Gati Aher

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EDUCATION

Carnegie Mellon University - Machine Learning Ph.D. — Pittsburgh, PA

Ph.D. in Machine Learning | Advised by Zachary Lipton, Ph.D. — *Aug. 2023 – Present*

Olin College of Engineering — Needham, MA

Bachelor of Science in Engineering: Computing; ***GPA:*** *4.00/4.00* — *Aug. 2019 – May 2023*

COMPUTING RESEARCH AND WORK EXPERIENCE

Microsoft Research — Cambridge, MA

Research Intern | Advised by Adam Kalai, Ph.D. and Rosa Arriaga, Ph.D. — *May 2022 – Aug. 2022*

- Research on simulating distributions of human population behavior on economics and psychology tasks using prompt-engineering on GPT-3 and Turing-NLG, resulting in paper (ICML 2023, *Oral)

Olin College Satellite + Spectrum Technology & Policy Group — Needham, MA

Research in the laboratory of Whitney Lohmeyer, Ph.D. — *Sep. 2021 – Present*

- Research on policies and factors driving value in 5G spectrum auctions (preprint on SSRN)
- Automate web-scraping, pdf-text extraction, and data cleaning to support two new analysis projects

Olin College Microbiology and Bioinformatics Research Lab — Needham, MA

Research in the laboratory of Jean Huang, Ph.D. — *Jan. 2021 – Present*

- Research into using time-series compositional analysis methods for inferring microbiome networks
- Cleaned and interpreted 2D Fourier analysis to isolate periodic patterns in bacteria surface images

Fidelity Center for Applied Technology — Needham, MA

Senior Engineering Capstone | Advised by AI and Data Science Research Team — *Sep. 2022 – Present*

- Research on realistic backtesting and analysis for debunking cryptocurrency trading strategies
- Writing white paper and releasing open-source library

Indico Data (AI for Unstructured Data Processing Start-Up) — Boston, MA

SWE Intern | Advised by Applied Deep Learning Research Team — *May 2021 – Aug. 2021*

- Evaluated classification of handwriting marks on documents with fine-tuned Faster R-CNN
- Experimented with alternate pre-training, multi-label tasks, and small object detection strategies
- Prototyped and user-tested novel React.js GUI for predicting and visualizing text groups on pdfs

The MITRE Corporation (Federally Funded Research Center) — Bedford, MA

SWE Intern | Research in the laboratory of John Henderson, Ph.D. — *Sep. 2020 – Jan. 2021*

- Researched new methods to exploit vulnerabilities in natural language machine learning-based systems
- Adapted and updated academic lab research code for using bilingual pivoting to generate paraphrases
- Ran experiments to determine hardware and Hadoop configuration for computation with 4x more data
- Applied logistic regression with feature engineering for classification on imbalanced dataset

Cumulus Digital Systems (Industrial Workflow Digitization Start-Up) — Cambridge, MA

SWE Intern — *May 2020 – Aug. 2020*

- Implemented Serverless microservice REST API using Swagger and AWS CloudFront
- Created AWS SNS, Lambda, and DynamoDB webhooks system to enable real-time data updates

Peer Reviewed Publications

1. **G. Aher**, R. I. Arriaga, and A. T. Kalai. *Using Large Language Models to Simulate Multiple Humans*. ICML 2023. ***Oral Presentation**

2. **G. Aher**, P. Post, P. Boyalakuntla, G. Miner, L. Heinrich, Y. Mao, J. A. Musey, W. Lohmeyer. *Evaluating the FCC's $10 Billion Gamble: Successfully Accelerating Access to Spectrum in Auction 107*. Journal of Information Policy (JIP) 2023.

3. P. Post, K. Fleming, K. Canavan, S. Cho, **G. Aher**, W. Lohmeyer. *Analysis of Geostationary Federal Communication Commission Satellite Applications from 2000 to 2022*. Journal of Spacecraft and Rockets 2023.

Posters

What Factors Affect Microbial Community Composition? *Jun. 2021*
Northeastern Microbiologists: Physiology, Ecology, and Taxonomy (NEMPET)

SOARing with Drones in Education *Sep. 2018*
Massachusetts Computer Using Educators (MassCUE)

Refining Private Set Intersection Under Secure Multi-Party Computation *Jul. 2018*
Boston University, Greater Boston Research Opportunities for Women (GROW)

Artificial Intelligence, Chatbots, and Amazon Web Services *Jun. 2018*
International Society of Technology Educators (ISTE)

Academic Service, Leadership, and Teaching

Instructor (Student-Led Course), **Advanced Algorithms (ENGR3599A-SL)**, Olin College *Spring 2023*

Teaching Assistant, Head Grader, **Discrete Mathematics (MTH2110)**, Olin College *Fall 2022*

Branch Leader, **Girls Who Code**, Olin College *Fall 2022*

Main Organizer & Presenter, **Data Science and ML Lunch-and-Learn**, Olin College *Fall 2021*

Teaching Assistant, **Software Design in Python (ENGR2510)**, Olin College *Fall 2020*

Teaching Assistant, **Einstein's Workshop Coding & STEM Classes**, Burlington, MA *2017 – 2019*

Teaching Assistant, **Marathi Indian Language K-8**, Shishu Bharati, Lexington, MA *2015 – 2019*

Mentor, **FIRST Lego League Robotics**, Burlington, MA *Fall 2018*

Skills

Programming: Python, R, SQL, Hadoop, Java, C, Linux/Bash, Git, React.js, Node.js, D3.js, HTML/CSS, Serverless, AWS, Docker, Pytorch, Tensorflow, OOPS, Data Structures and Algorithms, Machine Learning, Deep Learning

Math: Probability and Statistics, Calculus, Linear Algebra, Discrete Mathematics, Network Analysis

Languages: Latin, Marathi

Honors, Grants, and Awards

4-year, 50% Tuition, Franklin W. Olin College Merit Scholarship ($110,000) *2019 – 2023*

Massachusetts Space Grant Undergraduate Research Award *2021, 2022*

Franklin W. Olin College Student Academic Grant Research Award *2021*