Zachary **Burchill**

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Education

PhD + MA in Brain and Cognitive Sciences — *Rochester, NY*

University of Rochester — *2014-present*

Center for Language Sciences Fellowship

BA in Linguistics, Minor in Computer Science — *Philadelphia, PA*

University of Pennsylvania — *2010-2014*

Magna cum laude with distinction; Benjamin Franklin Scholar; Vagelos Undergraduate Research Grant recipient

Experience

Meta, AI (formerly Facebook, AI) — *New York, NY*

Data Scientist | Responsible AI Fairness — *2020-present*

- RAI Fairness: Meta's AI Innovation Center, research-focused team, bridging theory and practice
- Led multi-year project investigating central language model, covering 140+ languages, 440 language experts, and $360k data budget
- Used and developed cutting edge methodologies for ensuring responsible AI across Meta
- Analyzed: classifiers (binary, multiclass, MTML); regression; neural nets; ranking and recommendation systems
- Common tools: Python; Dataswarm (data pipelines and data engineering); R; Hive/Spark; Presto/SQL

Human Language Processing Laboratory, University of Rochester — *Rochester, NY*

Graduate Researcher — *2014-present*

- Research focuses on speech perception, statistics, and online improvements in processing accented speech
- Conducted behavioral experiments over the web via Amazon's Mechanical Turk, and in the lab via eye-tracking
- Developed computational models of word confusability and how speech variability impacts communication
- Analyzed (e.g., with GLMMs and GAMMs) and visualized large datasets with R and Python
- Developed distributed computing framework to run and analyze +10 million statistical models in parallel

Remitly — *Seattle, WA*

Machine-learning Engineer (Internship) — *Summer 2019*

- Improved the machine-learning model for third-largest remittance corridor (US-India, with a yearly revenue of $30.6 million)
- Implemented self-directed pricing model all the way from proposal to production
- Proposed and spear-headed new business project with estimated yearly revenue lift of >$530,000
- Tested and evaluated large number of statistical models (e.g., XGBoost and GAMMs) in Python with pandas and scikit-learn

Department of Computer Engineering, Purdue University — *West Lafayette, IN*

Full-time Research Assistant (paid) — *Summers of 2010-2014*

- Developed NLP framework for computer vision output, generating natural sentences to describe real-life video (via HMMs, FSAs)
- Improved human pose detection for naturalistic video
- Worked on rule induction of board games via computer vision

Relevant Coursework

Previous Natural Language Processing, Adaptive Language Processing, Quantitative Speech Analysis, Language and Computation, Computational Models of Cognition, General Linear Approaches to Data Analysis, Probabilistic Theories of Cognitive Processing, Statistical Theory/Methods, Mathematical Foundations of Computer Science, Computational Methods in Cognitive Science

Skills

Technical - Most experience Python, R, JavaScript, Scheme, UNIX, Java, LaTeX

Technical - Some experience C++, pandas/scikit-learn, SQL, compute clusters, web-scraping, AWS

Statistical Generalized linear mixed models (GLMM), (shape-constrained) generalized additive mixed models (GAMM), Power simulation, Bayesian modeling, XGBoost