Joshua Fan

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Education

University of Washington, Seattle, WA *(senior)* **2013-2018 (expected)**

- **B.S. Computer Science** *(expected 2017)*; **M.S. Computer Science** *(expected 2018)*
- **3.98 GPA** (cumulative)
- **Relevant courses:** Computational Biology, Computer Security, Artificial Intelligence, Natural Language Processing, Intro to Data Management, Data Abstractions, Systems Programming, Software Design & Implementation, Hardware/Software Interface, Foundations of Computing I/II, Quantitative Statistics for Data Scientists, Matrix Algebra
  - **Currently taking:** Statistical Methods in Computer Science, Algorithms, Compilers

Work Experience

Software Engineer Intern at **Facebook** ***(Search Indexing Team)*** **June-Sept 2016**

- Built a tool to help engineers debug and test changes to the search indexing pipeline
- Created a back-end C++ Thrift service to query data stores and simulate indexing process
- Allows engineers to validate local indexing code changes by viewing results in a webpage (created with PHP/XHP)

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

Teaching Assistant at **University of Washington Computer Science & Engineering** **Sept 2015-current**

- Communicated concepts (in Probability for CS 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
- Wrote code to measure accuracy of alignment algorithms (for scanning paper forms), involving Excel/JSON parsing

Projects

Sequence aligner (Java) ***(Course project: Computational Biology)***

- Finds best-scoring alignment between gene/protein sequences, using the Smith-Waterman algorithm (dynamic programming) and traceback
- Calculated "empirical p-value" to estimate significance of alignments between different species' protein sequences

HMM Part-of-speech tagger (Python) ***(Course project: Natural Language Processing)***

- Identifies the most probable sequence of part-of-speech tags for a given sentence
- Implemented a Hidden Markov Model (with parts of speech as hidden states) and the Viterbi algorithm (dynamic programming) from scratch; utilized smoothing techniques to handle words not seen during training

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
- **Some familiarity***:* C, C++, PHP/Hack, HTML/CSS, JavaScript, JQuery, SQLite, SQL Server, JSON, CouchDB
- **Tools/environments** *(basic familiarity):* Eclipse, Git, Visual Studio, Linux, Nuclide