Northeast Regional Conference on Complex Systems (NERCCS 2026)

Program Booklet

Location: *Goergen Hall, University of Rochester, 275 Hutchison Rd, Rochester, NY 14620*

Dates: *March 11–13, 2026*

Day 1 (March 11, 2026)

Registration 12:00 - 4:00

Opening Remarks 1:00 - 1:30

Keynote 1:30-2:30

Sloan Auditorium

Life Exists Beyond Biochemistry: Making Abiotic (Biochemistry-free) Life in the Computer and the Test-tube

Juan Perez-Mercader (Harvard University)

Break 2:30 - 2:45

Parallel Sessions 1 2:45 - 3:45

Sloan Auditorium (Goergen 101): Network Control, Measurement, and Bias

Session Chair: Sadamori Kojaku, Binghamton University

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)

Fantone Lecture Hall (Goergen 109): Adaptive Social Networks and Belief Dynamics

Session Chair: Hiroki Sayama, Binghamton University

2:45 Bridging Simple and Complex Contagions in Belief Dynamics: A Voter Model Extension
João Franco (Vermont Complex Systems Institute, University of Vermont)

3:05 Identifying brain network features that drive opinion formation and changes in humans
Shweta Hatote (University at Buffalo, SUNY)

3:25 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

Sloan Auditorium (Goergen 101): Information, Entropy, and Behavioral Signals

Session Chair: Georgi Yordanov Georgiev, Assumption University & Worcester Polytechnic Institute

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)

Fantone Lecture Hall (Goergen 109): Media, Platforms, and Field Mapping

Session Chair: TBD

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

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

Sloan Auditorium

Optimal Networks in Urban Transport Systems
Filippo Radicchi (Indiana University)

Break 10:15 - 10:30

Parallel Sessions 3 10:30 - 11:30

Sloan Auditorium (Goergen 101): Social / Institutional Simulation and Innovation Dynamics

Session Chair: Hiroki Sayama, Binghamton University

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

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

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

Fantone Lecture Hall (Goergen 109): Infrastructure, Risk, and Public/Health Networks

Session Chair: Damian Sowinski

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

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)
Remote

Lunch Break 11:30 - 1:30

Lunch on your own, see website for closeby options

Parallel Sessions 4 1:30 - 2:30

Sloan Auditorium (Goergen 101): Graph Methods and Applied Dynamics

Session Chair: Georgi Yordanov Georgiev, Assumption University & Worcester Polytechnic Institute

1:30 distanceclosure: A Python Package for Network Sparsification Based on Its 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)

Fantone Lecture Hall (Goergen 109): Computational Models and Algorithm Diagnostics

Session Chair: Damian Sowinski

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

Sloan Auditorium

Title TBD
Adilson Motter (Northwestern University)

Break 3:45 - 4:00

Parallel Sessions 5 4:00 - 5:00

Sloan Auditorium (Goergen 101): 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)
Remote

Fantone Lecture Hall (Goergen 109): 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)
Remote

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)
Remote

Day 3 (March 13)

Keynote 9:15 - 10:15

Sloan Auditorium

Complexity Across Scales of Space and time in the Brain
Krishnan Padmanabhan (University of Rochester)

Parallel Sessions 6 10:30 - 11:30

Sloan Auditorium (Goergen 101): 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)
Remote

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

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

Fantone Lecture Hall (Goergen 109): LLM Agents in Social Systems

Session Chair: Andreas Duus Pape, Binghamton University

10:30 Large Language Model Agents Partially Reproduce Real-World Segregation Patterns in the Schelling Model
Andreas 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)
Remote

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

Closing Remarks 11:50 - 12:00