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
Concetration: Astrophysics
Minor: Computer Science

PROFESSIONAL EXPERIENCE

Research Data Scientist   September 2022 - Present
RTI International   Research Triangle, NC
Supervisor: Gayle Bieler, Sandy Preiss

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   July 2024 - Present
Freelance   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   June 2024 - October 2024
AE Studio   Remote
Supervisor: Judd Rosenblatt

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   August 2021 - May 2022
Observatory on Social Media   Bloomington, IN
Supervisor: John Bryden

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 August 2019 - May 2022
Indiana University Informatics Department Remote & Bloomington, IN
Supervisors: Alexis Peirce Caudell, Nina Onesti

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

Data Scientist May 2021 - September 2021
GeniusMesh Remote
Supervisor: Neerja Bharti

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 August 2017 - August 2019
Indiana University Informatics Department Bloomington, IN
Supervisor: Filippo Menczer

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 August 2016 - May 2017
Indiana University Informatics Department Bloomington, IN
Supervisors: Filippo Raddichi, Alexander J. Gates

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

Radiological Surveyer, CAD Technician May 2014 - August 2014, August 2015
USA Environment LP Golden, CO
Supervisors: Vince Barlock, Beth Jensen

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 August 2013 - May 2014
Georgia Tech Physics Department Atlanta, GA
Advisor: David Ballantyne

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

GRANTS AND CONTRACTS WON

NSF EACS TEMPO 2024-2029
RTI International Durham, NC
PI: Jeffery Alexander
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, Fillipo 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, Fillipo 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)   Fall 2021 - Spring 2022
Indiana University   Bloomington, IN
Position: Lab Manager

Networks & agents Network (NaN)   Fall 2018 - Spring 2020
Indiana University   Bloomington, IN
Position: Website Admin

NetSci 2017 Conference   June 2017
The Network Science Society   Indanapolis, IN
Position: Volunteer

Society of Physics Students   Spring 2014 - Fall 2016
Georgia Institute of Technology   Atlanta, GA
Position: Member