Ryan Teehan

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Education: M.S. Computer Science (2018) ; B.A. Mathematics (2018), **The University of Chicago**, GPA: 3.66

Extracurricular Academic Work:
- University of Chicago Mathematics Directed Reading Program – Fall 2015: Representation Theory of Finite Groups: Random Walks on Finite Groups. Presented the results in January of 2016
- Independent Reading: Professor Shmuel Weinberger – Summer 2018: Discussed discrepancy theory as it relates to sampling techniques

Relevant Coursework:
- MATH 29700 – **Reading and Research: Spectral Clustering with Professor Steven Lalley**
  - Read papers on spectral methods in graphs including clustering, identification of community structure in networks, manifold learning, and diffusion methods with applications to data analysis and statistics.
- CMSC 35425 – **Topics in Statistical Machine Learning: Harmonic Analysis and Representation Theory (Graduate)**
  - Included discussion of Fourier analysis on finite groups, Fast Fourier Transforms, and signal processing

Experience:
- Work Experience
  - **January 2019 – Present: Charles River Analytics**
  - **Software Engineer II (May 2020 – Present); Software Engineer I (January 2019 – May 2020)**
    - Developing probabilistic supply chain models in **Pyro** to infer the existence of missing nodes
    - Developed the backend for a web application to provide streaming evidence of satellite movements
    - Implemented a multi-resolution Bayesian time series model for real-time maintenance of the condition of complex machinery at coarse and fine time scales
    - Utilized copulas to model dependences between univariate distributions for a Monte-Carlo model that computed the relative cost of uncertainties
    - Implemented a Multi-Objective Monte Carlo Tree Search algorithm in Scala for repair schedule optimization
    - Developed streaming analytics for a large distributed database and visualization system
    - Used the **Figaro** probabilistic programming language to model satellite movements
  - **Data Scientist, Infinite Analytics (September 2018 – January 2019)**
    - Reduced latency of **Spark** computations, implemented in Scala, by ~25%
    - Evaluated and implemented algorithms for dimensionality reduction of large (~ 300,000 x 7 million), sparse, binary matrices
    - Optimized word embeddings to improve search results for customer search engines
  - **Research Assistant, Deep Skies Lab (June – August 2018)**
    - Generating simulations of strongly lensed galaxies to train new neural networks in a high performance computing environment using the **Lenstronomy** Python package along with **Keras**

Technical Skills:
- **Python**, (Pandas, Numpy, Pytorch, Tensorflow, etc.)
- **Scala**
- **Javascript** (including **Node.js**)
- **Julia**
- **SQL**
- **MATLAB**

Projects:
- **Independent**
  - **Multi-Word Expression Identification – 2018**
    - Worked on developing a language independent method to identify multi-word expressions
  - **Backtranslations for Contranyms – 2021**
    - Explored the results of backtranslating works with contradictory meanings, especially in a legal or political context) using off the shelf translations algorithms
- **At Charles River**
  - **SNAPPR – 2019 to Present**
    - Condition-based maintenance for complex machinery with multiple subsystems using a Monte-Carlo Tree Search approach combined with time series models developed in the **Figaro** probabilistic programming language

Research Proposals:
- **PRESCRIPTION SBIR Proposal – 2020**
  - Wrote and developed the probabilistic modeling component to model pharmaceutical supply chains, which was awarded by the Defense Logistics Agency in mid-November.