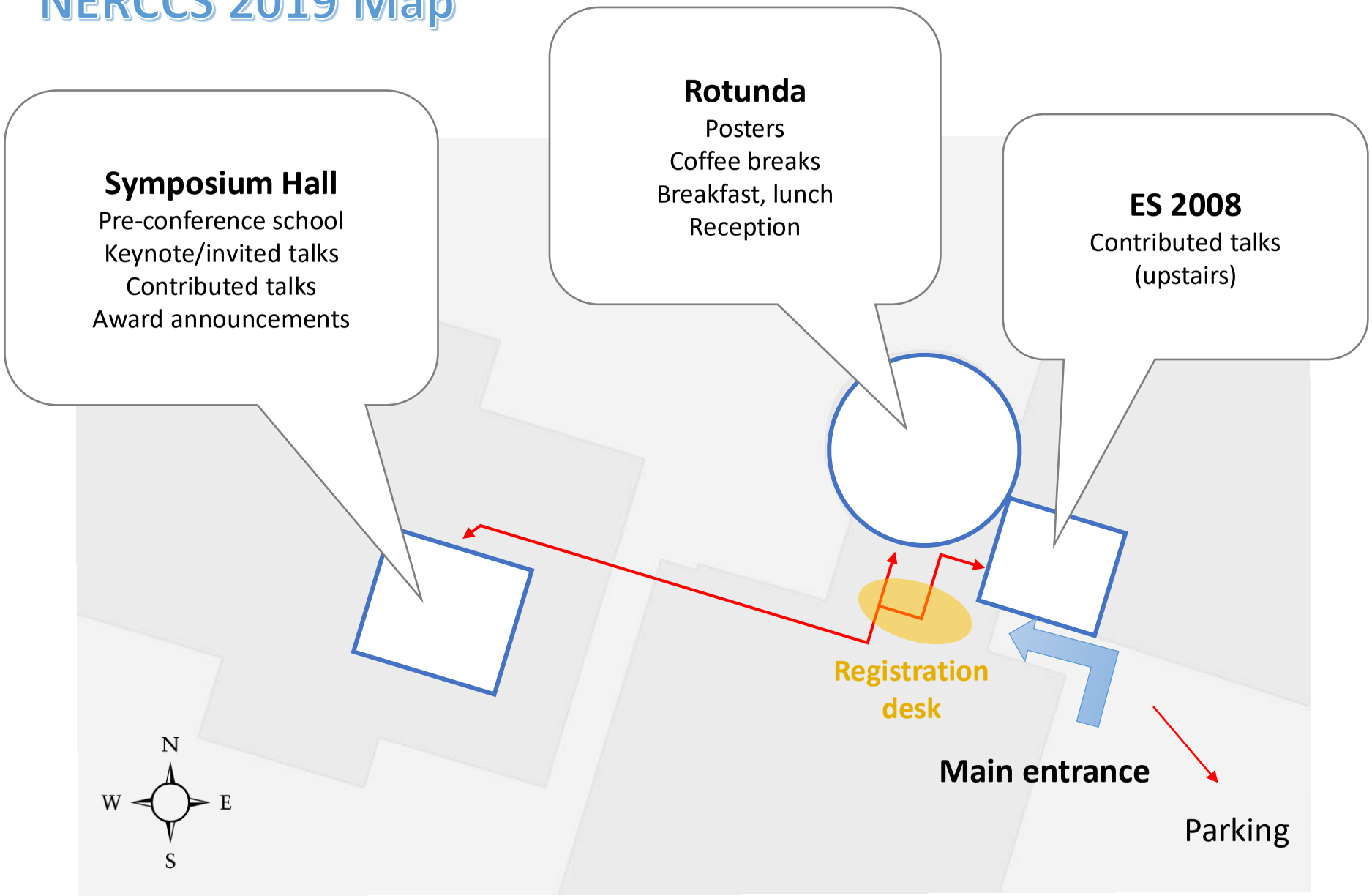
Social media – We encourage participants to spread their conference experience on social media. The conference's official hashtag is **#NERCCS2019** .

Parking – Conference participants are required to print out and put the NERCCS 2019 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 a guest 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 2019 Map



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