Aman Choudhri

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Education

Columbia University, Columbia College — New York, NY

BA in Mathematics and Statistics | GPA: 4.05 | Phi Beta Kappa — May 2025

- **Courses** (* for PhD-level): Agentic Systems*; High Performance ML*; Bayesian Optimization*; Econometrics III*; Causal Inference*; Interpretable ML*; Multilevel Regression Modeling; Advanced Probability Theory; Probabilistic ML*

Publications

Peterson R., Tanelus A., **Choudhri A.**, Ivan V., Prasad A., Schneider D., Sanes D., Williams A. (2023). "Benchmarks and deep learning models for localizing rodent vocalizations in social interactions." *ML for Audio Workshop, NeurIPS.*

Peterson R., **Choudhri A.**, Mitelut C., Tanelus A., Capo-Battaglia A., Williams A., Schneider D., Sanes D. (2023). "Unsupervised discovery of family specific vocal usage in the Mongolian gerbil." *eLife*, 12:RP89892.

Shahn Z.*, **Choudhri A.***, Jung B., Talmor D., Lehman L., Baedorf-Kassis E. (2023). "Effects of aggressive and conservative strategies for mechanical ventilation liberation." *Journal of Critical Care*, 76, 154275.

Projects

Federal Disaster Relief Agent — Jan 2024 – Present

- Building an agentic system to simplify federal disaster relief application for state/local governments (code available here)
- Constructed VLM pipeline to extract structured information from PDFs of past grant applications with 97.5% accuracy

Wind Farm Power Optimization — Sep 2024 – Present

- Applying Bayesian optimization to design wind turbine layouts for maximal power production (code available here)
- Implemented multi-fidelity strategy that efficiently combines information from cheap approximate models and expensive high-fidelity simulations, identifying optimal turbine configurations with 65% fewer high-cost simulation runs
- Built SLURM orchestration API to queue/manage fluid dynamics simulations parallelized across 192 HPC CPU cores

Blogregator: LLM-Powered Blog Aggregator — May 2025

- Built a monitor for blogs without RSS feeds, generating webscraping schemas using LLMs with 100% parsing success
- Created Github Actions workflow to process 10+ blogs and 400+ posts daily, generating summaries/topics for new posts

Experience

Columbia University, Gelman Lab — New York, NY

Research Assistant — May 2024 – Present

- Designed and conducted a 6000+ respondent survey studying how people's social circles relate to their political beliefs
- Analyzing resulting data using multilevel (random-effects) linear and logistic regression modeling in R and Stan

Public Policy Lab (PPL) — New York, NY

Summer Intern — Jun 2024 – Aug 2024

- Developed natural language processing pipeline analyzing transcripts of interviews with social service recipients, saving 2+ weeks of PPL researcher time per project (sentence transformer embeddings and k-means clustering)
- Created multithreaded desktop GUI application so non-technical staff can easily use the tool (code available here)

Flatiron Institute, Williams Lab — New York, NY

Research Assistant — Jun 2022 – Aug 2023

- Designed custom deep learning model architecture for gerbil vocal data that provides accurate estimates of its own uncertainty after synthesizing research on approaches to neural net uncertainty quantification (NeurIPS '23)
- Built parallelized Slurm pipeline and uncertainty calibration toolkit for scalable model training/evaluation in Pytorch
- Uncovered family-specific gerbil "dialects" by clustering 500k+ vocal calls using variational Gaussian mixtures in Stan

CUNY School of Public Health, Shahn Lab — New York, NY

Volunteer Researcher — Jan 2021 – Jun 2022

- Applied causal inference to estimate the effectiveness of care strategies for ICU patients on mechanical ventilation

Activities

President, Columbia Bhangra: Led 30-person competitive dance team. Managed $15,000+ budget; hosted and secured $5000 in corporate sponsorships for a 6-team competition yielding $6000+ in revenue from 400+ attendees

Skills

Programming Languages: Python, R, Stan, SQL, CUDA

Python Libraries: PyTorch, JAX, Transformers, Scikit-Learn, NumPy, Pandas, Plotly

Infrastructure and Tools: Linux, Bash, Git, Docker, GCP, Slurm, Cron, PostgreSQL