

Zachary Burchill

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Education

PhD + MA in Brain and Cognitive Sciences

UNIVERSITY OF ROCHESTER

Center for Language Sciences Fellowship

Rochester, NY

2014-present

BA in Linguistics, Minor in Computer Science

UNIVERSITY OF PENNSYLVANIA

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

Philadelphia, PA

2010-2014

Experience

Human Language Processing Laboratory

GRADUATE RESEARCHER

- 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 remote computing cluster framework to run and analyze +10 million statistical models in parallel

Rochester, NY

2014-present

Brain and Cognitive Sciences Department, University of Rochester

COURSE DEVELOPER/TEACHING ASSISTANT FOR UNDERGRADUATE PSYCHOLINGUISTICS COURSES

- Helped develop hands-on software to let students automatically run their own experiments over Amazon Web Services
- Mentored groups of students through the research process to publish replication studies

Rochester, NY

2014-2018

Department of Computer Engineering, Purdue University

FULL-TIME RESEARCH ASSISTANT (PAID)

- 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

West Lafayette, IN

Summers of 2010-2014

Kelly Writers House / The Christian Association / Heeding God's Call

WEBMASTER/WEB ASSISTANT FOR THREE MAJOR CAMPUS ORGANIZATIONS

- Kelly Writers House: campus literary/cultural hub; Christian Association: progressive social justice-oriented religious group; Heeding God's Call: interfaith advocate against Philadelphia gun violence
- Designed and maintained websites (front- and back-end)

Philadelphia, PA

2010-2014

Department of Health & Kinesiology, Purdue University

SUMMER RESEARCH ASSISTANT

- Developed MATLAB motion-tracking system for pen movements to detect native language effects on handwriting

West Lafayette, IN

Summer of 2009

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++, MATLAB, Stan, SQL, compute clusters, web-scraping, AWS

STATISTICAL Generalized linear mixed models (GLMM), (shape-constrained) generalized additive mixed models (GAMM), Power simulation, Bayesian modelling