# Program Overview

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<th>Time</th>
<th>Monday, June 19</th>
<th>Tuesday, June 20</th>
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<tr>
<td>7:30 AM - 6:00 PM</td>
<td>Registration Open - JW Marriott White River Registration, First Floor</td>
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<tr>
<td>8:00 AM - 12:30 PM</td>
<td>Schools and Satellite morning session - JW Marriott White River Rooms, First Floor</td>
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<tr>
<td>12:30 PM - 2:00 PM</td>
<td>Lunch Break</td>
<td></td>
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<tr>
<td>2:00 PM - 6:30 PM</td>
<td>Schools and Satellite afternoon session - JW Marriott White River Rooms, First Floor</td>
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<tr>
<td>7:00 PM</td>
<td>Social Event: Indians Baseball Game Location: Victory Field (steps from our conference space) NetSci block tickets sold out, but individual tickets available at indyindians.com</td>
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<table>
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<tr>
<th>Time</th>
<th>Wednesday, June 21</th>
<th>Thursday, June 22</th>
<th>Friday, June 23</th>
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<tr>
<td>8:00 AM - 6:00 PM</td>
<td>Registration Open - JW Marriott White River Registration, First Floor</td>
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<tr>
<td>8:45-9:00 AM</td>
<td>Introduction</td>
<td>Updates</td>
<td>Updates &amp; Poster Awards</td>
</tr>
<tr>
<td>9:00-9:45 AM</td>
<td>Keynote: Danielle S. Bassett</td>
<td>Keynote: Steve Borgatti</td>
<td>Keynote: Jennifer A. Dunne</td>
</tr>
<tr>
<td>9:45 -10:15 AM</td>
<td>Invited: Lise Getoor</td>
<td>Invited: Shawndra Hill</td>
<td>Invited: Alex Fornito</td>
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<tr>
<td>10:15-10:45 AM</td>
<td>Beverage Break</td>
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<tr>
<td>10:45-11:15 AM</td>
<td>Springer Complexity Invited Talk: Maximilian Schich</td>
<td>Invited: César A. Hidalgo</td>
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<tr>
<td>11:15-11:45 AM</td>
<td>Lightning Talks (5 minutes each, 18)</td>
<td>Invited: Roberta Sinatra</td>
<td>Invited: Xiaofan Wang</td>
</tr>
<tr>
<td>11:45 AM-12:15 PM</td>
<td>Invited: M. Ángeles Serrano</td>
<td>Invited: Meeyoung Cha</td>
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<tr>
<td>12:15-2:00 PM</td>
<td>Lunch Break</td>
<td></td>
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<tr>
<td>2:00-3:40 PM</td>
<td>Parallel Session A1-A5</td>
<td>Erdős–Rényi Prize Award</td>
<td>Parallel Sessions D1-D4</td>
</tr>
<tr>
<td>3:40-4:10 PM</td>
<td>Beverage Break</td>
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<tr>
<td>4:10-5:50 PM</td>
<td>Parallel Sessions B1-B5</td>
<td>Parallel Sessions C1-C5</td>
<td>Parallel Sessions E1-E4</td>
</tr>
<tr>
<td>6:00-8:00 PM</td>
<td>Poster Session and Reception</td>
<td>Editors Session (6-6:45pm), Funders Panel (6:45-7:30pm)</td>
<td>Join organizers for a complimentary champagne toast at the end of the conference</td>
</tr>
<tr>
<td>8:00-10:00 PM</td>
<td>Banquet</td>
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Sponsors and Support
NetSci 2017 is supported by grant W911NF-17-1-0195 from the Army Research Office. The views, opinions, and/or findings contained in this program are those of the organizers and should not be construed as an official Department of the Army or U.S. Government position, policy, or decision, unless so designated by other documentation.

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**BRONZE SPONSORS**

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- Indiana University School of Medicine
- Indiana University Alzheimer Disease Center
- Indiana University School of Medicine
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Susan Thie, Indiana University Network Science Institute

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Ciro Cattuto, ISI Foundation
Tina Eliassi-Rad, Northeastern University

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Yuheng Hu
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Marton Karsai
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Mikko Kivelä
Dmitri Krioukov
Dan Larremore
Sang Hoon Lee
Juyong Lee
Deoksun Lee
Zoran Levnaji
Daniele Marinazzo
Winter Mason
Naoki Masuda
Stasa Milojevic
Natasa Miskov-Zivanov
Adilson Motter
Mirco Musolesi
Anastasios Noulas
Juyong Park
Leto Peel
Tiago Peixoto
Konstantinos Pelechris
Orion Penner
Matjaž Perc
Nicola Perra
Alexander Petersen
Giovanni Petri
Carlo Piccardi
Chiara Poletto
Mason Porter
Iyad Rahwan
Jose Ramasco
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Giancarlo Ruffo
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Jie Tang
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John Ternovski
Juilee Thakar
Michele Tizzoni
Onur Varol
Paola Vera-Licona
Claudia Wagner
Dashun Wang
Samuel Way
Xidao Wen
Jevin West
Kevin Xu
Xiaoran Yan
Hyejin Youn
Jorge Zanudo
Indiana University
Network Science Institute (IUNI)
IN Indiana University Network Science Institute  
IUNI.IU.EDU

Founded in 2014 by a scientific leadership team (below), the mission of the Indiana University Network Science Institute (IUNI) is to strengthen the theories, methods, analytic tools, and practice of network science, and to foster collaborative, interdisciplinary network science approaches to understanding and improving the complex challenges of our world. IUNI accomplishes its mission by:

• Facilitating collaborative, high-impact, research projects in network science in any topical area, especially those projects requiring participation from multiple disciplines;
• Developing and improving network science methods and tools to enhance capabilities of the broader research community;
• Enabling interdisciplinary research by collecting, preserving, standardizing and providing access to secure data, analytic tools, and high performance computing resources;
• Providing information technology expertise and staff to develop the needed infrastructure to support network science tools and platforms;
• Developing educational opportunities for the research community to learn about network science;
• Enhancing the scientific rigor in the field by developing best practices related to network science;
• Hosting lectures, workshops, workgroups and other activities aimed and fostering collaboration among IU faculty interested in applying network sciences approaches in their research; and
• Leading scientific discourse in network science through support of scholarly works and hosting of network science meetings and conferences.

IUNI is led by Executive Director Patricia Mabry and Scientific Co-Directors Santo Fortunato, Bernice Pescosolido, Andrew J. Saykin, and Olaf Sporns. IUNI employs 13 full-time staff and research scientists. There are over 160 faculty at Indiana University who are affiliated with IUNI.

Founding Scientific Leadership Team

Bill Barnett, Indiana Clinical and Translational Sciences Institute (CTSI) and the Regenstrief Institute
Katy Börner, Department of Information and Library Science, Indiana University Bloomington
Alessandro Flammini, Informatics, Indiana University Bloomington
Tatiana Foroud, Medical and Molecular Genomics, Indiana University School of Medicine
Santo Fortunato, Informatics, Indiana University Bloomington
Fil Menczer, Informatics, Indiana University Bloomington
Eric Meslin, Council of Canadian Academies (formerly of Indiana University Center for Bioethics in IU School of Medicine)
Bernice Pescosolido, Sociology, Indiana University Bloomington
Armando Razo, Political Science, Indiana University Bloomington
Andy Saykin, Radiology and Imaging Sciences, Indiana University School of Medicine
Olaf Sporns, Psychological and Brain Sciences, Indiana University Bloomington
NETWORK SCIENCE SOCIETY

The Society serves and represents the rapidly growing research community on network science. NetSci acts as a truly interdisciplinary body, aiming to bring under one umbrella a wide variety of researchers and stakeholders with direct interest in network science, from physics to computer science, biology, social sciences, economics, and so on.

The main mission is to undertake the type of activities that would help the Network Science community thrive, such as organizing the yearly Network Science meeting, publishing, and working to attract funds for this effort.

NetSci accomplishes this mission in the following manner:

- Perpetuate commonality of interest and continuity of effort among researchers, enthusiasts and practitioners within the field of network science;
- Promote the discovery and investigation of network phenomena regardless of domain area manifestation;
- Model and analyze the innate behavior of diverse networks;
- Characterize the manner in which networks behave in order to establish their predictability;
- Formulate a principled and substantive approach whereby network science will mature and flourish;
- Serve as the leading societal representative and organizational body to industry, academia, and government on behalf of its international membership;
- Promote, advertise, and provide its members with relevant information pertaining to network science on a continual basis;
- Support organizational activities to include symposia, workshops and annual conferences on behalf of its members whenever possible.

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Erez Shmueli
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Ananthram Swami
Boleslaw Szymanski
Brian Uzzi
Alessandro Vespignani
Xiaofan Wang
Katharina Zweig
A.-László Barabási, Founding President

Member Emeritus
József Baranyi, Past Treasurer
NETSCI INTERNATIONAL SCHOOL

Day One (Monday, June 19)

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<th>Time</th>
<th>Activity</th>
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<tr>
<td>9:00 AM - 9:15 AM</td>
<td>Introductions and Preliminaries</td>
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<tr>
<td>9:15 AM-12:15 PM</td>
<td>Alex Arenas, Network Structure</td>
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<tr>
<td>12:15 PM -2:00 PM</td>
<td>Lunch break</td>
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<tr>
<td>2:00 PM-5:00 PM</td>
<td>Alessandro Vespignani, Contagion and Spreading Processes on Networks</td>
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Network Structure
Alex Arenas of Universitat Rovira i Virgili

This lecture will review the basics of network science and its purposes. We will pay attention on both the structural characterization of networks (degree distribution, distances, clustering, correlations, etc) and how structural attributes of real networks, such as the scale-free property or the small-world phenomenon, influence the dynamical behaviors that take place on them. To round off this introductory talk, we will introduce the main current challenges of network science such as time-varying and multilayer networks. Multilayer networks are attracting large interest because they describe complex systems in formed by several networks indicating interaction of different nature. Examples are ubiquitous from infrastructure to transportation and biological networks. We will describe the state of the art for characterizing and modelling the structure of multilayer networks and for studying their robustness properties.

Contagion and Spreading Processes On Networks
Alessandro Vespignani of Northeastern University

This lecture will provide an introduction to the basic theoretical concepts and tools needed for the analysis of dynamical processes taking place on networks. Topics covered will include: navigation, and exploration processes of complex networks; epidemic spreading; social contagion; computational modeling approaches to contagion dynamic; and reaction-diffusion processes on networks.
that the dynamics evolving on the network is linear. Work on control of non-linear dynamics on networks typically focuses on the phase space portrait of the dynamics and on exploiting non-linear flows to efficiently move the system between different basins of attraction. Yet, it requires detailed knowledge of complex attractors which are typically not fully understood. Finally, work on control of social systems is fraught with difficulties from the fact that agents are typically not rational to the limited knowledge we have of the system. Yet, simple mathematical models of opinion dynamics provide a starting lens.

**Learning, Mining, and Networks**

Tina Eliassi-Rad of Northeastern University

In this lecture, we will cover some of the most popular supervised and unsupervised learning algorithms on networks. Under supervised learning, we will cover within- and across-network classification of nodes. Under unsupervised learning, we will cover algorithms for finding patterns and anomalies in large-scale networks. We will discuss both generative and discriminative models and will pay special attention to the scalability of the learning algorithms.

**Controlling Complex Networks**

Raissa D’Souza of University of California Davis

Our understanding of the collective behaviors of complex networks has matured considerably in the last decade, and cutting edge research efforts now often focus on how to control behaviors of complex networks. This has become a prominent issue cutting across disciplines from engineering, to biology, to social systems. Three main threads include structural controllability, control of nonlinear systems, and how to influence and nudge behaviors in social systems. Here we will survey progress in all three of these areas, understanding that the context is essential and that each area has its own strengths and limitations. Structural controllability exploits the deep connection between graph combinatorics and linear algebra, making it possible to answer control related questions relying on network structure only. Yet, it requires
# Satellites

NetSci’s 22 satellites each keep their own agenda. Find out more about each at: netsci2017.net/satellites.

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<th>White River Room</th>
<th>MONDAY June 19</th>
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<td></td>
<td>MONDAY AM</td>
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<tr>
<td>D</td>
<td>Controlling Complex Networks: From Biological to Social and Technological Systems</td>
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<tr>
<td>A&amp;B</td>
<td>Machine Learning in Network Science</td>
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<tr>
<td>106</td>
<td>2nd Workshop on Statistical Physics for Financial and Economic Networks</td>
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<tr>
<td>105</td>
<td>Dynamics On and Of Complex Networks X: (Dynamic) Learning on Complex Networks</td>
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<tr>
<td>107</td>
<td>NetSciReg’17 — Network Models in Cellular Regulation</td>
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<tr>
<td>101</td>
<td>Network Medicine: Quantitative Interactome and Multilayer Networks Taking Medicine Beyond the Genome</td>
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<tr>
<td>102</td>
<td>Social Influence in Networks</td>
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<tr>
<td>107</td>
<td>Network Science for National Defense</td>
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<td></td>
<td>Strengthening Reproducibility in Network Science</td>
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Monday & Tuesday, Full Day

Controlling Complex Networks: From Biological to Social and Technological Systems
Room: White River D
Time: Monday & Tuesday, 8:00AM - 12:30PM, 2:00 PM-6:30 PM

This symposium will focus on Network Control: an intersection research area between network science and control theory. It will discuss fundamental issues on network control and potential applications to technological, social and biological systems.

Organizers: Yang-Yu Liu and Albert-László Barabási

Monday Full Day

2nd Workshop on Statistical Physics for Financial and Economic Networks
Room: White River 106
Time: 8:00AM - 12:30PM, 2:00 PM-6:30 PM

Stochasticity, interconnectedness, and collective behavior inherently characterize financial and economic systems. Statistical physics and network science thus seem perfect candidates to shed light on their structure and dynamics.

Organizers: Paolo Barucca, Guido Caldarelli, Giulio Cimini, Yérali Gandica, Tiziano Squartini

Monday Morning

Network Science for National Defense
Room: White River 107
Time: Monday morning, 8:00AM - 12:30PM

This symposium will network science practitioners to important issues in national defense, and allow DoD mission owners to explore the practical application of network science in addressing the issues facing the U.S. Department of Defense.

Organizers: Raluca Gera, Jon Roginski, Jesse Hammond

Monday Afternoon

Strengthening Reproducibility in Network Science
Room: White River 107
Time: Monday afternoon, 2:00 PM-6:30 PM

Featuring invited talks from publishing, funding, industry and academia perspectives, followed by a panel discussion with open audience participation. Join us to discuss how we can build a more rigorous foundation for Network Science!

Organizers: Santo Fortunato, Patricia L. Mabry, Kuansan Wang, Xiaoran Yan

Cognitive Network Science
Room: White River 103
Time: 8:00AM - 12:30PM, 2:00 PM-6:30 PM

The Cognitive Network Science workshop aims to bring together a broad group of researchers who are motivated in applying tools of network science as a means to explore and understand the workings of the human mind.

Organizers: Nicole M. Beckage, Yoed N. Kenett, Massimo Stella, and Michael S. Vitevitch

Dynamics On and Of Complex Networks X: (Dynamic) Learning On Complex Networks
Room: White River G
Time: 8:450AM - 12:30PM, 2:00 PM-5:00 PM (NOTE LATER START TIME)

The Dynamics On and Of Complex Networks workshop celebrates its tenth edition! This year, the timely topic of learning of networks and their dynamics will be the focus.

Organizers: Fakhteh Ghanbarnejad, Fariba Karimi, Rishiraj Saha Roy, Jean-Charles Delvenne, Bivas Mitra
Machine Learning in Network Science  
Room: White River A&B  
Time: 8:30AM - 12:30PM, 2:00 PM-6:00 PM (NOTE LATER START TIME)  

The satellite aims at exploring and showcasing the potential of machine learning in network science and vice versa. The goal is creating an opportunity for cross-pollinations between the two communities.  
Organizers: Ciro Cattuto, Kevin Chan, Márton Karsai, Nicola Perra, Bruno Ribeiro  

Network Medicine: Quantitative Interactome and Multilayer Networks  
Taking Medicine Beyond the Genome  
Room: White River 101  
Time: 8:00AM - 12:30PM, 2:00 PM-6:30 PM  

The Network Medicine satellite will focus on how the multilayer/multiscale nature of the network affects processes and dynamics of disease progression, causation, and classification, drawing from network science, clinical science, systems biology, and genomics.  
Organizers: Amitabh Sharma, Michael Calderwood, and Tijana Milenkovic  

NetSciReg’17—Network Models in Cellular Regulation  
Room: White River 105  
Time: 8:00AM - 12:30PM, 2:00 PM-6:30 PM  

The NetSciReg’17 symposium will explore recent advances in understanding the interplay between regulatory network structure, epigenetics and cellular function.  
Organizers: Erzsébet Regan, Melinda Varga and Nate R. Sundheimer  

Social Influence in Networks  
Room: White River 102  
Time: 9:00AM - 12:00PM, 2:00 PM-5:30 PM (NOTE LATER START TIME)  

This satellite brings together scientists and researchers from network science, computer science and research team in IT companies to discuss their recent works on topics of social influence.  
Organizers: Linyuan Lü, Tao Jia, Lingling Yi, Huawei Shen, Xiaofan Wang  

UrbanNet: Urban Systems and Network Science  
Room: White River 104  
Time: 9:30AM - 12:30PM, 2:00 PM-5:30 PM (NOTE LATER START TIME)  

Bringing together the latest contributions on analysis of urban systems at different scales: From individual mobility to urban infrastructures, including social networks and spreading dynamics.  
Organizers: Marta C. Gonzalez, Marc Barthelemy, Jose J. Ramasco  

Tuesday Morning  
NetCrime—Structure and Mobility of Crime  
Room: White River 101  
Time: 8:00AM - 12:30PM  

NetCrime has been put together to bring researchers from various fields including, criminology, sociology, physics, computer science, mathematics, to an open forum to discuss the role of network science to unveil the structure and dynamics of crime.  
Organizers: Marcos Oliveira, Hugo Barbosa-Filho, and Ronaldo Menezes
Room: White River 106
Time: 8:00AM - 12:30PM

NetSciEd6 is a perfect venue to discuss anything related to NetSci and education, including educational activities to teach/learn NetSci as well as applications of NetSci to understand, model and improve educational systems and practice.

Organizers: Catherine Cramer, Raluca Gera, Mason Porter, Hiroki Sayama, Lori Sheetz, Stephen Uzzo

Tuesday Afternoon

Contagion on Networks 2017: Progress and Issues with Models and Data
Room: White River 101
Time: 2:00 PM-6:30 PM

The Contagion on Network satellite covers recent advances and emerging problems in both theoretical and empirical research related to contagion processes on networks.

Organizers: Antoine Allard, Benjamin M. Althouse, Laurent Hébert-Dufresne and Samuel V. Scarpino

Knowledge Networks in Science and Technology
Room: White River 106
Time: 2:00 PM-6:30 PM

This symposium will bring together researchers working on both domain-specific and general knowledge networks, and survey state-of-the-art theories and methods in studies of the complex systems of human knowledge.

Organizers: Feng Shi, Valentin Danchev, Eamon Duede, and James Evans

Tuesday Full Day

1st Annual Consortium for the Society of Young Network Scientists (SYNS)
Room: White River 107
Time: 8:00AM - 12:30PM, 2:00 PM-6:30 PM

The goal of the Society of Young Network Scientists is to help new scholars gain a common foundational training and a theoretical and substantive foundation in a particular discipline. The satellite will also plan future SYNS initiatives.

Organizers: Kate Coronges, Patricia Mabry, Evelyn Panagakou, and Brooke Foucault Welles

Higher-Order Models in Network Science (HONS 2017)
Room: White River 103
Time: 8:00AM - 12:30PM, 2:00 PM-6:30 PM

Increasingly rich and complex data lead to new challenges for the analysis of complex systems, requiring modeling techniques that go beyond simple relations between elements. This workshop focuses on such higher-order models in network science.

Organizers: Renaud Lambiotte, Martin Rosvall, and Ingo Scholtes

Information, Self-Organizing Dynamics and Synchronization on Networks (ISODS III
Room: White River 102
Time: 8:00AM - 12:30PM, 2:00 PM-6:30 PM

Self-organization is crucial for diverse complex systems. ISODS 2017 brings together leading researchers to discuss nonlinear dynamics (synchronization and the spread of contagions) and the roles played by adaptive/multilayer networks and community structure.

Organizers: Dane Taylor, Per Sebastian Skardal, and Jie Sun
Network Neuroscience
Room: White River A
Time: 8:00AM - 12:30PM, 2:00 PM-6:30 PM

Studying the brain at various levels has led to the emergence of Network Neuroscience: a Network Science field within the brain-based scientific frontier. We envelop the full scope in terms of hierarchy, species, and disciplinary perspective.

Organizers: Emma Towlson, Danielle Bassett, Robin Wilkins, Martijn van den Heuvel, Andrea Gabrielli, David Papo, Fabrizio De Vico Fallani, Guido Caldarelli, Javier M. Buldú, Johann Martinez, Qawi Telesford, Raffaella Burioni, Tommaso Gili, Olaf Sporns, and Petra Vértes

Netonets’17
Room: White River 105
Time: 8:00AM - 12:30PM, 2:00 PM-6:30 PM

Network of networks 2017 - reached its seventh edition. Ten years ago the problem of interdependency among networks has been brought to complexity scientists’ attention. Now it is central to several sectors from social to brain or smart society.

Organizers: Gregorio D’Agostino & Michele Coscia

4th Satellite on Quantifying Success
Room: White River 104
Time: 8:00AM - 12:30PM, 2:00 PM-6:30 PM

The Quantifying Success satellite is bringing together researchers from different disciplines to discuss patterns underlying success on diverse topics - from citations to scientific papers to innovations essential for enterprise success.

Organizers: Paolo Cintia, Junming Huang, Tao Jia, Yasamin Khorramzadeh, and Luca Pappalardo

Statistical Inference for Network Models
Room: White River B
Time: 8:00AM - 12:30PM, 2:00 PM-6:30 PM

SINM2017 focuses on statistical inference as a principled and effective approach for both understanding richly annotated network data and testing interesting network hypotheses.

Organizers: Bailey Fosdick, Tamara Broderick, Daniel Larremore, and Aaron Clauset
**Keynote Speaker: Danielle S. Bassett**  
University of Pennsylvania  
Wednesday, June 21, 9:00 AM - 9:45 AM  
The Network Origins, Organ, and Object Of Learning

Bio: Danielle S. Bassett is the Eduardo D. Glandt Faculty Fellow and Associate Professor in the Department of Bioengineering at the University of Pennsylvania. She is most well-known for her work blending neural and systems engineering to identify fundamental mechanisms of cognition and disease in human brain networks. She received a B.S. in physics from the Pennsylvania State University and a Ph.D. in physics from the University of Cambridge, UK. Following a postdoctoral position at UC Santa Barbara, she was a Junior Research Fellow at the Sage Center for the Study of the Mind. In 2012, she was named American Psychological Association’s ‘Rising Star’ and given an Alumni Achievement Award from the Schreyer Honors College at Pennsylvania State University for extraordinary achievement under the age of 35. In 2014, she was named an Alfred P Sloan Research Fellow and received the MacArthur Fellow Genius Grant.

In 2015, she received the IEEE EMBS Early Academic Achievement Award, and was named an ONR Young Investigator. In 2016, she received an NSF CAREER award and was named one of Popular Science’s Brilliant 10. She is the founding director of the Penn Network Visualization Program, a combined undergraduate art internship and K-12 outreach program bridging network science and the visual arts. Her work has been supported by the National Science Foundation, the National Institutes of Health, the Army Research Office, the Army Research Laboratory, the Alfred P Sloan Foundation, the John D and Catherine T MacArthur Foundation, and the Office of Naval Research.

**Keynote Speaker: Steve Borgatti**  
LINKS Center for Social Network Analysis, University of Kentucky  
Thursday, June 22, 9:00 AM - 9:45 AM  
Centrality Three Ways: In Search of a Definition

Our field has been blessed with a plethora of centrality concepts: literally dozens of named measures and hundreds of identified variants. Curiously, though, we have difficulty giving a thoughtful answer to the question “what is centrality?” or “how do we tell a measure of centrality from a measure of anything else?”. Inherent in this situation is our inability to say what centrality measure should do, and what constitutes a well-formed member of the class. This leaves empirical researchers with little guidance for what measure to choose for a given problem, other than Brass (1984) used such and such a measure in a well-cited piece. This paper explores three broad approaches to defining centrality measures. Ultimately, no definitive answers are provided, but the exploration is, in this author’s opinion, enlightening. Moreover, it provides a way to both collapse existing measures into fewer categories, while at the same time pointing the way to generating bespoke measures uniquely appropriate for specific research questions.

Bio: Steve Borgatti is a Professor and Paul Chellgren Endowed Chair at the University of Kentucky in the Management Dept. of the Gatton College of Business and Economics. His research is focused on social networks, particularly in the context of organizations. His primary research interest is social network analysis with additional interest in cultural domains and knowledge management. His dissertation was on regular equivalence.

He serves as an Associate Editor for the Journal of Supply Chain Management and also Computational and Mathematical Organizational Theory. He was a founding editor of Field Methods, and still sits on their editorial board. He was a Senior Editor at Organization Science, and sat on the editorial boards of Administrative Science Quarterly, Connections, Organization Science, Journal of Management and Sociological Methodology. He was recently elected President of INSNA, the...
professional association for social network researchers. In the 1990’s, while serving two terms as President of INSNA, INSNA was incorporated and the Sunbelt conference was brought under INSNA’s umbrella. During that time, he also founded the SOCNET listserv. Previously he ran the NSF Summer Institute for Ethnographic Research Methods in Anthropology (founded by Russ Bernard and Bert Pelto).

Keynote Speaker: Jennifer A. Dunne
Sante Fe Institute
Friday, June 23, 9:00 AM - 9:45 AM
The Deep Time Frontiers of Ecological Network Research

Network science has provided powerful tools for analyzing and modeling many aspects of the organization, function, and stability of ecosystems. In particular, network-based approaches to the study of complex species interactions have led to new understanding of general patterns and processes of ecological structure and dynamics, and of the community-level consequences of species loss and other perturbations. However, most such research has focused on extant systems, on systems that are putatively human-free, and on trophic networks (e.g., food webs). This talk will discuss recent reconstructions and analyses of deep-time ecological network data, from hundreds to hundreds of millions of years ago, that move beyond these constraints. Research on ancient systems is providing new ways to address questions about the sustainability of modern socio-ecological systems.

Bio: Jennifer’s research interests are in analysis, modeling and theory related to the organization, dynamics and function of ecosystems, with a focus on ecological networks. Using cross-system analysis and computational modeling, Jennifer seeks to identify fundamental patterns and principles of ecological network structure and dynamics at multiple spatial and temporal scales. Such research provides a useful framework for understanding ecological robustness and persistence, including how humans fit into and impact ancient, historic, and current ecosystems. Her research has been covered in Scientific American, Wired, SmartPlanet, ScienceNow, and Nature News. She has served as an editor at the Journal of Complex Networks, Ecology Letters, and Oikos, is an Oxford Series in Ecology and Evolution editor, and is an advisor to the science and culture magazine Nautilus.
Invited Speaker: Lise Getoor  
University of California Santa Cruz  
Wednesday, June 21, 9:45 AM - 10:15 AM  
Collective Graph Identification

Network data (e.g., communication data, financial transaction networks, data describing biological systems, collaboration networks, the Web, etc.) is ubiquitous. While this observational data is useful, it is usually noisy, often only partially observed, and only hints at the actual underlying social, scientific or technological structures that give rise to the interactions. For example, an email communication network provides useful insight, but is not the same as the “real” social network among individuals. In this talk, I introduce the problem of graph identification, i.e., the discovery of the true graph structure underlying an observed network. This involves inferring the nodes, edges, and node labels of a hidden graph based on evidence provided by the observed graph. I show how this can be cast as a collective probabilistic inference task and describe a scalable approach to solving this problem.

Invited Speaker: Shawndra Hill  
Microsoft Research NYC & University of Pennsylvania  
Thursday, June 22, 9:45 AM - 10:15 AM  
Talkographics: Measuring TV and Brand Audience Demographics, Interests, and Networks from User Generated Content

A wide variety of data is available on consumers, including data that they themselves have made available online that is accessible by the public for free. Online users talk a lot about TV shows and brands online, and the resulting data can be used to measure TV and brand audiences and help marketers answer questions about who is talking, what they are saying, where to find them and who is connected. However, the demographics and networks of online users are typically hidden from public view and need to be inferred. We propose the use of “Talkographics”, which consists of gathering publicly available text data produced by users to learn their group-level demographics, interests and networks. We combine data from Twitter and online surveys about brands and TV shows in a novel way that enables group-level prediction of demographics and interests of a large number of audiences. In addition, we demonstrate that group-level predictions can be used reliably in the context of building affinity networks and recommendation systems and for individual-level prediction.

Invited Speaker: Maximilian Schich  
UT Dallas Arts & Technology  
Thursday, June 22, 10:45 AM - 11:15 AM  
Springer Invited Complexity Talk: Networks in Art and Culture

Why should network scientists be interested in art and culture? Why should historians of art and culture be interested in network science? Why does NetSci2017 officially call for contributions in “arts and design”? And why does the main conference feature a session on “culture”? This talk will provide reasoning regarding these questions, both documenting the rise of a vibrant community, and outlining challenges that are central to both network science and the study of art and culture. A NetSci satellite theme with more than 60 contributions from more than 37 disciplines since 2009, network analysis now permeates data-driven research in art and culture, while culture analytics increasingly establishes itself as a science.

Invited Speaker: Roberta Sinatra  
Central European University  
Thursday, June 22, 11:15 AM - 11:45 AM  
Quantifying Patterns of Success in Creative Careers

In most areas of human performance the path to major accomplishments requires a steep learning curve, long practice and many trials. Athletes go through years of training and compete repeatedly before setting new records; musicians practice from an early age and perform in secondary venues before earning the spotlight. Yet, little is known about the quantitative patterns that lead to success in creative fields. In this talk we provide a quantitative framework to describe the evolution of success in scientific and artistic careers, and
ask: Are there quantifiable signs of an impending career hit? Is the success of a particular work predictable? Are there network measures that improve our understanding of success? We show that in scientific careers impact, as measured by influential publications, is distributed randomly within a scientist’s sequence of publications, and that this random impact rule allows us to formulate a stochastic model to uncouple the effects of productivity, individual ability and luck, unveiling the existence of universal patterns governing the emergence of scientific success. Further we focus on trajectories of visual artists, and show that the prestige of institutions, quantified through network measures, fully determines an artist’s future success. Starting in prestigious venues increases the chance of exhibiting in more venues, appealing to a more international audience, and of being successful in the auction market.

**Invited Speaker: M. Ángeles Serrano**
University of Barcelona
Thursday, June 22, 11:45 AM -12:15 PM
**Multiscale Unfolding of Real Networks by Geometric Renormalization**

Multiscale unfolding of real networks by geometric renormalization
Complex networks display a hidden metric structure, which determines the likelihood and intensity of interactions. This quality has been exploited to map real networks, producing geometric representations that can be used as a guide for their efficient navigation and that shed light on pivotal forces --like preferentiality, localization, and hierarchization-- that rule their structure and evolution. Now, the powerful methods that unveil network geometry enable to disentangle the multiple scales coexisting in real networks, strongly intertwined due to the small world property. We have defined a geometric renormalization group for complex networks embedded in an underlying space that allows for a rigorous investigation of networks as viewed at different length scales. We find that real scale-free networks show geometric scaling under this renormalization group transformation. This feature enables us to unfold them in a self-similar multilayer shell which reveals the coexisting scales and their interplay. The multiscale unfolding brings about immediate practical applications. Among many possibilities, it yields a natural way of building high-fidelity smaller-scale replicas of large real networks, and sustains the design of a new multiscale navigation protocol in hyperbolic space which boosts the success of single-layer versions.

**Invited Speaker: Alex Fornito**
Monash Institute of Cognitive and Clinical Neurosciences
Friday, June 23, 9:45 AM - 10:15 AM
**Topological, Dynamical and Molecular Signatures of Segregation and Integration in Large-scale Brain Networks**

Functional segregation and integration are two fundamental pillars of brain organization. Functional segregation is supported by a modular topology and functional integration is supported by high inter-connectivity of hub regions (rich-club organization). In this talk I will present evidence from macroscale brain imaging in humans that this interplay between segregated and integrated activity is dynamic and context-dependent. Combining mesoscale tract-tracing, transcriptomics and functional magnetic resonance imaging in the mouse, we have found that the activity of hub regions is dominated by low-frequency dynamics and that hub connectivity has a distinctive genomic signature that is characterized by elevated coexpression of genes regulating energy metabolism. We have also found that this genomic signature of hub connectivity is conserved across species and resolution scales, being apparent in the microscale nervous system of the nematode worm C elegans. Our findings are consistent with a hierarchy of dynamical timescales and metabolic demand in the brain, such that hub regions integrate information over wide temporal windows and at high energetic cost.
**Invited Speaker: César A. Hidalgo**  
Massachusetts Institute of Technology  
Friday, June 23, 10:45 AM - 11:15 AM  
**Collective Learning in Society and the Economy**

How do networks learn? How do teams learn how to produce new products? Develop new skills? Start new industries and develop new research areas? Where do they get the knowledge they need? How is that learning affected by changes in technologies, institutions, and culture? In this presentation I will present work exploring how networks learn and how learning is affected by geography, industrial relatedness, and technology. Also, I will present tools that we have created to facilitate collective learning in teams and nations.

**Invited Speaker: Xiaofan Wang**  
Shanghai Jiao Tong University  
Friday, June 23, 11:15 AM - 11:45 AM  
**Analysis and Control of Competitive Dynamics on Complex Networks**

Analysis and Control of Competitive Dynamics on Complex Networks  
There has been a lot of researches on coordination behaviors on complex networks, however, competitive behaviors are also very common on real world complex networks. This talk will introduce our recent works on analysis and control of competitive behaviors on complex networks. In particular, the talk will focus on the influence of network structure and positions of competitors on the result of competition. We first consider a dynamical network model in which two competitors have fixed and different states, and each normal agent adjusts its state according to a distributed consensus protocol. The state of each normal agent converges to a steady value which is a convex combination of the competitors’ states. We compute an Influence Matrix (IM) in which each element characterizing the influence of an agent on another one in the network. We use the IM to predict the bias of each normal agent and thus predict which competitor will win. Furthermore, we compare the IM criterion with several centrality-based criteria. Then, we investigate the influence maximization problem in which a competitor tries to add a number of links so as to maximize the relative influence of the competitor over the other one. Finally, we generalize the model to the case with more than two competitors.

**Invited Speaker: Meeyoung Cha**  
KAIST  
Friday, June 23, 11:45 AM - 12:15 PM  
**Detecting Rumors and Fake News Online**

Detecting Rumors and Fake News Online  
Social platforms are an ideal place for spreading rumors and fake news. As more people seek information and read news online, automatically debunking such false claims has become an urgent problem. Recent years have seen great advances in data-driven rumor research. This talk will review some of its major developments, including how a comprehensive set of user, structural, linguistic, and temporal features help us better understand their propagation processes. In detecting rumors and fake news in the wild, time becomes a critical factor. This talk will present how the significance of features changes by time and which features are prominent for early detection. I will also highlight the latest detection studies with deep learning techniques.
LIGHTNING TALKS

Wednesday, June 21, 10:45 AM – 12:15 PM
White River Ballroom E&F

Lightning talks will be presented in plenary session. Each talk will be 5 minutes each and we will accept no questions from the audience. Lightning talk speakers must arrive at the podium for assigned seating at 10:35 AM.

2. Exploratory Analysis of Graph Data by Leveraging Domain Knowledge by Di Jin and Danai Koutra. Presenter: Di Jin
4. Application of Temporal Multiplex Networks to Cascade Processes in Food Trade by Rebekka Burkholz and Frank Schweitzer. Presenter: Rebekka Burkholz
5. Patient mobility in hospital networks by Sean Cornelius, Marc Santolini, Amar Dhand and Albert-Laszlo Barabasi. Presenter: Sean Cornelius
7. Macrosopes for Making Sense of Science and Technology by Katy Börner and Elizabeth Record Presenter: Katy Börner
8. Informal social networks in firms by Abigail Jacobs and Duncan Watts. Presenter: Abigail Jacobs
10. Modeling diffusion processes in the brain through a cooperative learning ant colony-inspired algorithm by Uttara Tipnis, Enrico Amico, Mario Ventresca and Joaquin Goni. Presenter: Uttara Tipnis
11. From Connectome to Behavior: Circuit motifs that generate oscillations to drive forward and backward locomotion in C. elegans by Erick Olivares, Eduardo Izquierdo and Randall Beer. Presenter: Erick Olivares
17. Percolation thresholds for photonic quantum computing by Mihir Pant, Don Towsley, Dirk Englund and Saikat Guha. Presenter: Mihir Pant
18. Explosive Percolation on Directed Networks Due to Monotonic Flow of Activity by Alex Waagen, Raissa D’Souza and Tsai-Ching Lu. Presenter: Alex Waagen
ERDŐS–RÉNYI PRIZE LECTURE
Thursday, June 22, 2:00 PM
Awarded lecture to be announced on site at the conference

The Network Science Society, among whose missions it is to support the activity of outstanding young researchers in the area of network science, has established the Erdős–Rényi Prize in the field of Network Science and its Applications.

The Prize is awarded each year to a selected young scientist (under 40 years old on the day of the nomination deadline) for their achievements in research activities in the area of network science, broadly construed. While the achievements can be both theoretical and experimental, the prize is aimed at emphasizing outstanding contributions relevant to the interdisciplinary progress of network science.


EDITORS PANEL
Thursday, June 22 6:00 PM – 6:45 PM
White River A & B
Panel Chair: Olaf Sporns, Indiana University Bloomington

Discussion at this panel will address new trends in network science, from the perspective of editors, authors, readers and publishers. Editors will share their perspective on the evolution of the field and answer questions from the audience.

Panelists:
Olaf Sporns of Network Neuroscience
Stanley Wasserman of Network Science
Federico Levi of Nature Communications
Ling Miao of Physical Review X
Barbara Jasny of Science

FUNDERS PANEL
Thursday, June 22 6:00 PM – 6:45 PM
White River A & B
Panel Chair: Patricia Mabry, Indiana University Network Science Institute

The Funders Panel is a unique opportunity to hear from a variety of program managers about sources of funding to support network science.

Panelists:
Ted Senator, Intelligence Advanced Research Projects Activity (IARPA)
Purush Iyer, Army Research Laboratory
Elizabeth Ginexi, National Institutes of Health
Stuart Buck, Laura and John Arnold Foundation
Jun “Luke” Huan, National Science Foundation
BANQUET SPEAKER AND PERFORMERS
Thursday, June 22, 8-10 PM
White River E&F
Buffet style, ticketed only

A banquet, presentation, and music performance:

MUSIC AS A MATHEMATICIAN’S PLAYGROUND
Julian Hook, Jacobs School of Music, Indiana University

From Sonata in A Minor, D. 385: ........... Franz Schubert (1797–1828)
Movement I: Allegro moderato

Mélodie, Op. 42, No. 3 ............ Pyotr Ilyich Tchaikovsky (1840–1893)

Song Without Words, Op. 62, No. 1 .. Felix Mendelssohn (1809–1847)
arranged by Fritz Kreisler

Schön Rosmarin ..................Fritz Kreisler (1875–1962)

Music unfolds on a vast playing field whose complex mathematical structure has never been well understood. This talk will illustrate applications of several different branches of mathematics in describing musical phenomena. Emphasis will be on applications of graph theory, particularly in describing various versions of a diagram called a Tonnetz in which certain musical pitch relationships can be graphed and certain kinds of chord progressions can be traced. Some Tonnetz graphs are embedded in a torus; one version, for example, illustrates a toroidal embedding of the complete graph K7. In some cases relationships between musical structures may be described algebraically using transformation groups, which range from familiar small cyclic groups to complex constructions such as wreath products. Other ways of conceiving of chordal relationships lead to topological descriptions in which, for example, all possible two-note chords define a Möbius strip while larger chords lie in more complex spaces (orbifolds) in higher dimensions.

Julian Hook holds graduate degrees in mathematics, architecture, piano performance, and music theory. He is Associate Professor of Music Theory at the Indiana University Jacobs School of Music, where he has taught since 2003. His research on mathematical approaches to the study of music engages branches of mathematics from combinatorics, graph theory, and group theory to geometry and topology; it has appeared primarily in music theory journals but also at conferences of the American Mathematical Society and in the pages of Science. He is a former chair of the music theory department at Indiana University, a past president of Music Theory Midwest, and the founding Reviews Editor of the Journal of Mathematics and Music. He is a past winner of a publication award from the Society for Music Theory and a Sabbatical Fellowship from the American Philosophical Society. As a pianist, he has performed chamber music with members of the Chicago Symphony Orchestra. He is currently writing a book titled Exploring Musical Spaces.

A native of South Korea, Sun Huh began her study of the violin at the age of eight. She studied at the Hanns Eisler Hochschule für Musik in Berlin and the Robert Schumann Musikhochschule in Düsseldorf. She has won several national competitions in South Korea as well as many prizes as soloist and chamber musician in Germany; performed as soloist with several German orchestras; and performed chamber music with many internationally known musicians. She came to Indiana University in 2009 as the recipient of a prestigious Barbara and David Jacobs Scholarship. At IU she earned a Performer Diploma as a student of Ik-Hwan Bae and a Master of Music degree as a student of Mark Kaplan, while holding the position of concertmaster in an IU orchestra. She is currently pursuing the Doctor of Music degree, studying with Mark Kaplan.

Following the presentation, Professor Hook and Ms. Sun Huh will perform in a concert for piano and violin.
Parallel Sessions
### PARALLEL SESSIONS

#### WEDNESDAY, June 21, 2:00 PM-3:40 PM

| White River A&B | A1 | Brain I |
| White River C&D | A2 | Diffusion and epidemics I |
| White River G&H | A3 | Social Media I |
| White River I | A4 | Biology |
| White River J | A5 | Phase Transition |

#### 4:10 PM-5:50 PM

| White River A&B | B1 | Brain II |
| White River C&D | B2 | Diffusion and epidemics II |
| White River G&H | B3 | Social Media II |
| White River I | B4 | Medicine |
| White River J | B5 | Theory and Measurement |

#### THURSDAY, June 22, 4:10 PM-5:50 PM

| White River A&B | C1 | New Applications |
| White River C&D | C2 | Social Systems |
| White River G&H | C3 | Techniques and Tools I |
| White River I | C4 | Dynamics |
| White River J | C5 | Economics |

#### FRIDAY, June 23, 2:00 PM-3:40 PM

| White River A&B | D1 | Culture |
| White River C&D | D2 | Resilience |
| White River G&H | D3 | Techniques and Tools II |
| White River I | D4 | Community I |

#### 4:10 PM-5:50 PM

| White River A&B | E1 | Multilayer Networks |
| White River C&D | E2 | Science of Science |
| White River G&H | E3 | Geometry and Embedding |
| White River I | E4 | Community II |

Join organizers for a complimentary champagne toast at the end of the conference.
Session A1: Brain I
Chair: Fabrizio De Vico Fallani
Wednesday, June 21 2:00-3:40 pm
White River A&B

2:00-2:20pm
Spectral Mapping of Functional Brain Connectivity from White Matter Structural Graphs
Cassiano Becker, Sergio Pequito, George J. Pappas, Michael B. Miller, Scott T. Grafton, Danielle S. Bassett, Victor M. Preciado
Presented by: Victor Preciado

2:20-2:40pm
High-resolution structural connectivity reveals modules within brain regions
Peter Taylor, Yujiang Wang and Marcus Kaiser
Presented by: Marcus Kaiser

2:40-3:00pm
Higher-order synaptic interactions shape neocortical activity beyond pairwise structure
Brendan Chambers and Jason MacLean
Presented by: Brendan Chambers

3:00-3:20pm
Optimal modularity in rodent cortical slices
Nathaniel Rodriguez, Yong-Yeol Ahn, John Beggs and Zachary Tosi
Presented by: Nathaniel Rodriguez

3:20-3:40pm
Mapping joint structural-functional connectivity traits in the human connectome
Enrico Amico and Joaquin Goni
Presented by: Enrico Amico

Session A2: Diffusion and Epidemics I
Chair: Vittoria Colizza
Wednesday, June 21 2:00-3:40 pm
White River C&D

2:00-2:20pm
Disease spreading processes through the lens of multilayer networks
Yamir Moreno
Presented by: Yamir Moreno

2:20-2:40pm
Susceptible-infected-susceptible dynamics on the rewired configuration model
Guillaume St-Onge, Jean-Gabriel Young, Edward Laurence, Charles Murphy and Louis J. Dubé
Presented by: Guillaume St-Onge

2:40-3:00pm
Co-existence of multiple SIS processes on temporal networks: implications for control of bacterial infections in hospitals
Francesco Pinotti, Éric Fleury, Didier Guillemot, Pierre-Yves Boëlle and Chiara Poletto
Presented by: Francesco Pinotti

3:00-3:20pm
Between mixed and networked populations: a new parameter to predict the spread of disease
Ewan Colman, Andreas Modlmeier, David Hughes and Shweta Bansal
Presented by: Ewan Colman

3:20-3:40pm
Evolutionary cooperation, yes or no?
Fakhteh Ghanbarnejad, Kai Seegers, Alessio Cardillo and Philipp Hoevel
Presented by: Fakhteh Ghanbarnejad
Session A3: Social Media I
Chair: Johan Bollen
Wednesday, June 21 2:00-3:40 pm
White River G&H

2:00-2:20pm
Detection, Estimation, and Characterization of Bot Nodes in Social Networks
Onur Varol, Clayton Davis, Prashant Shiralkar, Emilio Ferrara, Filippo Menczer and Alessandro Flammini
Presented by: Onur Varol

2:20-2:40pm
Do We Really Need To Catch Them All? A New User-guided Social Media Crawling Method
Fredrik Erlandsson, Piotr Bródka, Martin Boldt and Henric Johnson
Presented by: Piotr Bródka

2:40-3:00pm
Scaling up early detection of popular memes on Twitter and Tumblr
Pik-Mai Hui, Alireza Sahami and Filippo Menczer
Presented by: Pik-Mai Hui

3:00-3:20pm
Tradeoff between information quality and diversity in online social networks
Diego F. M. Oliveira, Xiaoyan Qiu, Alireza Sahami Shirazi, Alessandro Flammini and Filippo Menczer
Presented by: Diego F. M. Oliveira

3:20-3:40pm
The Ripple Effect: You Are More Influential Than You Think
Yan Leng, Xiaowen Dong, Esteban Moro and Alex Pentland
Presented by: Yan Leng

Session A4: Biology
Chair: Michelle Girvan
Wednesday, June 21 2:00-3:40 pm
White River I

2:00-2:20pm
The Network Architecture Of Embryo Developmental Regulation
Bradly Alicea and Richard Gordon
Presented by: Bradly Alicea

2:20-2:40pm
Minimal functional networks: How much network do you need to live?
Rasoul Rajaei, Sean Cornelius, Emma Towson and Albert-Laszlo Barabasi
Presented by: Rasoul Rajaei

2:40-3:00pm
Highlighting the Complex Network Structure of Epigenetic Regulation using Message-Passing
Abhijeet Sonawane and Kimberly Glass
Presented by: Abhijeet Sonawane

3:00-3:20pm
Predicting protein-protein interactions with latent geometry
Maksim Kitsak, Rodrigo Aldecoa, Ivan Voitalov, Asher Ameli, Amitabh Sharma, Nathan Johnson, Andi Dhroso, Dmitri Korkin and Dmitri Krioukov
Presented by: Maksim Kitsak

3:20-3:40pm
Community structure of functional and anatomical muscle networks
Tjeerd Boonstra, Jennifer Kerkman, Leonardo Gollo, Andreas Daffertshofer and Michael Breakspear
Presented by: Tjeerd Boonstra
Session A5: Phase Transition
Chair: Peter Mucha
Wednesday, June 21 2:00-3:40 pm
White River J

2:00-2:20pm
Network Characterization of Mechanical Percolation
Samuel Heroy, Bill Shi, Dane Taylor, Peter Mucha and Greg Forest
Presented by: Samuel Heroy

2:20-2:40pm
Clustering determines the dynamics of complex contagions in multiplex networks
Yong Zhuang, Alex Arenas and Osman Yağan
Presented by: Osman Yağan

2:40-3:00pm
Universal golden time in hybrid percolation transitions
Deokjae Lee, Wonjun Choi, Janos Kertesz and Byungnam Kahng
Presented by: Wonjun Choi

3:00-3:20pm
Double phase transition in asymmetric percolation processes such as Zika
Laurent Hébert-Dufresne, Benjamin Althouse, Samuel Scarpino and Antoine Allard
Presented by: Laurent Hébert-Dufresne

3:20-3:40pm
Structural Transitions in Densifying Networks
Renaud Lambiotte, Paul Krapivsky, Uttam Bhat and Sidney Redner
Presented by: Renaud Lambiotte

Session B1: Brain II
Chair: Joaquín Goñi
Wednesday, June 21 4:10-5:50 pm
White River A&B

4:10-4:30pm
ECO or: a possible criterion to filter information in complex brain networks
Fabrizio De Vico Fallani, Vito Latora and Mario Chavez
Presented by: Fabrizio De Vico Fallani

4:30-4:50pm
Multidimensional encoding of structural brain connectomes; build biological networks with preserved edge properties
Franco Pestilli, Brent McPherson, Daniel Bullock, Andrea Avena-Koenigsberger, Joey Contreras, Andrew Saykin, Olaf Sporns and Cesar Caiafa
Presented by: Franco Pestilli

4:50-5:10pm
The Eurekometric Connectome: Discovering unexplored areas of neuroscience research
Malhar Jere, Ravi Kiran Raman and Lav Varshney
Presented by: Malhar Jere

5:10-5:20pm
Correspondence of connectome architecture with intracranial functional brain networks
Richard Betzel and Danielle Bassett
Presented by: Richard Betzel

5:30-5:50pm
Low dimensional morphospace of topological motifs in human fMRI brain networks
Sarah Morgan, Sophie Achard, Maite Termenon, Ed Bullmore and Petra Vertes
Presented by: Sarah Morgan
Session B2: Diffusion & Epidemics II
Chair: Alessandro Vespignani
Wednesday, June 21 4:10-5:50 pm
White River C&D

4:10-4:30pm
Modeling the Spread of Research Areas in the Computer Science Faculty Hiring Network
Dimitrios Economou, Allison Morgan and Aaron Clauset
Presented by: Allison Morgan

4:30-4:50pm
Mapping International Spreading Risk of 2015-16 Zika Epidemic
Qian Zhang, Ana Pastore-Piontti, Kaiyuan Sun, Matteo Chinazzi, Natalie Dean, Diana Rojas, Stefano Merler, Dina Mistry, Syed Haque, Piero Poletti, Luca Rossi, Margaret Bray, M. Elizabeth Halloran, Ira Longini and Alessandro Vespignani
Presented by: Ana Pastore-Piontti

4:50-5:10pm
Parasites spreading in spatial ecological multiplex networks
Massimo Stella, Cecilia Andreazzi, Sanja Selakovic, Alireza Goudarzi and Alberto Antonioni
Presented by: Massimo Stella

5:10-5:20pm
Inferring dynamic contact networks of infectious disease spread in wildlife populations
Pratha Sah and Shweta Bansal
Presented by: Pratha Sah

5:30-5:50pm
Vulnerability of livestock trade networks to epidemics
Vittoria Colizza
Presented by: Vittoria Colizza

Session B3: Social Media II
Chair: Fil Menczer
Wednesday, June 21 4:10-5:50 pm
White River G&H

4:10-4:30pm
Emergence of Echo Chamber Networks: The Effects of Social Media Mechanisms
Kazutoshi Sasahara, Giovanni Luca Ciampaglia, Alessandro Flammini and Filippo Menczer
Presented by: Kazutoshi Sasahara

4:30-4:50pm
Group Polarization in Opinion Network Dynamics
Michael Gabbay, Zane Kelly, Justin Reedy and John Gastil
Presented by: Michael Gabbay

4:50-5:10pm
Beautiful and damned. Combined effect of content quality and social ties on user engagement
Luca Maria Aiello, Rossano Schifanella, Miriam Redi, Stacey Svetlichnaya, Frank Liu and Simon Osindero
Presented by: Rossano Schifanella

5:10-5:20pm
Beyond sentiment analysis: quantifying individual mood from natural language
Rui Fan and Johan Bollen
Presented by: Rui Fan

5:30-5:50pm
Dynamics of Disagreement: Large-Scale Temporal Network Analysis Reveals Negative Interactions in Online Collaboration
Milena Tsvetkova, Ruth Garcia Gavilanes and Taha Yasseri
Presented by: Taha Yasseri
**Session B4: Medicine**
Chair: Emma Towlson
Wednesday, June 21 4:10-5:50 pm
White River I

4:10-4:30pm
The multiplex network of human diseases
Arda Halu, Manlio De Domenico, Alex Arenas and Amitabh Sharma
Presented by: Arda Halu

4:30-4:50pm
Compensatory interactions to stabilize multiple steady states or mitigate the effects of multiple deregulations in biological networks
Gang Yang, Colin Campbell and Réka Albert
Presented by: Gang Yang

4:50-5:10pm
Understanding Tissue-Specific Gene Regulation
Presented by: Kimberly Glass

5:10-5:20pm
Global Metabolic Interaction Network of the Human Gut Microbiota with Community-level Disease Implications
Pan-Jun Kim, Jaeyun Sung, Seunghyeon Kim, Josephine Jill Cabatbat, Sungho Jang, Yong-Su Jin, Nicholas Chia and Gyoo Yeol Jung
Presented by: Pan-Jun Kim

5:30-5:50pm
Identifying phenotype-relevant modules from a tissue-specific biological network: Application to an amygdala imaging genetics study in Alzheimer’s disease
Xiaohui Yao, Jingwen Yan, Kwangsik Nho, Shannon Leigh Risacher, Casey Greene, Jason Moore, Andrew Saykin and Li Shen
Presented by: Xiaohui Yao

**Session B5: Theory and Measurement**
Chair: Tina Eliassi-Rad
Wednesday, June 21 4:10-5:50 pm
White River J

4:10-4:30pm
Scale-free networks are rare
Anna Broido and Aaron Clauset
Presented by: Anna Broido

4:30-4:50pm
Configuring random graph models with fixed degree sequences
Daniel Larremore, Bailey Fosdick, Johan Ugander and Joel Nishimura
Presented by: Daniel Larremore

4:50-5:10pm
Patterns and Anomalies in k-Cores of Real-world Networks
Kijung Shin, Tina Eliassi-Rad and Christos Faloutsos
Presented by: Kijung Shin

5:10-5:20pm
Multiscale mixing patterns in networks
Leto Peel, Jean-Charles Delvenne and Renaud Lambiotte
Presented by: Leto Peel

5:30-5:50pm
Edge-exchangeable graphs and sparsity
Diana Cai, Trevor Campbell and Tamara Broderick
Presented by: Diana Cai
Session C1: New Applications
Chair: Xiaofan Wang
Thursday, June 22 4:10-5:50 pm
White River A&B

4:10-4:30pm
The limits of efficiency in blockchain systems: Parsimonious modelling and data
Claudio Juan Tessone and Paolo Tasca
Presented by: Claudio Juan Tessone

4:30-4:50pm
Diminishing returns with size for parallel computation capacity of neural architectures
Giovanni Petri, Sebastian Musslick, H. Kayhan Ozceimder, Biswadip Dey, Nesreen Ahmed and Jonathan Cohen
Presented by: Giovanni Petri

4:50-5:10pm
Multiplex lexical networks reveal patterns of early word acquisition in children
Massimo Stella, Nicole Beckage and Markus Brede
Presented by: Massimo Stella

5:10-5:20pm
Discovering new materials by detecting modules in atomic networks
Sebastian Ahnert and Chris Pickard
Presented by: Sebastian Ahnert

5:30-5:50pm
Embedding graphs in Lorentzian spacetime
James Clough and Tim Evans
Presented by: Tim Evans

Session C2: Social Systems
Chair: Ciro Cattuto
Thursday, June 22 4:10-5:50 pm
White River C&D

4:10-4:30pm
What comes first? Social strength or common friends?
Giovanna Miritello, Manuel Cebrian and Esteban Moro
Presented by: Esteban Moro

4:30-4:50pm
Network Happiness: How Social Interactions Impact our Well-Being
Johan Bollen, Bruno Goncalves and Ingrid Van de Leemput
Presented by: Johan Bollen

4:50-5:10pm
Sharing Expertise versus Sharing Information: A computational model of team collaboration and problem solving
John Lang, Noshir Contractor, Leslie Dechurch, Brian Uzzi and Pj Lamberson
Presented by: John Lang

5:10-5:20pm
Evidence of Stubbornness in Jury Deliberations
Keith Burghardt, William Rand and Michelle Girvan
Presented by: Keith Burghardt

5:30-5:50pm
Rhesus macaques – societal collapse in a multiplex social network
Márton Pósfai, Niklas Braun, Brianne Beisner, Kelly R. Finn, Brenda McCowan and Raissa M. D’Souza
Presented by: Márton Pósfai
Session C3: Techniques and Tools I
Chair: Aaron Clauset
Thursday, June 22 4:10-5:50 pm
White River G&H

4:10-4:30pm
Reconsidering the impact of Stochastic Block Model performance on topological link prediction in complex networks
Alessandro Muscoloni and Carlo Vittorio Cannistraci
Presented by: Carlo Vittorio Cannistraci

4:30-4:50pm
Inferring Influence Networks from Longitudinal Bipartite Relational Data
Frank Marrs, Benjamin Campbell, Bailey Fosdick, Skyler Cranmer and Tobias Bohmelt
Presented by: Frank Marrs

4:50-5:10pm
Network Backboning with Noisy Data
Michele Coscia and Frank Neffke
Presented by: Michele Coscia

5:10-5:20pm
Finding the logic backbone of a boolean network
Parul Maheshwari and Reka Albert
Presented by: Parul Maheshwari

5:30-5:50pm
Identifying a Hierarchical Backbone from Bipartite Networks
Woo Seong Jo, Yong-Yeol Ahn and Beom Jun Kim
Presented by: Woo Seong Jo

Session C4: Dynamics
Chair: Santo Fortunato
Thursday, June 22 4:10-5:50 pm
White River I

4:10-4:30pm
Fisher information as indicator of edge-of-chaos for finite Kuramoto networks
Alexander Kalloniatis, Mathew Zuparic and Mikhail Prokopenko
Presented by: Alexander Kalloniatis

4:30-4:50pm
Committed activists and the reshaping of status-quo social consensus
Dina Mistry, Qian Zhang, Nicola Perra and Andrea Baronchelli
Presented by: Dina Mistry

4:50-5:10pm
When is your network a network? Statistical Inference in Multi-Order Network Models of Pathway Data
Ingo Scholtes
Presented by: Ingo Scholtes

5:10-5:20pm
Efficient Change Point Detection on Dynamic Social Networks
Yu Wang, Aniket Chakrabarti, Srinivasan Parthasarathy and David Sivakoff
Presented by: Yu Wang

5:30-5:50pm
Self-Organization of Dragon Kings
Yuansheng Lin, Pierre-André Noël and Raissa M. D’Souza
Presented by: Yuansheng Lin
**Session C5: Economics**
Chair: César A. Hidalgo
Thursday, June 22 4:10-5:50 pm
White River J

4:10-4:30pm
**Career paths and career loops: the occupational mobility network of the Brazilian labor market**
Cristian Jara Figueroa, Mary Kaltenberg, Dominik Hartmann and Cesar Hidalgo
Presented by: Cristian Jara Figueroa

4:30-4:50pm
**The Blessing and the Curse of Fraught Regions in a Group Coordination Game**
Whitney Tabor, Zachary Ekves, Garrett Smith, Yu Mao and Harry Dankowicz
Presented by: Garrett Smith

4:50-5:10pm
**The price of complexity in financial networks**
Stefano Battiston, Guido Caldarelli, Robert May, Tarik Roukny and Joseph Stiglitz
Presented by: Guido Caldarelli

5:10-5:20pm
**Firms’ Heterogeneity in Accessing Foreign Markets: A Network Analysis**
Shibi He
Presented by: Shibi He

5:30-5:50pm
**Hierarchy, Modularity and Community: Empirical Analysis and Modeling of Global Industrial Supply Networks**
Tomomi Kito, Steve New and Felix Reed-Tsochas
Presented by: Tomomi Kito

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**Session D1: Culture**
Chair: Maximilian Schich
Friday, June 23 2:00-3:40 pm
White River A&B

2:00-2:20pm
**Novelty and Influence Networks from the Transition Network of Musical Codewords**
Doheum Park and Juyong Park
Presented by: Doheum Park

2:20-2:40pm
**Network Science of Narratives: Dynamics and Interaction Mapping**
Semi Min and Juyong Park
Presented by: Juyong Park

2:40-3:00pm
**Time-dependent branching of genres in the Paris Salon**
Maximilian Schich, Artem Bolshakov, Debra Dewitte and Diana Greenwald
Presented by: Maximilian Schich

3:00-3:20pm
**The Role of Figurative Language in Multimodal Social Platforms**
Rossano Schifanella, Paloma de Juan, Joel Tetreault and Liangliang Cao
Presented by: Rossano Schifanella

3:20-3:40pm
**The puzzle of near misses - a novelty perspective**
Zhongyang He, Zhen Lei and Dashun Wang
Presented by: Zhongyang He
Session D2: Resilience
Chair: Raissa D’Souza
Friday, June 23 2:00-3:40 pm
White River C&D

2:00-2:20pm
Towards Attack Tolerant Networks: Multipath Fault Tolerance
Edward Plattt and Daniel Romero
Presented by: Edward Plattt

2:20-2:40pm
A Framework To Calculate the Cascade Size Evolution on Random Networks
Rebekka Burkholz and Frank Schweitzer
Presented by: Rebekka Burkholz

2:40-3:00pm
Network topology protection in an adversarial environment
Siddharth Pal, Ertugrul Ciftcioglu, Kevin Chan, Prithwish Basu and Ananthram Swami
Presented by: Siddharth Pal

3:00-3:20pm
Robustness of interdependent networks under a flow redistribution model
Yingrui Zhang and Osman Yağan
Presented by: Yingrui Zhang

3:20-3:40pm
Tipping points leading to catastrophic shifts in networked populations
Young-Ho Eom
Presented by: Young-Ho Eom

Session D3: Techniques and Tools II
Chair: Giovanni Ciampaglia
Friday, June 23 2:00-3:40 pm
White River G&H

2:00-2:20pm
Rich-clubness test: how to determine whether a complex network has or doesn’t have a rich-club?
Alessandro Muscoloni and Carlo Vittorio Cannistraci
Presented by: Alessandro Muscoloni

2:20-2:40pm
Integer Programming Techniques for Finding Key Players in Networks
Alexander Veremyev, Oleg Prokopyev, Vladimir Boginski and Eduardo Pasiliao
Presented by: Alexander Veremyev

2:40-3:00pm
Tools for constructing graphs with fixed degree sequences
David Burstein and Jonathan Rubin
Presented by: Jonathan Rubin

3:00-3:20pm
Reducing Network Incompleteness through Probing Nodes
Sucheta Soundarajan, Tina Eliassi-Rad, Brian Gallagher and Ali Pinar
Presented by: Sucheta Soundarajan

3:20-3:40pm
Efficient thresholding of weighted networks
Xiaoran Yan, Santo Fortunato, Alessandro Flammini and Filippo Radicchi
Presented by: Xiaoran Yan
Session D4: Community I
Chair: YY Ahn
Friday, June 23 2:00-3:40 pm
White River I

2:00-2:20pm
On comparing clusterings: an element-centric framework unifies overlaps and hierarchy
Alexander Gates, Ian Wood and Yong-Yeol Ahn
Presented by: Alexander Gates

2:20-2:40pm
A semidefinite program for structured blockmodels
David Choi
Presented by: David Choi

2:40-3:00pm
Statistical mechanics of mesoscopic structure extraction
Jean-Gabriel Young, Guillaume St-Onge, Patrick Desrosiers and Louis J. Dubé
Presented by: Jean-Gabriel Young

3:00-3:20pm
The many facets of community detection in complex networks
Renaud Lambiotte, Jean-Charles Delvenne, Martin Rosvall and Michael Schaub
Presented by: Renaud Lambiotte

3:20-3:40pm
Nonparametric Bayesian inference of the microcanonical stochastic block model
Tiago Peixoto
Presented by: Tiago Peixoto

Session E1: Multilayer Networks
Chair: Filippo Radicchi
Friday, June 23 4:10-5:50 pm
White River A&B

4:10-4:30pm
Graph Product Multilayer Networks: Spectral Properties and Applications
Hiroki Sayama
Presented by: Hiroki Sayama

4:30-4:50pm
Community detection, link prediction, and layer interdependence in multilayer networks
Caterina De Bacco, Eleanor A. Power, Daniel B. Larremore and Cristopher Moore
Presented by: Caterina De Bacco

4:50-5:10pm
Cycles and Clustering in Multiplex Networks
Gareth Baxter, Davide Cellai, Sergey Dorogovtsev and Jose Fernando Mendes
Presented by: Gareth Baxter

5:10-5:20pm
Congestion induced by the structure of multiplex networks
Albert Sole, Alex Arenas and Sergio Gómez
Presented by: Albert Sole

5:30-5:50pm
Generative benchmark models for mesoscale structure in multilayer networks
Marya Bazzi, Lucas G. S. Jeub, Alex Arenas, Sam D. Howison and Mason A. Porter
Presented by: Lucas G. S. Jeub
Session E2: Science of Science
Chair: Dashun Wang
Friday, June 23 4:10-5:50 pm
White River C&D

4:10-4:30pm
The Inner Circles of Women’s Networks Predict their Job Attainment in STEM Leadership Positions
Yang Yang, Kevin Gaughan and Brian Uzzi
Presented by: Yang Yang

4:30-4:50pm
A quantitative framework for revealing disciplinary organizations of science
Hao Peng, Qing Ke and Yong-Yeol Ahn
Presented by: Hao Peng

4:50-5:10pm
Hot Hand in Science: Quantifying the Dynamical Impact of Individual Scientists
Lu Liu, Yang Wang, Roberta Sinatra, Lee Giles, Chaoming Song and Dashun Wang
Presented by: Lu Liu

5:10-5:20pm
Geography of Scientific Collaboration in Physics
Enrico Maiorino, Matteo Chinazzi and Qian Zhang
Presented by: Qian Zhang

5:30-5:50pm
Understanding the success and failure of grant applications
Yang Wang, Travis Hoppe, Bruce Hutchins, George Santangelo, James Evans and Dashun Wang
Presented by: Yang Wang

Session E3: Geometry and Embedding
Chair: Renaud Lambiotte
Friday, June 23 4:10-5:50 pm
White River G&H

4:10-4:30pm
The effective navigable geometry of the brain
Antoine Allard and M. Ángeles Serrano
Presented by: Antoine Allard

4:30-4:50pm
Coalescent embedding in the hyperbolic space unsupervisedly discloses the hidden geometry of the brain
Alberto Cacciola, Alessandro Muscoloni, Vaibhav Narula, Alessandro Calamuneri, Salvatore Nigro, Emeran Mayer, Jennifer Labus, Giuseppe Anastasi, Aldo Quattrone, Angelo Quattarone, Demetrio Milardi and Carlo Vittorio Cannistraci
Presented by: Carlo Vittorio Cannistraci

4:50-5:10pm
Time-dependent connection threshold in growing random geometric graphs
Charles Murphy, Antoine Allard, Guillaume St-Onge and Louis J. Dubé
Presented by: Charles Murphy

5:10-5:20pm
Curvature-based Analysis of Complex Networks
Melanie Weber, Emil Saucan and Juergen Jost
Presented by: Melanie Weber

5:30-5:50pm
Dynamical embeddings of complex systems: dynamical modules and dimensionality reduction
Michael Schaub, Jean-Charles Delvenne, Renaud Lambiotte and Mauricio Barahona
Presented by: Michael Schaub
Session E4: Community II
Chair: Giancarlo Ruffo
Friday, June 23 4:10-5:50 pm
White River I

4:10-4:30pm
**NestModularity measure for the join analysis of nested and modular networks**
Albert Sole, Claudio Tessone, Manuel Mariani and Javier Borge-Holthoefer
Presented by: Albert Sole

4:30-4:50pm
**Layer aggregation with thresholding: A nonlinear filter for super-resolution community detection in multilayer and temporal networks**
Dane Taylor, Rajmonda Caceres and Peter Mucha
Presented by: Dane Taylor

4:50-5:10pm
**Modulus of family of loops with applications in network analysis**
Heman Shakeri, Caterina Scoglio, Pietro Poggi-Corradini and Nathan Albin
Presented by: Heman Shakeri

5:10-5:20pm
**Community Detection with Selective Zooming**
Ian Wood, Xiaoran Yan, Xiaozhong Liu and Yong-Yeol Ahn
Presented by: Ian Wood

5:30-5:50pm
**Spectral partitioning in random regular blockmodels**
Paolo Barucca
Presented by: Paolo Barucca
POSTERS

Network Neuroscience

P1001: Path ensembles and a trade-off between communication efficiency and resilience in the human connectome
Andrea Avena-Koenigsberger, Bratislav Misic, Robert X. D. Hawkins, Alessandra Griffa, Patric Hagmann, Joaquin Goñi and Olaf Sporns
Presented by: Andrea Avena-Koenigsberger

P1002: Optimal control of brain communication efficiency through local and global information
Andrea Avena-Koenigsberger, Xiaoran Yan, Artemy Kolchinsky and Olaf Sporns
Presented by: Andrea Avena-Koenigsberger

P1003: Structure, Function, and Control of the Musculoskeletal Network
Andrew Murphy, Sarah Muldoon, David Baker, Adam Lastowka, Brittany Bennett, Muzhi Yang and Danielle Bassett
Presented by: Andrew Murphy

P1004: A predictive framework of co-activation patterns of excitable networks
Arnaud Messé, Marc-Thorsten Hütt and Claus-Christian Hilgetag
Presented by: Arnaud Messé

P1005: Information transfer enhanced by noise on a human connectome model
Bertha Vázquez-Rodríguez, Andrea Avena, Olaf Sporns and Hernán Larralde
Presented by: Bertha Vázquez-Rodríguez

P1006: Spatiotemporal Network Markers of Individual Variability in the Human Functional Connectome
Cleofe Pena-Gomez, Andrea Avena-Koenigsberger, Jorge Sepúlcre and Olaf Sporns
Presented by: Cleofe Pena-Gomez

P1007: A Network Model of the Effects of Nodal Lesions on Human Resting State Functional Connectivity
David Botros, Olaf Sporns, Alessandra Griffa, Patric Hagmann and Andrea Avena-Koenigsberger
Presented by: David Botros

P1008: Towards integrating white matter topology in the Human Connectome: The extended connectome.
Domingo Lopez-Rodriguez, Bernat Corominas-Murtra, Carlos Rodriguez-Caso and Joaquin Goni
Presented by: Domingo Lopez-Rodriguez

P1009: Persistent activity of neural dynamics on hierarchical networks
Edward Laurence, Patrick Desrosiers and Louis J. Dubé
Presented by: Edward Laurence

P1010: Structural connectivity measures are partial predictors of EEG resting-state functional connectivity
Emeline Mullier, Alessandra Griffa, Jean-Francois Knebel, Jakub Vohryzek, Micah Murray, Christoph Michel and Patric Hagmann
Presented by: Alessandra Griffa

P1011: Localized homological reorganization of brain functional scaffolds after LSD administration
Esther Ibañez-marcelo, Angkoon Phinyomark, Paul Expert, Robin Carhart-Harris, Francesco Vaccarino and Giovanni Petri
Presented by: Esther Ibañez-marcelo
P1012: Structural Network Segregation and Integration in Comorbid Cigarette and Alcohol Dependence
Evgeny Chumin, Mario Dzemidzic, Joaquin Goñi, Meredith Halcomb and Karmen Yoder
Presented by: Evgeny Chumin

P1013: Synaptic excitation-inhibition relationship in neocortical microcircuits boosts anatomical small-world organization
Eyal Gal, Amir Globerson, Michael London, Olaf Sporns, Henry Markram and Idan Segev
Presented by: Eyal Gal

P1014: Detecting optimal subgraphs in connectomes across individuals and species
Filip Miscevic and Olaf Sporns
Presented by: Filip Miscevic

P1015: The Role of Philosophy in Systems Neuroscience
Frank Faries
Presented by: Frank Faries

P1016: Functional Network Structure and Integrated Information in the Human Brain during Anesthetic-Induced Unconsciousness
Hyoungkyu Kim, Phillip Vlisides, Tarik Bel-Bahar, George Mashour and Uncheol Lee
Presented by: Hyoungkyu Kim

P1017: Network Metrics for Spatio-temporal Connectomes
Jakub Vohryzek, Alessandra Griffa, Emeline Mullier, Cecilia Maeder, Marie Schaer, Stephan Elliez and Patric Hagmann
Presented by: Jakub Vohryzek

P1018: Loss of inter-frequency brain hubs in Alzheimer’s disease
Jeremy Guillon, Yohan Attal, Olivier Colliot, Valentina La Corte, Bruno Dubois, Denis Schwartz, Mario Chavez and Fabrizio De Vico Fallani
Presented by: Jeremy Guillon

P1019: Network classification with applications to brain connectomics
Jesus Arroyo, Daniel Kessler, Elizaveta Levina and Stephan Taylor
Presented by: Jesus Arroyo

P1020: Inhibitory Modulation of Network Dynamics: from Criticality to Tight Balance
Jingwen Li and Woodrow Shew
Presented by: Jingwen Li

P1021: ConnlICA: a group-level framework for reconstruction of individual connectomes
Joaquin Goni, Enrico Amico, Diana Svaldi, Kausar Abbas and Thomas Talavage
Presented by: Joaquin Goni

P1022: Resting state network modularity along the prodromal late onset Alzheimer’s disease continuum
Joey Contreras, Santo Fortunato, Andrea Avena-Koenigsberger, Shannon Risacher, John West, Eileen Tallman, Brenna McDonald, Martin Farlow, Liana Apostolova, Joaquin Goñi, Mario Dzemidzic, Olaf Sporns and Andrew Saykin
Presented by: Joey Contreras

P1023: Brain networks are independently modulated by donepezil, sleep, and sleep deprivation
Jonathan Wirsich, Marc Rey, Maxime Guye, Joelle Micallef, Olivier Blin and Jean-Philippe Ranjeva
Presented by: Jonathan Wirsich

P1024: General Relationship between Network Topology and Directionality of Information Flow: with Application to Brain Networks across Different Species
Joon-Young Moon, Uncheol Lee, George Mashour, Tae-Wook Ko, Junhyeok Kim, Jee-Hyun Choi, Yasser Iturria Medina, Minkyung Kim and Joseph Lee
Presented by: Joon-Young Moon
P1025: Development of Community Structure in the Human Connectome across the Life Span: An Application of Weighted Stochastic Blockmodels
Joshua Faskowitz, Xiaoran Yan, Xi-Nian Zuo and Olaf Sporns
Presented by: Joshua Faskowitz

P1026: Quantum annealing of sparse associative memory models
Kathleen Hamilton, Jonathan Schrock, Neena Imam and Travis Humble
Presented by: Kathleen Hamilton

P1027: Simultaneous Community Detection in Structural Brain Networks across Multiple Subjects
Kefei Liu, Huang Li, Shiaofen Fang, Enrico Amico, John West, Jingwen Yan, Yu-Chien Wu, Olaf Sporns, Andrew Saykin, Joaquin Goni and Li Shen
Presented by: Kefei Liu

P1028: A Brain Network Model of Fibromyalgia Patient's Hyper Sensitivity
Kyoungun Lee and Uncheol Lee
Presented by: Kyoungun Lee

P1029: Dense-EEG source connectivity: a network-based approach to brain disorders
Mahmoud Hassan and Fabrice Wendling
Presented by: Mahmoud Hassan

P1030: Structure-function relationships in segregated and integrated states of time-resolved brain networks
Makoto Fukushima, Richard F. Betzel, Ye He, Marcel A. de Reus, Martijn P. van den Heuvel, Xi-Nian Zuo and Olaf Sporns
Presented by: Makoto Fukushima

P1031: Graph-Informed Regularization Methods for Regression
Marta Karas, Damian Brzyski, Joaquin Goni, David Kareken, Timothy Randolph, Mario Dzemidzic and Jaroslaw Harezlak
Presented by: Marta Karas

P1032: Functional Network Configurations of the Human Brain Lead to Distinct Synchronization Patterns that Model the Progressive and Abrupt Recovery of Consciousness after General Anesthesia
Minkyung Kim, Seunghwan Kim, George Mashour and Uncheol Lee
Presented by: Minkyung Kim

P1033: Phases of Physical 3D Networks
Nima Dehmamy, Soodabeh Milanloui and Albert-Laszlo Barabasi
Presented by: Nima Dehmamy

P1034: Connectomics from a Traffic Analysis Perspective
Ouri Wolfson, Piotr Szczurek, Aishwarya Vijayan, Alex Leow and Olu Ajilore
Presented by: Ouri Wolfson

P1035: Tailoring Echo State Networks for Optimal Learning
Pau Vilimelis Aceituno, Gang Yan and Yang-Yu Liu
Presented by: Pau Vilimelis Aceituno

P1036: Oscillatory network dynamics of non-rapid eye movement sleep
Roy Cox, Anna Schapiro and Robert Stickgold
Presented by: Roy Cox

P1037: Out-degree rich clubs in networks of spiking cortical neurons feed neural computations while in-degree rich clubs perform neural computations
Samantha Faber, John Beggs, Ehren Newman and Nick Timme
Presented by: Samantha Faber

P1038: Emergence of Topological Features in Evolved Artificial Neural Networks
Scott McCaulay
Presented by: Scott McCaulay
P1039: **Recurrent Collective Classification**
Shuangfei Fan and Bert Huang
Presented by: Shuangfei Fan

P1040: **A random effects stochastic block model for community detection in multiple networks with applications to neuroimaging.**
Subhadeep Paul and Yuguo Chen
Presented by: Subhadeep Paul

P1041: **Enhancing functional recovery after stroke: Identifying optimal neuro-stimulation targets using connectivity profiles**
Sol Lim and Marcus Kaiser
Presented by: Sol Lim

P1042: **Robustness in coupled structural and functional human brain networks**
Sol Lim, Filippo Radicchi, Marcel A. de Reus, Martijn P. van den Heuvel and Olaf Sporns
Presented by: Sol Lim

P1043: **Modeling diffusion processes in the brain through a cooperative learning ant colony-inspired algorithm**
Uttara Tipnis, Enrico Amico, Mario Ventresca and Joaquin Goni
Presented by: Uttara Tipnis

P1044: **Reconfiguration of Brain Functional Network Community Structure in Major Depressive Disorder**
Ye He, Sol Lim, Santo Fortunato, Lei Zhang, Xi-Nian Zuo, Jiang Qiu and Olaf Sporns
Presented by: Ye He

P1045: **Multistate bootstrap percolation as a simplified model of bursting in the pre-Bötzinger complex**
Yury Sokolov, Jeffrey Smith and Jonathan Rubin
Presented by: Yury Sokolov

P1046: **Generating Functional Rat Brain Networks from Directed Structural Networks**
Zachary Osborn, Antonio Diaz-Parra and Olaf Sporns
Presented by: Zachary Osborn

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**Biological Networks and Network Medicine**

P1047: **Structural Robustness in Function-Specific Protein-Interaction Networks**
Alice Schwarze, Mason A. Porter and Jonny Wray
Presented by: Alice Schwarze

P1048: **Patient-sharing hospital network centrality and its effect on inpatient mortality**
Amar Dhand
Presented by: Amar Dhand

P1049: **Towards personalized medicine: novel disease taxonomy by integrating phenotypic and molecular networks**
Amitabh Sharma, Xuezhong Zhou, Arda Halu and Joseph Loscalzo
Presented by: Amitabh Sharma

P1050: **Integrated method for comparative gene co-expression network analysis**
Andre Voigt, Martin Borud, Katja Nowick and Eivind Almaas
Presented by: Andre Voigt

P1051: **Exploiting the structure of temporal networks to identify the keys genes in diseases**
Asher Ameli, Shikang Liu, Marc Santolini, Alvin Kho, Scott Weiss and Amitabh Sharma
Presented by: Asher Ameli
P1052: Pioneering topological methods for network-based drug-target prediction
Claudio Duran, Carlo Vittorio Cannistraci, Simone Daminelli, Josephine Thomas, Joachim Haupt and Michael Schroeder
Presented by: Claudio Duran

P1053: Mining and visualizing the network of directional drug interaction effects
Danai Chasioti, Xiaohui Yao, Pengyue Zhang, Sara Quinney, Xia Ning, Lang Li and Li Shen
Presented by: Danai Chasioti

P1054: Robustness of the metabolic networks: The impact of enzymatic gene expression
Gyeong-Gyun Ha and Deok-Sun Lee
Presented by: Gyeong-Gyun Ha

P1055: Network approach integrates 3D structural and sequence data to improve protein structural comparison
Fazle Faisal, Julie Chaney, Khalique Newaz, Jun Li, Scott Emrich, Patricia Clark and Tijana Milenkovic
Presented by: Khalique Newaz

P1056: The Interhospital Transfer Network for Very Low Birth Weight Infants in the United States
Samuel Scarpino, Munik Shrestha, Erika Edwards, Lucy Greenberg and Jeffrey Horbar
Presented by: Samuel Scarpino

P1057: Finding topologically associated domains in chromosome interactions via network community identification
Sang Hoon Lee, Jae-Hyung Jeon, Ludvig Lizana and Per Stenberg
Presented by: Sang Hoon Lee

P1058: Enlightening discriminative network functional modules behind Principal Component Analysis separation in differential-omic science studies.
Sara Ciucci, Yan Ge, Claudio Duran, Alessandra Palladini, Víctor Jiménez Jiménez, Luisa María Martínez Sánchez, Susanne Sales, Andrej Shevchenko, Steven W. Poser, Maik Herbig, Oliver Otto, Andreas Androutsellis-Theotokis, Jochen Guck, Mathias J. Gerl and Carlo Vittorio Cannistraci
Presented by: Sara Ciucci

P1059: Form and function in regulatory networks: The dynamical state space of network motifs
Sebastian Ahnert and Thomas Fink
Presented by: Sebastian Ahnert

P1060: What can network science tell us about human aging?
Tijana Milenkovic
Presented by: Tijana Milenkovic

P1061: Pattern Discovery from Directional High-Order Drug-Drug Interaction Relations
Xia Ning, Lang Li and Li Shen
Presented by: Xia Ning

Epidemics, Diffusion, and Spreading

P1062: Strategic Network Diffusion
Aamena Alshamsi, Flavio Pinheiro and Cesar Hidalgo
Presented by: Aamena Alshamsi

P1063: Modeling disease spreading on constrained real networks
Alberto Aleta, Sandro Meloni and Yamir Moreno
Presented by: Alberto Aleta
P1064: The role of local network structure on disease spread in coupled networks
Wouter Vermeer, Bryan Head and Uri Wilensky
Presented by: Bryan Head

P1065: Anomalous early growth pattern predicts ultimate impact
Ching Jin, Chaoming Song, Johannes Bjelland, Geoffrey Canright, Albert-László Barabási and Dashun Wang
Presented by: Ching Jin

P1066: Surveillance on Networks
Daniele Cassese
Presented by: Daniele Cassese

P1067: Strategies for identifying influential seed nodes for spreading processes in complex networks
Felipe Montes, Ana Maria Jaramillo, Juan Alejandro Valdivia and Roberto Zarama
Presented by: Felipe Montes

P1068: SIS Epidemic Spreading with Heterogeneous Infection Rates
Bo Qu and Huijuan Wang
Presented by: Huijuan Wang

P1069: Balancing Speed and Coverage by Sequential Seeding in Complex Networks
Jaroslaw Jankowski, Piotr Bródka, Przemysław Kazienko, Boleslaw Szymanski, Radosław Michalski and Tomasz Kajdanowicz
Presented by: Jaroslaw Jankowski

P1070: Quantifying the global transmission pattern of infectious disease epidemic
Kaiyuan Sun, Dina Mistry, Ana Pastore Y Piontti, Luca Rossi, Marcelo Gomes and Alessandro Vespignani
Presented by: Kaiyuan Sun

P1071: A tensor decomposition-based method for temporal networks with partial information
Anna Sapienza, Laetitia Gauvin and Ciro Cattuto
Presented by: Laetitia Gauvin

P1072: The spatial spreading of infectious diseases in South Korea via national and local mobility networks
Okyu Kwon
Presented by: Okyu Kwon

P1073: Finding influential seeds for information cascade in multilayer networks
Fredrik Erlandsson, Piotr Bródka and Anton Borg
Presented by: Piotr Bródka

P1074: Not all friends are equal: How heterogeneous social influence promotes or hinders behavioural cascades in complex networks
Samuel Unicomb, Gerardo Iniguez and Marton Karsai
Presented by: Samuel Unicomb

P1075: A seeding strategy to promote the spread of behavior on social networks
Soojong Kim and Damon Centola
Presented by: Soojong Kim

P1076: Use of Cattle Movement Information to Improve Bovine Tuberculosis Surveillance in the U.S.
Szu-Yu Zoe Kao, Kimberly Vanderwaal, Eva A. Enns, Catalina Picasso, Julio Alvarez, Andres Perez, Meggan E. Craft and Scott Wells
Presented by: Szu-Yu Zoe Kao

P1077: Social Networks in the Pig Barn
Tobias Kaufholz, Malke Will, Dirk Brockmann and Thomas Selhorst
Presented by: Tobias Kaufholz
P1078: Optimally Containing Epidemic Processes on Temporal and Adaptive Networks
Masaki Ogura and Victor Preciado
Presented by: Victor Preciado

Dynamics

P1079: Phase transitions and the emergence of collective intelligence in small human networks.
Giuseppe Carbone and Ilaria Giannoccaro
Presented by: Giuseppe Carbone

P1080: An Analysis of the Structural Transformation of Power Distribution Grids
Hale Cetinay Iyicil, Yakup Koc, Fernando A. Kuipers and Piet Van Mieghem
Presented by: Hale Cetinay Iyicil

P1081: Quantifying Co-Evolution of Layers in Multiplex Networks
Haochen Wu, Ryan James, James Crutchfield and Raissa D’Souza
Presented by: Haochen Wu

P1082: Temporal Graph Anomaly Summarization
Charalampos Chelmis and Reshul Dani
Presented by: Charalampos Chelmis

P1083: From Random to Optimal: The Emergence of High Rewarding Paths in Networks
Daniel Figueiredo and Michele Garetto
Presented by: Daniel Figueiredo

P1084: Models of Human Mobility: Migration vs. Commuting
David Robinson and Bistra Dilkina
Presented by: David Robinson

P1085: Overload cascades on multiplex networks
Dong Zhou and Ahmed Elmokashfi
Presented by: Dong Zhou

P1086: Evolutionary Design of Complex Networks in the Presence of Adversarial and Competitive Entities
Ertugrul Ciftcioglu, Kevin Chan, Siddharth Pal, Derya Cansever, Prithwish Basu and Ananthram Swami
Presented by: Ertugrul Ciftcioglu

P1087: Robustness of network synchronisation under tempered stable noise
Alexander Kalloniatis and Dale Roberts
Presented by: Alexander Kalloniatis

P1088: Adaptive control of networked oscillators through frustration in the Kuramoto-Sakaguchi model
Alexander Kalloniatis and Markus Brede
Presented by: Alexander Kalloniatis

P1089: Case study of stochastic synchronisation of oscillators: numerical and analytical solutions
Alexander Kalloniatis, Mathew Zuparic and Andrew Holder
Presented by: Alexander Kalloniatis

P1090: Tap-embedded Network Representation for Power Grids
Heetae Kim, David Rojas, Eduardo Álvarez-Miranda, Claudio Tenreiro and Seung-Woo Son
Presented by: Heetae Kim

P1091: Cascading effects of critical transitions in social-ecological systems
Juan Carlos Rocha Gordo
Presented by: Juan Carlos Rocha Gordo
Pattern formation on time-varying networks
Julien Petit, Timoteo Carletti and Ben Lauwens
Presented by: Julien Petit

Fractal dimension in a hybrid percolation transition
K.J. Choi, Deokjae Lee, Y. S. Cho, J. C. Thiele, H. J. Herrmann and B Kahng
Presented by: K.J. Choi

Exploring Dynamic Patterns on Complex Networks: a Temporal Analysis of the U.S. Airport Network
Kathryn Cooper and Dario Ghersi
Presented by: Kathryn Cooper

Dynamical fluctuations and node centralities in temporal networks
Liping Chi
Presented by: Liping Chi

Heterogeneity of interdependent networks suppresses cascading failures
Malgorzata Turalska and Ananthram Swami
Presented by: Malgorzata Turalska

Malls As Social Class Enablers Or Barriers? The Case of Santiago de Chile
Mariano Gastón Beiró, Ciro Cattuto, Leo Ferres, Eduardo Graells-Garrido, Loreto Bravo and Diego Caro
Presented by: Mariano Gastón Beiró

Solving the dilemma of diversity-precision in link prediction
Ming-Yang Zhou, Wen-Man Xiong and Hao Liao
Presented by: Ming-Yang Zhou

The Role of Temporal Trends in Growing Networks
Osnat Mokryn, Alon Wagner, Marcel Blattner, Eytan Ruppin and Yuval Shavitt
Presented by: Osnat Mokryn

Evaluating Link Prediction Accuracy on Dynamic Networks with Added and Removed Edges
Ruthwik Junuthula, Kevin Xu and Vijay Devabhaktuni
Presented by: Ruthwik Junuthula

Dynamic Centrality in Random Subnetworks
Scott A. Hill
Presented by: Scott A. Hill

The fundamental advantages of temporal networks
Aming Li, Sean Cornelius, Yang-Yu Liu, Long Wang and Albert-László Barabási
Presented by: Sean Cornelius

Network alignment: latest insights
Vipin Vijayan and Tijana Milenkovic
Presented by: Vipin Vijayan

Automated Modeling and Design of Complex Networks
Viplove Arora and Mario Ventresca
Presented by: Viplove Arora

Random graph models for dynamic networks
Xiao Zhang, Cristopher Moore and Mark Newman
Presented by: Xiao Zhang

Input resilience in controlling complex networks
Xizhe Zhang
Presented by: Xizhe Zhang
P1107: The Global Terrorism Network: A New Approach to Predicting Terrorism Lethality
Yang Yang, Adam Pah and Brian Uzzi
Presented by: Yang Yang

Community

P1108: The Impact of Random Models on Clustering Similarity
Alexander Gates and Yong-Yeol Ahn
Presented by: Alexander Gates

P1109: Consensus clustering approach to group brain connectivity matrices
Javier Rasero Daparte, Jesus Cortes, Daniele Marinazzo and Sebastiano Stramaglia
Presented by: Daniele Marinazzo

P1110: Community Stability in Heterogeneous Networks
Marco Alberto Javarone and Daniele Marinazzo
Presented by: Daniele Marinazzo

P1111: Modelling Categorical Variables on Weighted Networks
David Meyer, David Rideout and Hooman Sherkat
Presented by: David Rideout

P1112: Severable components in dynamic networks
Yun William Yu, Jean-Charles Delvenne, Mauricio Barahona and Sophia N. Yaliraki
Presented by: Jean-Charles Delvenne

P1113: Detecting Community Structure in Mobility Networks
Ingrida Steponavice, Mohsen Ramezani and Meead Saberi
Presented by: Meead Saberi

New Methods, Measures, and Tools

P1114: Estimating the Number of Communities in a Bipartite Network
Tzu-Chi Yen and Daniel Larremore
Presented by: Tzu-Chi Yen

P1115: Partition Ensemble Filtering of Modularity Based Community Detection
William Weir, Peter Mucha and Saray Shai
Presented by: William Weir

P1116: Community Detection in Bipartite Networks by Modular Decomposition of Random Walk and its Applications to Data Analysis
Xule Qiu, Seiya Inagi, Tsuyoshi Murata and Hiroshi Okamoto
Presented by: Xule Qiu

P1117: Detecting community structure in signed network based on the random walk
Jianlin Zhou, An Zeng, Ying Fan and Zengru Di
Presented by: Ying Fan

P1118: Applying Genetic Algorithm in Personalized Community Detection by a Two-step Optimization
Zheng Gao
Presented by: Zheng Gao

P1119: Decision Support Mesh Networks for the IoT: New Roles for Hubs, Bridges, and Routers
Alex Bordetsky, Daniel Dolk and Steven Mullins
Presented by: Alex Bordetsky
P1120: **An adaptive-biased Fully Polynomial Randomized Approximation Scheme for infrastructure systems reliability assessment**  
Bowen Fu and Leonardo Duenas-Osorio  
Presented by: Bowen Fu

P1121: **The limits to detectability of network nestedness**  
Claudio Juan Tessone and Alexander Grimm  
Presented by: Claudio Juan Tessone

P1122: **Exploratory Analysis of Graph Data by Leveraging Domain Knowledge**  
Di Jin and Danai Koutra  
Presented by: Di Jin

P1123: **Venue Recommendation by Random Walk Tripartite Network of Venues, Place Semantics, and Users**  
Doheum Park, Seungkyu Shin, Gyuhyeon Jeon, Yonghan Kim and Juyong Park  
Presented by: Doheum Park

P1124: **Scalable Egalitarian Networks and the Nested Clique**  
Edward Platt and Daniel Romero  
Presented by: Edward Platt

P1125: **If they agree on the facts, do their conclusions match? Correlating causal network structure and simulation outcomes**  
Andrew Stefanik, Eric Lavin, Jinwuk Lee, Dylan Boss, Steven Gray and Philippe Giabbanelli  
Presented by: Eric Lavin

P1126: **power-hop: A Pervasive Observation for Real Complex Networks**  
Evangelos Papalexakis, Bryan Hooi, Konstantinos Pelechrinis and Christos Faloutsos  
Presented by: Evangelos Papalexakis

P1127: **Mixture Network Model (MNM) for Empirical Network Characterization and Simulation**  
Fairul Mohd-Zaid and Christine Schubert Kabbani  
Presented by: Fairul Mohd-Zaid

P1128: **A Percolation Based Approach for Thresholding Weighted Networks**  
Farnaz Zamani Esfahani and Hiroki Sayama  
Presented by: Farnaz Zamani Esfahani

P1129: **Impact of Biased Scores on Ranking in Bipartite Competition Networks and Inference of Modular Structure via Generalized Modularity**  
Gyuhyeon Jeon and Juyong Park  
Presented by: Gyuhyeon Jeon

P1130: **An Overview of Network Sampling Methods: On- and Off-Line**  
Haema Nilakanta and Zack Almquist  
Presented by: Haema Nilakanta

P1131: **Estimating networks from censored random walk data**  
Jeffrey Zemla and Joseph Austerweil  
Presented by: Jeffrey Zemla

P1132: **Jetstream: Network Workbench and Custom VMs for Network Scientists on the Science Cloud**  
Jeremy Fischer, Valantin Pentchev, David Y. Hancock, Craig A. Stewart and Katy Börner  
Presented by: Jeremy Fischer

P1133: **Using large-scale network analysis to capture the fast-food landscape in England**  
Magda Baniukiewicz, John Winans and Philippe Giabbanelli  
Presented by: Magda Baniukiewicz
P1134: Supporting a systems science approach to policymaking using network visualizations
Magda Baniukiewicz, Megan Buccola, Jeff Pascoe and Philippe Giabbanelli
Presented by: Magda Baniukiewicz

P1135: IUNI Graphical User Interface for Legislative Data (GUILD)
Matthew Hutchinson
Presented by: Matthew Hutchinson

P1136: Hub dependency and vulnerability of global-local connectivity in the world liner shipping network: An empirical case study
Mengqiao Xu and Haoxiang Xia
Presented by: Mengqiao Xu

P1137: Constructing social networks for digital forensic investigations
Michael McCarrin, Janina Green and Raluca Gera
Presented by: Michael McCarrin

P1138: Detectability of ranking hierarchies in directed networks
Elisa Letizia, Paolo Barucca and Fabrizio Lillo
Presented by: Paolo Barucca

P1139: The optimal value of Pagerank’s damping factor
Peter Bruck, István Réthy, Jan Tobochnik and Péter Érdi
Presented by: Peter Bruck

P1140: The Neighbor Matrix: an extension of the degree distribution
Jon Roginski, Erik Rye and Raluca Gera
Presented by: Raluca Gera

P1141: The origins of Zipf’s meaning-frequency law
Ramon Ferrer-I-Cancho and Michael S. Vitevitch
Presented by: Ramon Ferrer-I-Cancho

P1142: A math-geographical model of cities and road network
Takaaki Aoki, Naoya Fujiwara and Toshiyuki Nakagaki
Presented by: Takaaki Aoki

P1143: Large scale network measures computation using distributed computational model in comparison to centralized methods.
Roman Bartusiak and Tomasz Kajdanowicz
Presented by: Roman Bartusiak

P1144: WordNet2Vec: Vectorization of Linguistic Complex Networks
Roman Bartusiak, Lukasz Augustyniak, Tomasz Kajdanowicz, Przemysław Kazienko and Maciej Piasecki
Presented by: Roman Bartusiak

P1145: Principled Structure Extraction as a Model for Network Growth
Salvador Aguinaga, Corey Pennycuff and Tim Weninger
Presented by: Tim Weninger

P1146: Complex networks and Benford’s distribution
Mikolaj Morzy, Tomasz Kajdanowicz and Boleslaw Szymanski
Presented by: Tomasz Kajdanowicz

P1147: Constructing directed networks from multivariate time series via linear modeling technique
Toshihiro Tanizawa, Tomomichi Nakamura and Michael Small
Presented by: Toshihiro Tanizawa

P1148: Short Term Passenger Flow Forecast of Metro Network
Ximan Ling and Pu Wang
Presented by: Ximan Ling
P1149: Reconstructing direct and indirect interactions in networked public goods game
Xiao Han, Zhesi Shen, Wen-Xu Wang, Ying-Cheng Lai and Celso Grebogi
Presented by: Zhesi Shen

Social Networks

P1150: Temporal social networks within Recreovía users: measuring cohesion emerging from a physical activity program in Bogota, Colombia.
Ana Maria Jaramillo, Felipe Montes, Ana Paola Rios and Olga Lucia Sarmiento
Presented by: Ana Maria Jaramillo

P1151: Leveraging social network and topic data to construct positive and negative classes for partially supervised learning.
Johan Bollen, Andre Panisson and Alberto Ceria
Presented by: Andre Panisson

P1152: Building dynamic networks from trace data versus human coded interactions: A comparison of two collection methods
Andrew Pilny, Ly Dinh, Chengyu Fang, Marshall Scott Poole, Jeffery Proulx, Luisa Ruge-Jones and Alex Yahja
Presented by: Andrew Pilny

P1153: Should We Think, Talk, or Listen?: Studying Idea Exchanging Adaptive Social Networks with an Agent Based Model
Benjamin Bush and Hiroki Sayama
Presented by: Benjamin Bush

P1154: Optimization Adjustment of Human Resources Based on Bipartite Graph
Danling Zhao, Yuejin Tan, Zhiwei Yang, Keiwei Yang, Sheng Zhang and Ran Cheng
Presented by: Danling Zhao

P1155: Racial Disparities in the Workplace: The Role of Social Isolation, Burnout, and Organizational Support
Erin Pullen, Angela Rollins, Gary Morse, Michelle Salyers and Melanie Watkins
Presented by: Erin Pullen

P1156: Effects of the perception mechanism on the friendship paradox
Eun Lee, Hang-Hyun Jo, Young-Ho Eom, Sungmin Lee and Petter Holme
Presented by: Eun Lee

P1157: How Behavioral Attributes Affect the Cohesiveness of Society: An Agent-Based Social Network Simulation
Ewa Sulicz, Joyce Zhu, Evan George, Kashaf Nadeem, Alexis Van Donsel, Sheng-Liang Slogar, Carol Reynolds and Hiroki Sayama
Presented by: Ewa Sulicz

P1158: Homophily and group size create viability biases in social networks
Fariba Karimi, Mathieu Genois, Claudia Wagner, Philipp Singer and Markus Strohmaier
Presented by: Fariba Karimi

P1159: Collaboration Networks in Wikipedia Content: Who are the most influential people in the music industry?
Francisca Varela and Eduardo Graells-Garrido
Presented by: Francisca Varela

P1160: Social network fragmentation
Goylette Chami, Sebastian Ahnert, Narcis Kapatereine and Edridah Tukahebwa
Presented by: Goylette Chami

P1161: The Problem of Action at a Distance in Networks and the Emergence of Preferential Attachment from Triadic Closure
Jérôme Kunegis, Jun Sun and Fariba Karimi
Presented by: Jérôme Kunegis
P1162: Properties of Signed Bipartite Social Network  
Ke Gu, An Zeng, Ying Fan and Zengru Di  
Presented by: Ke Gu

P1163: Keys to Longevity in Online Multiplayer Games  
Kunwoo Park, Meeyoung Cha, Haoewon Kwak and Kuan-Ta Chen  
Presented by: Kunwoo Park

P1164: Search Strategies and Network Structure in the Small-World Phenomenon  
Kyosuke Tanaka and Noshir Contractor  
Presented by: Kyosuke Tanaka

P1165: Using a Network Approach for Modeling Shared Cognition of Astronaut Teams  
Marlon Twyman, Leslie Dechurch and Noshir Contractor  
Presented by: Marlon Twyman

P1166: Searching Networks to Assemble Teams  
Marlon Twyman, Liang Ma, Mudhakar Srivatsa, Derya Cansever and Noshir Contractor  
Presented by: Marlon Twyman

P1167: Core-periphery structure of networks: Consideration for random heterogeneous networks  
Sadamori Kojaku and Naoki Masuda  
Presented by: Sadamori Kojaku

P1168: Can Network Analysis Provide Insights Into Chinese Characters?  
Henry Price and Tim Evans  
Presented by: Tim Evans

P1169: Smartphone app to investigate relationship between social networks and depression  
Tjeerd Boonstra, Mark Larsen, Aliza Werner-Seidler, Bridianne O’Dea and Helen Christensen  
Presented by: Tjeerd Boonstra

P1170: Does classroom cooperation promote learning?  
Victor Landaeta-Torres, Cristian Candia-Castro-Vallejos, César A. Hidalgo, Carlos Rodríguez-Sickert, Camilo Rodríguez-Beltrán and Jorge Fábrega  
Presented by: Victor Landaeta-Torres

P1171: Healthcare Knowledge in Discussion Networks Predicts Improved Quality of Life among Older Adults Experiencing Cognitive Impairment  
William McConnell  
Presented by: William McConnell

P1172: Success of Books and Authors  
Xindi Wang, Burcu Yucesoy and Albert-László Barabási  
Presented by: Xindi Wang

Economics

P1173: Cognitive Limitations in Financial Networks  
Dhaval Adjodah, Peter Krafft, Esteban Moro and Alex Pentland  
Presented by: Dhaval Adjodah

P1174: MINIMAX-based Node Centrality  
Dongfeng Tan, Baohong Liu, Kewei Yang and Guoliang Zhang  
Presented by: Dongfeng Tan

P1175: Network Approach to Determining Vulnerabilities of Financial Institutions with Shared Portfolios  
Irena Vodenska and Yohei Sakamoto  
Presented by: Irena Vodenska
P1176: Power and dependence in complex networks: An application to the international trade network
Isabella Cingolani, Cesar Hidalgo, Lucia Tajoli and Pietro Panzarasa
Presented by: Isabella Cingolani

P1177: Labor flow network reveals the hierarchical organization of the global economy
Ian Wood, Jaehyuk Park, Elise Jing, Azadeh Nematzadeh, Souvik Ghosh, Michael Conover and Yong-Yeol Ahn
Presented by: Jaehyuk Park

P1178: Motif formation in the Japanese Business Network
Julian Maluck, Reik V. Donner, Hideki Takayasu and Misako Takayasu
Presented by: Julian Maluck

P1179: Network analysis of behavioral patterns in financial transactions
Marcella Tambuscio, Silvia Ronchiadin, Edoardo Galimberti, Marco Perotti, Matteo Pisciotta, Alfonso Semeraro and Giancarlo Ruffo
Presented by: Marcella Tambuscio

P1180: Segregation in economic activity: deriving features and drivers from income and spending patterns
Milan van den Heuvel, Benjamin Vandermarliere and Ken Bastiaensen
Presented by: Milan van den Heuvel

P1181: Developed Economies and TPP (Trans Pacific Partnership); The Network Perspective
Muhammad Mohsin Hakeem and Ken-Ichi Suzuki
Presented by: Muhammad Mohsin Hakeem

P1182: Analysis of Router Topology Effects on ISPs’ Value in The Stock Market
Muhammed Abdullah Canbaz, Murat Yuksel and Mehmet Hadi Gunes
Presented by: Esra Erdin

P1183: On the Contractability of Complex Networks
Marcus Nguyen, Robert Ruschke, Britany Cordell, Michael Unger and Philippe Giabbanelli
Presented by: Robert Ruschke

P1184: Meet me in the middle: The reunification of the German research system
Bogang Jun, Flavio Pinheiro, Tobias Buchmann, Seung-Kyu Yi and César Hidalgo
Presented by: Bogang Jun

P1185: Picturing the writing style of highly cited articles
Chao Lu, Yi Bu, Ying Ding and Chengzi Zhang
Presented by: Chao Lu

P1186: Depicting scientific intellectual structures by keyword co-citation network analysis
Yi Bu, Chao Lu and Ying Ding
Presented by: Chao Lu

P1187: Imitation or Innovation: the Diffusion of Citations
Chao Min, Jianjun Sun and Ying Ding
Presented by: Chao Min

P1188: The Anatomy of Medicine: A tale of a gender gap and how our network affects our success
Diego Fregolente Mendes de Oliveira and Brian Uzzi
Presented by: Diego Fregolente Mendes de Oliveira

P1189: Networking to Establish Supportive Peer Relationships
Eric Brewe, Zahra Hazari, Renee-Michelle Goertzen and Theodore Hodapp
Presented by: Eric Brewe
P1190: An Independent Set Algorithm for Consolidating Identities in Social Networks
Janaina Gomide, Hugo Kling and Daniel Figueiredo
Presented by: Janaina Gomide

P1191: Measuring Change in the Semantic Similarity Network of Academic Papers: Applications to Predicting Growth and Decline of Scientific Disciplines
Jared Lorince, Martin Gerlach and Brian Uzzi
Presented by: Jared Lorince

P1192: Small Teams Disrupt
Lingfei Wu, Dashun Wang, James Evans, and Diego F. M. Oliveira
Presented by: Lingfei Wu

P1193: Mapping the Knowledge Space
Matteo Chinazzi, Bruno Gonçalves, Qian Zhang and Alessandro Vespignani
Presented by: Matteo Chinazzi

P1194: Understanding predictability of citation success of scientific papers
Qing Ke
Presented by: Qing Ke

P1195: Network Analysis of Cosine-normalized and Ochiai-normalized co-occurrence matrices
Qiuju Zhou and Zaifeng Zhou
Presented by: Qiuju Zhou

P1196: Academic Environment and Social Effects on Scholarly Productivity
Samuel Way, Allison Morgan, Aaron Clauset and Daniel Larremore
Presented by: Samuel Way

P1197: Centrality measures for Directed Acyclic Graphs
Vaiva Vasiliauskaite, James R Clough and Tim S Evans
Presented by: Vaiva Vasiliauskaite

P1198: Temporal scaling of repeated failures
Yian Yin, Yang Wang, James A. Evans and Dashun Wang
Presented by: Yian Yin

P1199: Mobility through Network of Scientific Institutions: Mentorship in Scientific Careers
Yifang Ma, Satyam Mukherjee and Brian Uzzi
Presented by: Yifang Ma

P1200: Network of Scientific Bloodlines
Yifang Ma, Satyam Mukherjee and Brian Uzzi
Presented by: Yifang Ma

Social Media and Online Networks

P1201: Dynamics of Twitter Opinion Regarding the US 2016 Presidential Election and Comparison with National Polls
Alexandre Bovet, Flaviano Morone and Hernán A. Makse
Presented by: Alexandre Bovet

P1202: The fall of the empire: The Americanization of English
Bruno Gonçalves, Lucia Loureiro-Porto, Jose J. Ramasco and David Sanchez
Presented by: Bruno Gonçalves

P1203: The role of social movement organizations and their leaders in Twitter: Evidence from the Chilean Student Movement
Diego Gomez-Zara, Denis Parra and Noshir Contractor
Presented by: Diego Gomez-Zara

P1204: Understanding predictability of citation success of scientific papers
Qing Ke
Presented by: Qing Ke
P1204: Using Relational Event Modeling to explain movements’ emergence in Twitter: Evidence from the Chilean Student Movement
Diego Gomez-Zara, Denis Parra and Noshir Contractor
Presented by: Diego Gomez-Zara

P1205: Quantifying Exposure Biases in Online Information Networks
Dimitar Nikolov, Mounia Lalmas, Alessandro Flammini and Filippo Menczer
Presented by: Dimitar Nikolov

P1206: Hyperbolic geometry and social networks of GitHub
Dorota Celińska and Eryk Kopczynski
Presented by: Dorota Celińska

P1207: Information dissemination in heterogeneous-intent networks
Abhimanyu Das, Sreenivas Gollapudi, Emre Kiciman and Onur Varol
Presented by: Onur Varol

P1208: What Does Social Media Say about the Outcomes of Personal Experiences? A Propensity Scored Analysis
Alexandra Olteanu, Onur Varol and Emre Kiciman
Presented by: Onur Varol

P1209: Characterization of Online Censorship and its Impact on User Behavior
Onur Varol
Presented by: Onur Varol

P1210: A Taxonomy of Socialbots
Gregory Maus, Onur Varol, Fillippo Menczer and John Paolillo
Presented by: Gregory Maus

P1211: Cross-Model Event Summarization: A Network of Networks Approach
Jiejun Xu, Samuel Johnson and Kang-Yu Ni
Presented by: Jiejun Xu

P1212: Characterizing popularity dynamics of online users and videos in complex networks
Jing Shen, Hao Liao, Xingtong Wu, Xiangyang Wu and Mingyang Zhou
Presented by: Jing Shen

P1213: Russian Propaganda and US Politics on YouTube: A Longitudinal View
John Paolillo
Presented by: John Paolillo

P1214: Genetically Modified Food Controversies in the Digital Era: A Social Network Analysis of Public Discussion in China’s Social-Media Space
Yunya Song, Anatoliy Gruzd and Xinyu Dai
Presented by: Yunya Song
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STUDENT SUPPORT

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Zhongyang He, Department of Energy and Mineral Engineering, Pennsylvania State University
Michael Kitromilidis, Centre for Complexity Science, Department of Physics, Imperial College London
Julian Maluck, Potsdam Institute for Climate Impact Research
Chao Min, School of Information Management, Nanjing University
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Pratha Sah, Biology, Georgetown University
Massimo Stella, Institute for Complex Systems Simulation, University of Southampton

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Muhammed Abdullah Canbaz, Department of Computer Science and Engineering, University of Nevada, Reno
Dorota Celinska, Faculty of Economic Sciences, University of Warsaw
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Attractions and Restaurants
**THINGS TO DO IN INDY**

A Canal Walk  
801 W. Washington Street  
317.233.2434  
Take a walk, rent a bike, a pedal boat or Segway. Schedule a gondola ride. Stop along the way for refreshments at a café. Make your experience there slow and relaxing or active and energetic. The Canal Walk is an unexpected and beautiful part of downtown Indy — located a few blocks from the JW.

B Eiteljorg Museum of American Indians & Western Art  
500 W. Washington Street  
317.636.9378  
Located directly across the street from the JW, is one of the world’s finest Native American and Western Art collections. It contains traditional and contemporary pieces by artists such as T.C. Cannon, Andy Warhol and Georgia O’Keefe.

Thursday, June 22nd: “Summer Under the Sails – Joshua Silver Combo  
11:30 AM – 1:30 PM  
Live music on the patio. Lunch items available for purchase in the café.

C White River State Park  
801 W. Washington Street  
317.233.2434  
America’s only cultural urban state park. It encompasses a large area immediately adjacent to the JW. Within the perimeters of the park are green space and cultural attractions:  
- Canal Walk  
- Indianapolis Zoo  
- White River Gardens  
- Eiteljorg Museum  
- NCAA Hall of Champions  
- IMAX Theatre  
- Indiana State Museum  
- Victory Field (baseball stadium)

D Lucas Stadium  
500 S. Capitol Ave (located directly across the street from the JW)  
317.262.8600  
Lucas Oil Stadium offers public tours — typically every Tuesday and Wednesday — that give participants an up-close and personal look at all the stadium has to offer. Tours last approximately one hour and include visits to the playing field, an NFL locker room, Lucas Oil Plaza, the press box, and numerous other areas (depending on availability) that are generally inaccessible to the public. Ticket purchases are available at the Colts Pro Shop located near the corner of South St and Capitol Ave.

E Indianapolis Motor Speedway & Museum  
4790 W. 16th Street  
(not within walking distance; will need to take a cab)  
317.481.8500  
Celebrating over 100 years of the adventure of motor racing, the Speedway is a landmark of Indianapolis. In addition to the Speedway, arrangements can be made to tour the grounds and take a track lap (1 narrated lap on the 2.5 mile track in an Motor Speedway bus).

See following pages for map ➔

Check out www.visitindy.com or their mobile app “Visit Indy” for a great free travel guide to the town.
INDIANAPOLIS RESTAURANTS

There are many restaurant options in Indianapolis from delis to wine cafes to brew pubs to steak houses and elegant dining. We suggest that you refer the Indy Visitor’s Guide available in guest rooms of your hotel or at the Conference registration desk for a listing of food establishments.

We have identified a few of the eateries that are in or in close proximity to the JW Marriott. See next page for map.

In the JW Hotel
1. High Velocity (sports bar)
2. Osteria Pronto (authenic Italian cuisine)

Within walking distance
3. Café Patachou (casual, breakfast and lunch)
   225 W. Washington St
   317.632.0765

4. Harry and Izzy’s (steaks, seafood, upscale, lively bar)
   153 S. Illinois Street
   317.635.9594

5. St. Elmo Steak House (century old steakhouse, highly rated)
   127 S. Illinois Street
   317.635.0636

6. Capital Grille (highly respected, elegant downtown steak house)
   40 W. Washington Street
   317.423.8790

7. nada (modern Mexican delicacies, artsy atmosphere)
   11 W. Maryland St
   317.638.6232

8. Weber Grill (everything prepared on Weber charcoal kettles)
   10 N. Illinois Street
   317.636.7600

9. Tastings (over 200 wines in stock + small plates menu)
   50 West Washington Street
   317.423.2400

10. Eiteljorg Museum Café (sandwiches, soups salads for lunch)
    500 W. Washington St
    317.636.9378

A little further away
11. Cerulean (innovative menu with modern and artisanal flavors)
    339 S. Delaware St
    317.870.1320

12. Oceanaire Seafood Room (fresh seafood flown in daily)
    30 S. Meridian Street
    317.955.2277
DOWNTOWN INDIANAPOLIS RESTAURANTS
and THINGS TO DO

For information about things to see and do in Indianapolis, go to visitindy.com.

Refer to previous page for recommended restaurants and attractions
FREE TUESDAY NIGHT?

Come see the Indianapolis Indians vs Toledo Mud Hens!

Tuesday, June 20th at 7:00 PM

Location: Victory Field (across from the JW Marriott, steps away from conference space)

Tickets: If you didn’t purchase yours online, great seats are still available online at indyindians.com for less than $20.

The Indianapolis Indians are the professional Triple-A baseball club affiliate of the Pittsburgh Pirates. The stadium is one of the best in the minor league. The games are fun, enjoyable, lively and the NetSci seating block is ideally placed to see all of the action on the field.