NERCCS2026

Northeast Regional Conference on Complex Systems (NERCCS 2026)

Program Booklet

Location: *University of Rochester, Rochester, NY, Venue TBD* · Dates: *March 11–13, 2026*

DRAFT 2-3-26

Day 1 (March 11, 2026)

Registration   12:00 - 4:00

Opening Remarks   1:00 - 1:30

Keynote   1:30-2:30

The Physics and Chemistry of Synthesizing Abiotic Life in a Test Tube
Juan Perez-Mercader (Harvard University)

Break   2:30 - 2:45

Parallel Sessions 1   2:45 - 3:45

Room A: Network Control, Measurement, and Bias

Session Chair: TBD

2:45 **Distributed Self-Control of Dynamical Networks by Adaptive Link Weight Adjustments**
Hiroki Sayama (Binghamton University, SUNY)

3:05 **Estimating Uncertainty in Network Measures and Structures Arising from Noisy Data**
James Hartz (University at Buffalo, SUNY)

3:25 **A Diagnostic Framework for Sampling-Induced Distortion in Network Metrics**
Sriniwas Pandey (Binghamton University, SUNY)

Room B: Adaptive Social Networks and Belief Dynamics (80 min session)

Session Chair: TBD

2:45 Information-mediated homophily in adaptive networks
Joshua Rosen (Northeastern University)

3:05 Bridging Simple and Complex Contagions in Belief Dynamics: A Voter Model Extension
João Franco (Vermont Complex Systems Center, University of Vermont)

3:25 Identifying brain network features that drive opinion formation and changes in humans
Brian L. Clary (Penn State University)

3:45 Why We Experience Society Differently: Intrinsic Dispositions as Drivers of Ideological Complexity in Adaptive Social Networks
Akshay Gangadhar (Binghamton University)

Break 3:45 - 4:00

Parallel Sessions 2 4:00 - 5:00

Room A: Information, Entropy, and Behavioral Signals

4:00 On the Uniqueness of the Coupled Entropy and its Applications
Kenric P Nelson (Photrek, Inc)

4:20 A Network Perspective of the Stock Market Using Mutual Information and Transfer Entropy
Shangyi Bi (Binghamton University, SUNY)

4:40 Detecting Dynamic "Fingerprints" in Human Random Keystrokes
Jacqueline Blake (Binghamton University, SUNY)

Room B: Media, Platforms, and Field Mapping

4:00 How News Connects: Mapping the Semantic Topology of a Digital Newspaper
Sofia Sciangula (Carlo Cattaneo University LIUC)

4:20 Tempo-Dependent Emergence in Platform-Mediated Collective Behavior
Shaunette T. Ferguson (Barnard College, Columbia University)

4:40 Interactive Visualization of the Updated Complex Systems Keyword Diagram
Hiroki Sayama (Binghamton University, SUNY)

Day 2 (March 12)

Keynote 9:15-10:15

Title TBA
Filippo Radicchi (Indiana University)

Break   10:15 - 10:30

Parallel Sessions 3   10:30 - 11:30

Room A: Social / Institutional Simulation and Innovation Dynamics

Session Chair: TBD

10:30 **A Simulation Model for Historical Evolution of Geopolitical Entities**
Andrea Agosta (Carlo Cattaneo University LIUC)

10:50 **Using Agent Based Modeling to explore long-term economic impacts of nurse turnover in healthcare**
Kate J. O'Neill (Binghamton University, SUNY)

11:10 **Uncovering simultaneous breakthroughs with a robust measure of disruptiveness**
Sadamori Kojaku (Binghamton University, SUNY)

Room B: Infrastructure, Risk, and Public/Health Networks

Session Chair: TBD

10:30 **Graph-Based Analysis of Hurricane Stakeholder and Warning Networks: Structural Roles, Information Flow, and Optimization Diagnostics**
Hayford Adjavor (Binghamton University, SUNY)

10:50 **Inaccessibility in Public Transit Networks**
Katherine Betz (University at Buffalo, SUNY)

11:10 **Network-Driven Cohort Selection and Adverse Drug Reaction Detection in Epilepsy Social Media**
Ziqi Guo (Binghamton University, SUNY)

Lunch Break   11:30 - 1:30

Lunch on your own, see website for closeby options

Parallel Sessions 4   1:30 - 2:30

Room A: Graph Methods and Applied Dynamics

1:30 **distanceclosure: A Python Package for Network Sparsification Based on Their Topology**
Robert Palermo (Binghamton University, SUNY)

1:50 The Effective Graph improves prediction of network dynamics in biochemical models
Xuan Wang (Binghamton University, SUNY & Indiana University)

2:10 Robust Video Anomaly Detection under Partial Observation via Patch-Motion Graph Smoothing
Neda Amirirad (Binghamton University, SUNY)

Room B: Computational Models and Algorithm Diagnostics

1:30 Diagnostic Evaluation of Conditional Generative Algorithms on Curated Single Cell Reference Data
Matthew Jehrio (University of Rochester)

1:50 Spark: Modular Spiking Neural Networks
Mario Franco (Binghamton University, SUNY)

2:10 Scalability of Structure-Preserving Simulations in Plasma Physics
Sarthak Sharma (University at Buffalo, SUNY)

Break   2:30 - 2:45

Keynote   2:45 - 3:45

Title TBA
Adilson Motter (Northwestern University)

Break   3:45 - 4:00

Parallel Sessions 5   4:00 - 5:00

Room A: Self-Organization, Robustness, and Epidemic Coupling

Session Chair: TBD

4:00 A Feedback-Driven Lyapunov Principle for Self-Organization in Open Stochastic Systems
Georgi Yordanov Georgiev (Assumption University & Worcester Polytechnic Institute)

4:20 Canalization drives Robustness in the Evolution of Collective Intelligence under Noise
Srikanth Iyer (Binghamton University, SUNY)

4:40 A symbiotic SIR process
Gerardo Palafox-Castillo (Universidad Autonoma de Nuevo Leon)

Room B: Collapse, Inequality, and Sustainability Dynamics

Session Chair: TBD

4:00 A Meta-Model of Endogenous Overcrowding-Driven Demographic Collapse
Federico Carucci (Carlo Cattaneo University LIUC)

4:20 **Parasites become rich and drive inequality in approach to collapse in a model of evolving networks**
Atiyab Zafar (University of Delhi)

4:40 **Artificial Agents and Ecological Collapse: an LLM-enhanced Agent-Based Model of a Sustainability Game**
Francesco Bertolotti (Carlo Cattaneo University LIUC)

Day 3 (March 13)

Keynote   9:15 - 10:15

Title TBA
Krishnan Padmanabhan (University of Rochester)

Parallel Sessions 6   10:30 - 11:30

Room A: LLM Learning, Optimization, and Alignment

Session Chair: TBD

10:30 **Prospect Learning in Large Language Models: Quantifying Risk Preferences and Adaptation Dynamics**
Nency Dhameja (Binghamton University, SUNY)

10:50 **Evolutionary System-Prompt Optimization for LLM Agents in Competitive Market Simulations**
Ossama Zaroual (Carlo Cattaneo University LIUC)

11:10 **Cooperation or Defection? The Decay of Alignment Instructions in Complex LLM Systems**
Andrea Monoli (Carlo Cattaneo University LIUC)

Room B: LLM Agents in Social Systems

Session Chair: TBD

10:30 **Large Language Model Agents Partially Reproduce Real-World Segregation Patterns in the Schelling Model**
Adreas Duus Pape (Binghamton University, SUNY)

10:50 **Going for the Third: Cooperation between LLM Agents in a Three-Option Setting**
Leonardo Mascagni (Carlo Cattaneo University LIUC)

11:10 **An Extension of the Sugarscape Model with LLM-based Agents**
Luca Moroni (Carlo Cattaneo University LIUC)

NERCCS Business Meeting   11:50 - 12:30