Alexander Fogelson

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Software engineer in the Boston area with an M.S. in Data Analytics and a B.S. in Math and Computer Science from Carnegie Mellon University. Academic and industry experience in machine learning, computer security, and iOS development. Strong mastery and teaching experience in theoretical mathematics. Demonstrated ability to quickly acquire new skills across project settings.

EDUCATION

Carnegie Mellon University — Aug. 2018 – May 2022

> G.P.A. – Graduate 3.6/4.0; Undergraduate 3.5/4.0
> *Master of Science* – Data Analytics (MS-DAS Program)
> *Bachelor of Science* – Mathematical Sciences
> *Additional Major* – Computer Science
> *Additional Minor* – Chinese Studies

Shanghai International Studies University — June 2019 – July 2019

> *Study Abroad* – Chinese Language and Culture

EXPERIENCE

MFS Investment Management – *Software Engineer* — Feb. 2023 – Current

- Currently working with the Investment Data Management Office on their data harmonization project.

Meta/Facebook – *Software Engineer* — Aug. 2022 – Dec. 2022

- Recruited directly out of university into engineering program.
- Contributed to a wide range of projects, from code-based privacy policy configurations to large-scale refactoring projects.
- For myself and other new hires, the experience ended prematurely due to the company's struggling performance and sudden historic layoffs.

PNC Financial Services Group – *M.S. Capstone Project* — Jan. 2022 – May 2022

- Designed and deployed TF–IDF– and BERT–based models for product recommendation pipeline.
- Advised industry professionals on defining new metrics for assessing similarities between target clientele for all products.

Qualcomm – *Linux Security Team, Intern* — June 2021 – Aug. 2021

- Researched recurrent neural networks for vulnerability detection on assembly code.
- Developed novel symbolic execution tool with customizable modules for common vulnerability detection.
- Additional work in path algorithms and DevOps to improve efficiency and usability of the tool.

Carnegie Mellon University – *Teaching Assistant* — Jan. 2020 – Dec. 2021

- Lectured students biweekly on new material, including set theory, propositional logic, number theory, a diverse set of linear algebra topics, and their deep relationships to computer science theory.
- Conducted office hours with both individualized and group instruction.

Audition Technology – *Mobile Development Team, Intern* — June 2020 – Aug. 2020

- Engineered iOS application for hearing health startup with emphasis on data analysis.
- Expressed willingness to learn iOS-dev on the job; subsequently became primary iOS developer.

Carnegie Mellon Humanist League – *Vice President* — Jan. 2020 – Dec. 2021

- Curated topics & moderated discussions on philosophy & politics for CMU and Pittsburgh communities.
- Coordinated campus events with national speakers, with hundreds of attendees.
- This experience has had a foundational effect on how I approach problems in every aspect of life. We focus on high-level, mutually productive dialogue with others and an apply ethical frameworks to diverse environments. I continue to participate in the community virtually.

SKILLSET

Programming Languages

- Experienced with Python, C, C++, SML, Bash and Swift.
- Comfortable with Haskell, C#, SQL, PHP, Java, Javascript, MATLAB, and Assembly.

Python Libraries

- PyTorch, TensorFlow, SciKit-Learn, Numpy, Scipy, Pandas, and Matplotlib.

Software

- Experienced with Linux, MacOS, Excel, XCode, Git, and LaTeX.
- Comfortable with Windows, Mercurial, and GDB.

Mathematics

- Extensive experience with linear algebra, real analysis, graph theory, probability theory, and cryptography.
- Notable exposure to combinatorics, group theory, and formal logic.

Foreign Languages

- *Spanish* (6 years, high intermediate); *Mandarin* (4 years, study abroad, low intermediate).

Video Editing

- Experienced with Final Cut Pro and DaVinci Resolve video editing softwares.

RELEVANT COURSEWORK
italics indicates graduate level coursework

Data Science & Machine Learning
- *Information Visualization*
- *Computer Vision*
- *Introduction to Probability Modeling*
- *Neural Networks and Deep Learning in Science*
- *Linear Algebra for Data Science*
- *Computational Modeling and Statistical Analysis*
- *Foundations of Computational Data Science*

Mathematics
- Linear Algebra
- *Computational Linear Algebra*
- Matrix Theory
- Vector Analysis
- Real Analysis I & II
- Probability Theory
- Graph Theory
- Intro to Mathematical Finance
- Algebraic Structures
- Differential Equations
- Combinatorics
- Constructive Logic

Computer Science
- Introduction to Computer Systems
- Introduction to Computer Security
- Database Systems
- *Introduction to Large Scale Computing*
- Neural Computation
- Parallel & Sequential Data Structures & Algorithms
- Algorithm Design and Analysis
- Principles of Imperative Computation
- Principles of Functional Programming

Courses Taught
- Mathematical Concepts and Proofs
- Matrices and Linear Transformations
- Mathematical Foundations of Computer Science