Bill Z. Qin

bzq@andrew.cmu.edu | https://www.bzqin.dev | github.com/bqin01 | linkedin.com/in/bzqin | (878) 600-1629

EDUCATION

Carnegie Mellon University – *Pittsburgh, PA* *Aug 2019 – May 2023*
Bachelor of Science in Artificial Intelligence, Minor in Mathematics
GPA: 3.8/4.0
Coursework: Intro to Deep Learning, Bug Catching: Automated Program Verification, Search Engines, Planning for Robotics, Parallel and Sequential Data Structures and Algorithms, Design and Analysis of Algorithms, Introduction to Machine Learning, Introduction to Computer Systems, Modern Regression, Computer Vision, Real Analysis

WORK EXPERIENCE

Carnegie Mellon University – *Pittsburgh, PA* *Aug 2021 – Present*
Head Teaching Assistant for 15-451: Algorithm Design and Analysis
- Hosted weekly recitations to help students better understand concepts taught in lecture.
- Hosted weekly office hours to further aid students in understanding course material in a 1-on-1 setting.
- Managed team of 12+ other TAs in weekly meetings, recitation planning, and student accommodations.
- Coordinated with team of TAs and led discussions on potential course improvements.
- Developed and troubleshooted auto-grade software for programming homework to handle 150+ student submissions.
- Taught high-level algorithms content including flow networks, linear optimization, FFT, and streaming algorithms.

Jane Street Capital - *New York City, NY* *June 2022 – Aug 2022*
Quantitative Research Intern
- Utilized Pandas library to analyze 5+ years of trading volume data to extract independent mechanisms via a proprietary linear algebra technique.
- Compiled and cross-referenced 2 years of Twitter data from 10,000+ Twitter users about 1,000+ liquid instruments with trading volume data to determine causation and predict market fluctuations from influential tweets.
- Designed proprietary trading software and manually traded during various mock trading activities.
- Coordinated with fellow interns and project managers in creating actionable trading strategies from research.
- Presented project summaries and findings in 30-minute sessions to full-timers and fellow interns.

Vecna Robotics – *Waltham, MA* *June 2021 – Aug 2021*
DevOps Engineering Intern
- Wrote 15+ validation scripts and micro-services to automatically run tests on server and robot environments.
- Constructed heartbeat system for DevOps' internal tools allowing for session sharing and live updates (<10ms) for improved firefighting.
- Wrote and configured Jenkins jobs for automated integration of DevOps tools.
- Managed and resolved disk space issues on servers through New Relic monitoring and nightly CRON cleanup scripts, reducing disk space issues by 30%.

PROJECTS

Search Engines Project for 11-442: Search Engines (Java)
- Extended Apache Lucene with various best-match retrieval algorithms, such as BM25 and Indri.
- Added features to improve future data-driven algorithms, such as different document component relevancy metrics, PageRank, etc.
- Implemented a neural search model to train on various labelled data to learn authority metrics.

Shopify Challenge 2021 "Shoppies" App (React web app) https://shopify-challenge-2021.herokuapp.com/
- Coded front-end system where users search for films and nominate up to five for "The Shoppies", a play on The Grammys.
- Implemented search bar to make API calls to the IMDb database to retrieve films.
- Ran user testing and iterated on design to make application intuitive to use.

Tree Visualization Project (Full-stack Ruby on Rails App) https://treevis.herokuapp.com/
- Developed Ruby application allowing users to create and simulate growth of arboreal trees.
- Researched and implemented mathematical models for how arboreal trees grow.
- Designed PostgreSQL database schema using JSON to support storage of users, trees, and metadata.
- Documented project ideas and implementation into a technical writeup.

SKILLS

Software and Frameworks: C++, C, Java, C#, Python, HTML/CSS/JS, Bash, React, Ruby (on Rails), PHP, NodeJS, SML, Sinatra, Groovy (Jenkins), SQL (Mongo/Postgres), TensorFlow, Pandas
Technical Skills: Algorithm Development and Optimization, Full Stack App Development, Machine Learning, Quantitative Data Analysis (Visualization and Modeling), Game Design and Development, Robotics Planning
Languages: English (native), Mandarin (intermediate), French (basic)

HONORS

USAMO (United States of America Mathematics Olympiad) qualifier *2016 - 2019*
CMO (Canadian Math Olympiad) International Honor Roll *2018*
CCO (Canadian Computing Olympiad) Silver Medalist – 10th place overall *2017*