Alexander S. Rich

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Work Experience

Fellow, Data Science for Social Good Europe, University of Chicago **Summer 2018**

Worked with a small team to predict MMR vaccine refusal using medical record data provided by the Croatian Institute of Public Health. Created a sparse, interpretable machine learning model and intuitive dashboard to enable targeted interventions, reverse falling vaccination rates, and prevent measles outbreaks.

Graduate researcher, New York University **Fall 2013–Spring 2018**

- Researched exploratory choice and learning biases, which led to several first-author peer-reviewed journal and conference papers. This involved:
  - Generating novel predictions about human behavior using dynamic programming, reinforcement learning and neural network models implemented in R and Python.
  - Designing and building interactive online experiments using javascript and D3; collecting and managing participant data using Amazon Mechanical Turk and SQL.
  - Performing inference using a Bayesian hierarchical framework implemented in R and Stan.
- Led and collaborated on projects including predicting second-language learning with gradient-boosted trees, and using NLP to track the evolution of cognitive science through dynamic topic modeling.
- Contributed to psiTurk, a python-based framework for conducting online experiments used at more than 30 universities, with 111 Github commits to the project; led psiTurk workshops at international conferences.

Teaching Assistant, New York University **Fall 2014–Spring 2018**

Taught labs and sections for graduate courses in the Psychology and Data Science departments. Topics included reinforcement learning, deep learning, linear algebra, Bayesian and frequentist statistics, and experiment design.

Teaching Assistant, Williams College **Fall 2010–Spring 2013**

Taught labs and sections for undergraduate courses in Mathematics and Computer Science including *Linear Algebra*, *Calculus II*, *Data Structures and Advanced Programming*, and *Introduction to Computer Science*.

Education

New York University **May 2018**

PhD in Cognitive Psychology with Quantitative Minor

Williams College **June 2013**

BA in Mathematics, *Magna Cum Laude*, Phi Beta Kappa

Skills

Programming languages/tools: Python (scikit-learn, pandas, pyTorch) • R • Javascript (D3) • HTML/CSS • Stan • SQL • Hadoop Streaming • Docker • LaTeX • Git/Github • Unix • AWS

Graduate-Level Math/Stats/Data-Science Coursework: Deep Learning • Bayesian Data Analysis • Machine Learning and Computational Statistics • Inference and Representation • Dynamic Programming and Optimal Control • Big Data (audited) • Ethics of Data Science (audited)

Competition placements

2nd (Spanish), 3rd (English, French), Duolingo Second Language Acquisition Modeling competition (2018)
sharedtask.duolingo.com

23rd (top 1%), Kaggle prediction competition, Instacart Market Basket Analysis (2017)
www.kaggle.com/c/instacart-market-basket-analysis/leaderboard