Joshua Fan

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Education

University of Washington, Seattle, WA *(combined BS/MS program)* **2013-2018 (expected)**
- ➢ **M.S. Computer Science** *(expected June 2018)*; **B.S. Computer Science** *(completed March 2017)*
- ➢ **3.97 GPA** (cumulative)
- ➢ **Relevant courses:** Machine Learning for Big Data, Algorithms, Computational Biology, Machine Learning, Statistical Methods in Computer Science, Compilers, Computer Security, Artificial Intelligence, Natural Language Processing, Intro to Data Management, Data Abstractions, Systems Programming, Software Design & Implementation, GIS and Mapping, Hardware/Software Interface, Foundations of Computing I/II, Quantitative Statistics for Data Scientists, Matrix Algebra

Experience

Software Engineer Intern at **Facebook** *(Search, Whole Page Ranking Team)* **Sept-Dec 2017**
- ➢ Improved quality of search ranking (and click rate) for subset of queries, by taking user's previous queries into account
- ➢ Trained a sequence neural network to predict which search result module the user will click on, given sequence of queries
- ➢ Engineered features for ML models used in search ranking, by creating data pipelines and coding in C++ and PHP

Software Engineer Intern at **Facebook** *(Search Indexing Team)* **June-Sept 2016**
- ➢ Built an indexing console tool which enables engineers to debug and test changes to the search indexing pipeline
- ➢ Created a C++ Thrift service to query data stores and simulate indexing process, and PHP webpage to present data

Software Design Engineer Intern at **BitTitan** **June-Sept 2015**
- ➢ Implemented an in-memory data migration provider in C#, and used it to efficiently test/simulate a mailbox migration in memory without relying on network connections and different data formats
- ➢ Improved the performance of a frequently-called method by ~60% by optimizing redundant SQL computations

Research Assistant at **University of Washington Electrical Engineering** **June-Sept 2017**
- ➢ Researched and tested algorithms for parallel Latent Dirichlet Allocation, online optimization, and matrix factorization to scale up cell type discovery on large single-cell RNA datasets
- ➢ (Code: https://github.com/joshuafan/lightlda-warm-start, https://tinyurl.com/ybvad6yv)

Teaching Assistant at **University of Washington Computer Science & Engineering** **Sept 2015-June 2017**
- ➢ Communicated concepts (in Probability and Discrete Math courses) in classroom, office hours, and grading
- ➢ Participated in creating practice problems, additional handouts, and hosting review sessions to clarify concepts

Research Assistant at **UW Computing for Development Lab** **Mar 2015-June 2016**
- ➢ Helped redesign an app for public health workers that collects data and makes diagnoses per medical protocol
- ➢ Collaborated with team and PATH (global health company) to correct survey logic and optimize user experience

Projects

Political speech clustering (Python) *(Course project: Machine Learning)*
- ➢ Implemented unsupervised clustering methods (k-means, bisecting k-means, spectral clustering) to detect groupings of presidential campaign speeches (by candidates or issues)
- ➢ Used tf-idf and dimensionality reduction techniques to extract relevant features from texts

Campus paths (Java) *(Course project: Software Engineering)*
- ➢ Implemented a Java application that finds and displays the shortest path between UW buildings on a map
- ➢ Utilized Model-View-Controller design pattern; implemented both GUI and a Graph data structure API

Search engine and web server (C, C++) *(Course project: Systems Programming)*
- ➢ Developed a file search engine, as well as a web server to process user queries using the search engine
- ➢ Implemented low-level hash-tables, inverted indices, and index files to speed up processing

Checkers game applet (Java) — *https://github.com/joshuafan/Checkers-Applet* *(Extracurricular)*
- ➢ Used object-oriented design to program a game of checkers (against a simple AI) as a Java applet
- ➢ Applied self-taught graphics (Swing) and event handling skills to implement a drag-and-drop GUI

Languages and Technologies

- ➢ **Significant experience**: Java, Python, C#, SQL, C++
- ➢ **Some familiarity**: PHP/Hack, HTML/CSS, JavaScript, JQuery, Matlab, R
- ➢ **Tools/environments**: Eclipse, Git, Visual Studio, Linux, Nuclide, ArcGIS