Krishna C. Bathina

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Education

2014-'20 exp.   **PhD Complex Systems**; Indiana University (Bloomington)

2014-'17   **MS Computer Science**; Indiana University (Bloomington)

2010-'14   **BS Comput. and Math. Modeling in Biology and Epidemiology**;

                BS Psychology;

                Minor: Biophysics; University of Michigan (Ann Arbor)

Research Summary

While my research projects have varied from genetic promoter diversity to community detection, my main interests revolve around early warning indicators and resilience in signals during phase transitions. More specifically, I am interested in finding universal patterns in these signals across many different kinds of systems such as in collective gameplay and social media.

Experience

Research Associate with Johan Bollen: January 2018 – Present

- Collecting social media in accordance to the EDA grant
- Applying sentiment analysis tools for rating tweets
- Building null models and bootstrapping data for statistical analysis

Associate Instructor: August 2017 – December 2017

- Information I-400: Collective Intelligence
- Responsibilities include teaching, designing homework and projects, and grading.

Research Associate with Filippo Radicchi: August 2016 – May 2017

- Reducing the computational complexity of a current community detection method
- Analyzing the efficiency and accuracy of the new method on artificial and real networks

Intern at HRL Laboratories: June 2016 – August 2016

- Collecting social media data using Hadoop with MapReduce
- Agent based modelling the spread of viral protest hashtags using Python3

Associate Instructor: January 2016 – May 2016

- Informatics I-210: Information Infrastructure I

- Responsibilities include teaching Python3, proctoring exams, and grading homework assignments.

Research Associate with L Jean Camp: August 2015 – December 2015

- Coding and analyzing participant responses and surveys about computer security
- Making visualizations using Python3

Associate Instructor: August 2014 – May 2015

- Informatics I-201: Mathematical Foundations of Informatics
- Responsibilities include teaching mathematics, proctoring exams, and grading homework assignments.

Student Instructor Instructor: August 2013 – December 2013

- Complex Systems 209: Agent Based Models
- Complex Systems 391: Modeling in Political Science
- Responsibilities include making and grading classroom homework, quizzes, and exams.

Publications

- Bathina, Krishna C, and Raddichi, Filippo. "Error-Correcting Decoders for Communities in Networks". Under Review at Applied Network Science
- Grim, Patrick, Mengzhen Liu, Krishna C. Bathina, Naijia Liu, and Jake William Gordon. "How Stable Is Democracy? Suggestions from Artificial Social Networks." Journal on Policy and Complex Systems. (2018), Volume 4, Number 1.
- Bathina, KC, et al. "An Agent-Based Model of Posting Behavior During Times of Societal Unrest." Social, Cultural, and Behavioral Modeling. Springer, Cham, 2017.
- Bathina, KC, and Blythe, Jim. "Instrumenting Simple Risk Communication to Enable Online Self-Protection." Federal Trade Commission.
- Ellis, Nick C., Ute Römer, and Matthew Brook O'Donnell. "Usage-Based Approaches to Language Acquisition and Processing." The Language Learning Monograph Series (2016), Chapter 9.

Conferences

- RSAI 2018 (San Jose, Texas) - E-Ship: Modeling public and entrepreneur sentiment from longitudinal online data
- CCS 2018 (Thessaloniki, Greece) - Error-Correcting Decoders for Communities in Networks
- CCS 2018 (Thessaloniki, Greece) - Using Social Media Indicators to Study Regional Socio-Economic Resilience
- NetSci 2018 (Paris, France) - Error-Correcting Decoders for Communities in Networks
- CCS 2017 (Cancun, Mexico) - Predicting Epistatic Interactions Using Information and Network Theory
- SBP-BRiMS 2017 (Washington DC, USA) - An Agent-Based Model of Posting Behavior During Times of Societal Unrest
- CHI 2016 (San Jose, CA) - Bridging the Gap between Privacy by Design and Privacy in Practice
- 3rd annual preconference on Dynamical Systems and Computational Modeling in Social Psychology, Society for Personality and Social Psychology 2014 (Austin, TX) - Grim P., Liu MZ, Bathina K.,

Liu N., Gordon J. Opinion Instability in Democratic and Anti-Democratic Networks: Suggestions from an Agent-Based Model.

Services

- Young Researchers of the Complex Systems Society (yrcCCS) board member: 2018 - Present
  — Conference on Complex Systems Warm Up: September 21-23 2018
  — Conference on Complex Systems Warm Up: September 30 - October 4 2019

Skills

Coding Skills -

- Highest Proficiency with **Python2**, **Python3**, **Latex**
- Experience with **C**, **C++**, **R**, **MySQL**, **Bash**, **Gephi**, **Matlab**, **Hadoop**
- Python Packages
  — Analysis - **NumPy**, **SciPy**, **Pandas**, **GeoPandas**, **nltk**, **scikit-learn**, **PyMC3**, **Theano**
  — Data - **BeautifulSoup**, **SQLAlchemy**,
  — Visualization - **matplotlib**, **seaborn**, **plotly**

Technical Skills - **Data Science**, **Big Data Analysis**, **Network Science**, **Sentiment Analysis**, **Machine Learning**, **Statistics** (parametric and non-parametric)