Krishna C. Bathina

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Education

PhD Complex Systems; Indiana University - 2020 exp
MS Computer Science; Indiana University
BS Comput. and Math. Modeling in Biology and Epidemiology; University of Michigan
BS Psychology; University of Michigan

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.

Skills

- Highest Proficiency with **Python2/3**, **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**
- **Data Science**, **Big Data Analysis**, **Network Science**, **Sentiment Analysis**, **Machine Learning**, **Statistics** (parametric and non-parametric)

Research Experience

- Collecting, applying sentiment analysis, building null models, and bootstrapping tweet data for various projects
- Exploring early warning indicators in signals with phase transitions across a variety of fields
- Expanding upon a current community detection method by reducing its complexity, expandings its uses, and analyzing its accuracy on artificial and real networks
- Coding and analyzing participant responses and surveys about computer security

Industry Experience

Intern at HRL Laboratories: June 2016 – August 2016

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

Teaching Experience

- Information I-400: Collective Intelligence (Indiana University)
- Informatics I-210: Information Infrastructure I (Indiana University)
- Informatics I-201: Mathematical Foundations of Informatics (Indiana University)
- Complex Systems 209: Agent Based Models (University of Michigan)
- Complex Systems 391: Modeling in Political Science (University of Michigan)

Journal 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.

Conference Publications

- 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.

Other Publications

- 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.

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