Richard Zhao

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Education

Carnegie Mellon University
May 2018, Pittsburgh PA

Bachelor of Science in Physics 3.63/4.0 GPA

Pursuing a dual degree in Computer Science

Experience

Software Engineering Intern
June - August 2017

Jump Trading

Designed and built a low-latency high-throughput work queue for time-series data analysis.

Used dynamic work partitioning and fair scheduling algorithms to service 100GB+ queries in less than one second.

Embedded a V8 JavaScript engine to support dynamic, user-generated queries which manipulate C++ structures.

Engineered low-latency, fault-tolerant, production cryptocurrency exchange gateways.

Software Developer Intern
June - August 2016

Avvo

Developed production API services with 12x faster mean response times and 8.3x greater throughput using Golang and Node.js.

Implemented parallelized continuous deployment pipelines to automate and speed up the build, test, and deploy cycle.

Collaborated as part of a multidisciplinary development team to architect a full stack application that generates personalized analytics reports for 400 high-profile customers.

Head Teaching Assistant
January - December 2016

School of Computer Science, Carnegie Mellon University

Directed a staff of 20 teaching assistants by leading meetings, organizing logistics, supervising recitations, and communicating with students.

Led exam review sessions, taught a lab section of 20 students, held office hours, graded assignments, and overhauled the course website.

Wrote robust autograding software which significantly decreased the amount of manual grading performed by the staff.

Research Assistant
January 2017 - present

Pittsburgh Supercomputing Center

Automated the detection of axons in zebrafish microscopy data using deep convolutional neural networks implemented in Tensorflow.

Software Developer Intern
June - August 2015

Project 'Unlocked', Carnegie Mellon University

Researched teaching strategies and leveraged educational technology to improve learning, retention, and assessment.

Built a light weight, front-end user interface API in JavaScript used by over 30 developers.

Skills

Proficient

C, C++, Python, JavaScript, Git

Familiar

CUDA, Ruby, SML, Golang

Projects

Flow On The Go
May 2017

CUDA, C++, C

Designed and implemented an optical flow algorithm targeted at a 7.5W TDP mobile system capable of processing 4K resolution frames in realtime, 24 fps.

Achieves a 1250x speedup over OpenCV by using optimized GPU kernels, multithreading, and fine-grained memory management.

Award winner at the CMU Parallelism competition.

Touch Calculator
May 2015

Python, Objective C

Machine learning driven touchpad calculator. Powered by a novel, vector-based feature detection algorithm.

Awarded 4th place at an end-of-semester showcase for Fundamentals of Programming and Computer Science.

resume.pdf.js
July 2016

JavaScript (Node.js)

Resume generator that converts uncluttered, easy to read yaml files into clean, pdf-ready html documents (like this one). Designed for extensibility and ease of use.

CMU Sits
January 2016

Python, JavaScript, C

An Internet of Things proof of concept that monitors chairs in study areas for occupancy using microcomputers that communicate with a live-updated web server.

richard-zhao.com
May 2015

HTML, CSS

Personal website and technology blog with articles focusing on productivity tips and development environment configuration and personalization.