



Northeast Regional Conference on Complex Systems (NERCCS 2020)

April 2-3, 2020

Location:

Jacobs School of Medicine and Biomedical Sciences

University of Buffalo, Downtown Campus

955 Main St.

Buffalo, NY 14203

(parking available on the street and in the medical parking structure)

Program

Thursday, April 2 (room 1220; contributed talks also in 1225a)

8:30 – 9:00	Registration, breakfast/coffee in 1220
9:00 – 9:15	Welcome remarks
9:15 – 9:45	Invited talk 1 - Kenny Joseph – The Complex Nature of Bias
9:45 – 10:45	Keynote 1 - Kerstin Dautenhahn – Social Robots: Past, Present and Future
10:45 – 11:00	Coffee break in room 1220
11:00 – 12:20	Contributed talks 1 (dual sessions: 4x20 min talks) 1A. Collective behavior (room 1220) 1B. Socioeconomic systems (room 1225a)
12:20 – 1:30	Lunch and poster setup (atrium)
1:30 – 2:00	Invited talk 5 - Sucheta Soundarajan – The Fairness of Information Flow in Social Networks
2:00 – 3:00	Keynote 2 - Marianthi Markatou – Evidence and Uncertainty for Complex Health Interventions in Complex Health Systems
3:00 – 3:30	Coffee break
3:30 – 4:50	Contributed talks 2 (dual sessions: 4x20 min talks) 2A. Network theory I (room 1220) 2B. Dynamical systems (room 1225a)
4:50 – 6:00	Poster Session (atrium)
6:30 – 8:30	Dinner for invited speakers (other participants on their own)

Friday, April 3 (room 2220; contributed talks also in 2213A)

8:30 – 9:00	Registration, breakfast/coffee in 2220
9:15 – 9:45	Invited talk 3 - Saray Shai – Percolation-based Network Algorithms for Destroying/Protecting Modular Networks
9:45 – 10:45	Keynote 3 - Eugene Stanley – Using Statistical Physics Concepts to Offer Insights into Economic Questions
10:45 – 11:00	Coffee break in room 2220
11:00 – 12:20	Contributed talks 3 (dual sessions: 4x20 min talks) 3A. Network theory II (room 2220) 3B. Spatial patterns & PDEs (room 2213A)
12:20 – 1:30	Lunch and poster viewing (atrium)
1:30 – 2:00	Invited talk 4 - Winnie Chen – Title TBD
2:00 – 2:30	Invited talk 2 - Nishant Malik – Uncovering Dynamical Transitions in Paleoclimate Time Series
2:30 – 3:00	Invited talk 6 - Irina Benedyk – Cooperative Arrangements in Intermodal Transportation: Who is paying for these decisions?
3:00 – 3:30	Coffee break
3:30 – 4:50	Contributed talks 4 (dual sessions: 4x20 min talks) 4A. Neuro-systems (room 2220) 4B. Agent-based modeling (room 2213A)
4:50 – 5:00	Closing remarks

Saturday, April 4

Self-organized trips to Niagara Falls (we will help coordinate)

Contributed Talks

(1A) Collective Behavior – Thursday April 2, 11:00am–12:20pm, room 1220

- 1A-1. **Dobromir Dotov**. Dynamic Interactive Minimal Artificial Intelligence with Examples from Human Sensorimotor Control
- 1A-2. **Tomasz Raducha, Mateusz Wilinski, Tomasz Gubiec and Gene Stanley**. Statistical mechanics of a coevolving spin system
- 1A-3. **Zhao Song and Dane Taylor**. Diffusion on Multiplex Networks with Asymmetric Coupling
- 1A-4. **Lana Delasanta, Dobri Dotov, Laurel Trainor and Edward Large**. Analyzing Group Drumming Using a Dynamical Systems Approach

(1B) Socioeconomic systems – Thursday April 2, 11:00am–12:20pm, room 1225a

- 1B-1. **Ashwath Ashok, Carlin Reyen, Afzal Shah, Carol Reynolds and Hiroki Sayama**. Correlation Between Socioeconomic Risk Factors and HTT Gene Mutations Leading to Neurodegenerative Autosomal-Dominant Diseases
- 1B-2. **Siyu Huang, Qinghua Chen and Xiaomeng Li**. A Study on the Evolution of Global Migration Pattern based on Complex Network
- 1B-3. **Zeinab S. Jalali, Krishnaram Kenthapadi and Sucheta Soundarajan**. Towards Diversifying Organizational Networks through Employee Assignments
- 1B-4. **Jaron Cui, John Guo, Daksh Mehta, Ameet Ashok, Carol Reynolds and Hiroki Sayama**. The Viability of Wealth-Based Post-Secondary Educational Affirmative Action

(2A) Network theory I – Thursday April 2, 3:30pm–4:50pm, room 1220

- 2A-1. **Valerio Guarrasi, Penghang Liu and A. Erdem Sariyüce**. Temporal Network Motifs: Models, Limitations, Unification
- 2A-2. **Shun Cao and Hiroki Sayama**. Entropy-based Detecting of Dynamic States in Temporal Networks
- 2A-3. **Jeremy Kazimer and Dane Taylor**. Effect of Network Perturbations and Community Structure on Graph Von Neumann Entropy
- 2A-4. **Timothy Larock, Vahan Nanumyan, Ingo Scholtes, Giona Casiraghi, Tina Eliassi-Rad and Frank Schweitzer**. Analyzing DeBruijn Graphs to Discover Over- and Under-represented Pathways

(2B) Dynamical systems – Thursday April 2, 3:30pm–4:50pm, room 1225a

- 2B-1. **Sean Cornelius and Chia-Hung Yang**. Emergence of Laplace-distributed Growth Rates in Complex Systems
- 2B-2. **Shweta Singh and Mieczyslaw M. Kokar**. Reduced Complexity Approach for Emergent Behavior Detection
- 2B-3. **Joseph Johnson, Nathan White, Alain Kangabire and Daniel Abrams**. A Mathematical Model of Anisogamy
- 2B-4. **Erik Bollt**. Geometric Considerations of a Good Dictionary for Koopman Analysis of Dynamical Systems

(3A) Network theory II – Friday April 3, 11:00am–12:20pm, room 2220

- 3A-1. **Jean-Gabriel Young, George T. Cantwell and M. E. J. Newman.** Efficient and Fully Bayesian Inference of Complex Networks from Noisy Data
- 3A-2. **Ryan Gallagher, Jean-Gabriel Young and Brooke Foucault Welles.** Diversity of Core-Periphery Structure in Real Networks
- 3A-3. **Philip Chodrow.** Moments of Uniformly Random Multigraphs with Fixed Degree Sequences
- 3A-4. **István Kovács.** Utilizing Complex Networks with Error Bars

(3B) Spatial patterns & PDEs – Friday April 3, 11:00am–12:20pm, room 2213A

- 3B-1. **Jonathan Lottes and Gino Biondini.** Dispersive Shocks in the Lugiato-Lefever Equation
- 3B-2. **Daniel Cooney.** PDE Models of Multilevel Selection: Cooperation and the Shadow of Lower-level Selection
- 3B-3. **Bong Jae Chung and Ashwin Vaidya.** A Two-Phase Model for Mucosal Aggregation and Clearance in the Human Tear Film
- 3B-4. **Hiroki Sayama.** Enhanced Information Gathering May Intensify Disagreement Among Groups

(4A) Neuro-systems – Friday April 3, 3:30pm–4:50pm, room 2220

- 4A-1. **James Wilson, Skyler Cranmer and Zhong-Lin Lu.** A Hierarchical Latent Space Network Model for Population Studies of Functional Connectivity
- 4A-2. **Cong Ye, Konstantinos Slavakis, Sarah Muldoon, Johan Nakuci and John Medaglia.** Online Multilayer Brain-Network State Clustering
- 4A-3. **Marinho Lopes, Jiaxiang Zhang, Dominik Krzemiński, Khalid Hamandi, Qi Chen, Lorenzo Livi and Naoki Masuda.** Recurrence Analysis of Dynamic Functional Brain Networks
- 4A-4. **Johan Nakuci, Thomas J. Covey, Janet L. Shucard, David W. Shucard and Sarah F. Muldoon.** A single-trial Clustering Approach to Examining Neural Variability During Working Memory

(4B) Agent-based modeling – Friday April 3, 3:30pm–4:50pm, room 2213A

- 4B-1. **Alina Vereshchaka and Wen Dong.** Resource Allocation During Natural Disasters Using Multi-agent Systems
- 4B-2. **Matthew Barlin and Michael Zargham.** Emergent Price Dynamics through Simulation of Modeled Multi-market Investor Agents
- 4B-3. **Surendra Hazarie, Hugo Barbosa, Adam Frank, Ronaldo Menezes and Gourab Ghoshal.** Uncovering the Role of Spatial Constraints in Physical and Virtual Mobility
- 4B-4. **Simone Cassani, Joseph Benson, Mariya Bessonov, Korana Burke, Maria-Veronica Ciocanel, Daniel Cooney and Alexandria Volkening.** Mathematical Models of Pedestrian Movement in Large Lecture Halls