

**John Bollenbacher**  
jbollenbacher.github.io

**EDUCATION**

**Indiana University**, Bloomington, IN  
*Doctor of Philosophy*, Informatics, May 2024  
Track: Complex Networks and Systems  
Minor: Statistics

**Indiana University**, Bloomington, IN  
*Masters of Science*, Informatics, May 2019

**Georgia Tech**, Atlanta, GA  
*Bachelor of Science*, Physics, May 2016  
Concentration: Astrophysics  
Minor: Computer Science

**PROFESSIONAL EXPERIENCE**

**Research Data Scientist**  
RTI International  
Supervisor: Gayle Bieler, Sandy Preiss

September 2022 - Present  
Research Triangle, NC

Internal consulting at a large research institute applying data science and AI to facilitate research in various domains including public health, environmental science, and communications. Also leads quantitative research related to applied AI and social media studies. Specializing in NLP, causal inference, and task automation with AI. Co-Authoring \$8+ million dollars of successful contract and grant proposals.

**AI Strategy Consultant**  
Freelance

July 2024 - Present  
Remote

Helping clients understand AI technology, its future, and its impacts on their businesses. Providing executive briefings on AI capabilities, limitations, and projections. Identifying opportunities to apply AI to improve productivity, and consulting on strategy to develop these opportunities.

**Product Owner**  
AE Studio  
Supervisor: Judd Rosenblatt

June 2024 - October 2024  
Remote

Consulted on R&D strategy, focusing on improving the generalization capabilities in neural networks and LLMs by using self-modeling as a regularization strategy. Also explored application of self-modeling to improve alignment stability in LLMs.

**Research Assistant**  
Observatory on Social Media  
Supervisor: John Bryden

August 2021 - May 2022  
Bloomington, IN

Analyzed social media data, news articles, and UK Parliamentary discourse to measure the influence of social media on the language of UK MPs. Wrote and published a paper.

**Assistant Instructor**

Indiana University Informatics Department  
Supervisors: Alexis Peirce Caudell, Nina Onesti

August 2019 - May 2022  
Remote & Bloomington, IN

Helped teach an Ethics of Technology course. Helped design course curricula including the syllabus, lectures, assignments, and tests. Occasionally lectured. Graded assignments.

**Data Scientist**

GeniusMesh  
Supervisor: Neerja Bharti

May 2021 - September 2021  
Remote

Performed data science, NLP, and feature engineering tasks to analyze career paths of Executive MBAs and make career decision recommendations. Worked with a development team to deploy a client-facing data dashboard to production.

**Research Assistant**

Indiana University Informatics Department  
Supervisor: Filippo Menczer

August 2017 - August 2019  
Bloomington, IN

Analyzed large social media datasets, and modeled and forecast social systems. Worked effectively with a large data science team. Wrote regular reports and presentations. Wrote and published academic papers.

**Assistant Instructor**

Indiana University Informatics Department  
Supervisors: Filippo Raddichi, Alexander J. Gates

August 2016 - May 2017  
Bloomington, IN

Helped teach a discrete mathematics course. Lectured and proctored in-class work weekly. Graded assignments.

**Radiological Surveyer, CAD Technician**

USA Environment LP  
Supervisors: Vince Barlock, Beth Jensen

May 2014 - August 2014, August 2015  
Golden, CO

Surveyed land for radiological contamination. Designed and managed instrument packages for radiological survey work; trained others in their use. Designed excavation plans for remediation of contaminated land in Civil3D CAD software.

**Student Researcher**

Georgia Tech Physics Department  
Advisor: David Ballantyne

August 2013 - May 2014  
Atlanta, GA

Analyzed spectral emissions from black hole accretion disks, following close instructions of David Ballantyne.

**GRANTS AND CONTRACTS WON****NSF EACS TEMPO**

RTI International  
PI: Jeffery Alexander

2024-2029  
Durham, NC

Contribution: Wrote proposal text, coordinated staffing, and drafted budgets for the Analytics team, which is responsible for several data science and software engineering subtasks. Our efforts resulted in an 8.3 million dollar contract win, of which 1.4 million was allocated to the Analytics team.  
<https://www.highergov.com/contract/49100421D0013-49100424F0249/>

**Google Cloud Research Credits Program** 2021  
Observatory on Social Media Bloomington, IN  
PI: John Bollenbacher  
Contribution: Wrote and submitted grant application  
cloud.google.com/edu/researchers

**Social Media and Democracy Grant** 2021  
Observatory on Social Media Bloomington, IN  
PI: John Bryden  
Contribution: Data science work; wrote a paper as a grant deliverable  
ssrc.org/grantees/how-does-facebook-influence-parliament

**DARPA SocialSim Grant** Fall 2017 - Spring 2019  
Indiana University Bloomington, IN  
PIs: Fil Menczer, Emilio Ferrara  
Contribution: Added to grant proposal; produced grant deliverables  
darpa.mil/program/computational-simulation-of-online-social-behavior

## PUBLICATIONS

Chew, R., Bollenbacher, J., Wenger, M., Speer, J., Kim, A. LLM-assisted content analysis: Using large language models to support deductive coding. arXiv preprint arXiv:2306.14924 (2023)

Bollenbacher, J., Loynes, N., Bryden, J. Does United Kingdom parliamentary attention follow social media posts? EPJ Data Sci. 11, 51 (2022).

Bollenbacher, J. et al. On the challenges of predicting microscopic dynamics of online conversations. Appl Netw Sci 6, 12 (2021).

DeVerna, Matthew et al. CoVaxxy Tweet IDs data set. in Proceedings of the International AAAI Conference on Web and Social Media (2021).

Blythe, J. et al. Massive multi-agent data-driven simulations of the GitHub ecosystem. in International conference on practical applications of agents and multi-agent systems 3–15 (2019).

Blythe, J. et al. The DARPA SocialSim challenge: massive multi-agent simulations of the github ecosystem. in Proceedings of the 18th international conference on autonomous agents and MultiAgent systems 1835–1837 (2019).

Ballantyne, D. R. et al. NuSTAR reveals the Comptonizing corona of the broad-line radio galaxy 3C 382. The Astrophysical Journal 794, 62 (2014).

## CONFERENCES PRESENTATIONS

John Bollenbacher, Filippo Menczer, “Forecasting Vaccine Refusal Rates by Modeling Social Influence,” *NetSci*, Full Talk, September 2020.

John Bollenbacher, Diogo Pacheco, Pik-Mai Hui, Yong-Yeol Ahn, Alessandro Flammini, Filippo Menczer, “The empirical limits of prediction of microscopic dynamics of online conversation,” *NetSci*, e-Poster Session, September 2020.

John Bollenbacher, Filippo Menczer, “Forecasting Vaccine Refusal Rates by Modeling Social Influence,” *IC2S2*, e-Poster Session, June 2020.

John Bollenbacher, Diogo Pacheco, Pik-Mai Hui, Yong-Yeol Ahn, Alessandro Flammini, Filippo Menczer, “The empirical limits of prediction of microscopic dynamics of online conversation,” *IC2S2*, e-Poster Session, June 2020.

## OTHER PROJECTS

### **Comparison of spectrogram generation methods for audio classification using CNN classifiers, 2019**

Used image classifiers (e.g. ResNet) to classify audio spectrograms  
Generated and compared audio spectrograms

### **Forecasting Yellowstone Visitor Traffic, 2019**

Used time series methods to forecast Yellowstone National Park visitor traffic  
Performed ablation study on rich feature set

### **Predicting Academic Citations with Collaborative Filtering, 2018.**

Used collaborative filtering methods to forecast academic citations

### **Radon Decay Chain, 2015.**

Modeled concentrations of radioactive decay products over time for risk assessments

### **Modeling Gravitational Wave Detection, 2014.**

Used MCMC methods to fit model parameters for gravitational wave detection events

### **Observations of the Faraday Instability 2014.**

Used particle image velocimetry to measure internal fluid flows of Faraday waves  
Wrote related software tools to enable data processing

## INSTITUTIONAL SERVICE AND MEMBERSHIPS

### **Networks & agents Network (NaN)**

Indiana University  
Position: Lab Manager

Fall 2021 - Spring 2022  
Bloomington, IN

### **Networks & agents Network (NaN)**

Indiana University  
Position: Website Admin

Fall 2018 - Spring 2020  
Bloomington, IN

### **NetSci 2017 Conference**

The Network Science Society  
Position: Volunteer

June 2017  
Indianapolis, IN

### **Society of Physics Students**

Georgia Institute of Technology  
Position: Member

Spring 2014 - Fall 2016  
Atlanta, GA