



# 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)

<b>Registration</b>	12:00 - 4:00
<b>Coffee   Munnerlyn Atrium</b>	12:00

<b>Opening Remarks</b>	<b>1:00 - 1:30</b>
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<b>Keynote</b>	<b>1:30-2:30</b>
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*Sloan Auditorium*

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

Juan Perez-Mercader ( Harvard University )

<b>Break</b>	2:30 - 2:45
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<b>Parallel Sessions 1</b>	<b>2:45 - 3:45</b>
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**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 &amp; 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*

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#### Optimal Networks in Urban Transport Systems

Filippo Radicchi ( Indiana University )

Break

10:15 - 10:30

### Parallel Sessions 3

10:30 - 11:30

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#### 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 &amp; 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 &amp; 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 &amp; 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 &amp; Worcester Polytechnic Institute

**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**

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