



NERCCS2026



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

Coffee | Munnerlyn Atrium

12:00

Opening Remarks

1:00 - 1:30

Sloan Auditorium (Goergen 101)

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

Srinivas 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)

Continental Breakfast | Munnerlyn Atrium

8:00

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 health-care

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, University of Rochester

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

Buffet Lunch**11:30 - 1:30***Munnerlyn Atrium*

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 Amirad (Binghamton University, SUNY)

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

Session Chair: Damian Sowinski, University of Rochester

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)

Coffee Break | Munnerlyn Atrium**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)****Continental Breakfast | Munnerlyn Atrium**

8:00

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: Georgi Yordanov Georgiev, Assumption University & Worcester Polytechnic Institute

10:30 Prospect Learning in Large Language Models: Quantifying Risk Preferences and Adaptation Dynamics

Nancy 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

Thank you to our Official Sponsors:



At-a-Glance Schedule

Day 1 — Wednesday, March 11

| Time | Sloan Auditorium (Goergen 101) | Fantone Lecture Hall (Goergen 109) |
|-----------|--|--|
| 12:00 | <i>Registration (12:00–4:00) & Coffee (Munnerlyn Atrium)</i> | |
| 1:00–1:30 | <i>Opening Remarks</i> | |
| 1:30–2:30 | <i>Keynote: Juan Perez-Mercader (Harvard University)</i> | |
| 2:30–2:45 | <i>Break</i> | |
| 2:45–3:45 | Network Control, Measurement, and Bias | Adaptive Social Networks and Belief Dynamics |
| 3:45–4:00 | <i>Break</i> | |
| 4:00–5:00 | Information, Entropy, and Behavioral Signals | Media, Platforms, and Field Mapping |

Day 2 — Thursday, March 12

| Time | Sloan Auditorium (Goergen 101) | Fantone Lecture Hall (Goergen 109) |
|-------------|---|---|
| 8:00 | <i>Continental Breakfast (Munnerlyn Atrium)</i> | |
| 9:15–10:15 | <i>Keynote: Filippo Radicchi (Indiana University)</i> | |
| 10:15–10:30 | <i>Break</i> | |
| 10:30–11:30 | Social / Institutional Simulation and Innovation Dynamics | Infrastructure, Risk, and Public/Health Networks |
| 11:30–1:30 | <i>Buffet Lunch (Munnerlyn Atrium)</i> | |
| 1:30–2:30 | Graph Methods and Applied Dynamics | Computational Models and Algorithm Diagnostics |
| 2:30–2:45 | <i>Coffee Break (Munnerlyn Atrium)</i> | |
| 2:45–3:45 | <i>Keynote: Adilson Motter (Northwestern University)</i> | |
| 3:45–4:00 | <i>Break</i> | |
| 4:00–5:00 | Self-Organization, Robustness, and Epidemic Coupling | Collapse, Inequality, and Sustainability Dynamics |

Day 3 — Friday, March 13

| Time | Sloan Auditorium (Goergen 101) | Fantone Lecture Hall (Goergen 109) |
|-------------|--|------------------------------------|
| 8:00 | <i>Continental Breakfast (Munnerlyn Atrium)</i> | |
| 9:15–10:15 | <i>Keynote: Krishnan Padmanabhan (University of Rochester)</i> | |
| 10:30–11:30 | LLM Learning, Optimization, and Alignment | LLM Agents in Social Systems |
| 11:50–12:00 | <i>Closing Remarks</i> | |