walkermills

software engineer

contact

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MSC 767
Pasadena, CA 91126

languages

English (native)
Spanish (fluent)

programming

advanced:
C, C++, Haskell, Python, Cython, Linux/Unix, SQL, Bash/Zsh
proficient:
Java, Pyrex
Erlang, IA32
Lisp, Lua

technologies

Django, Apache, Thrift, NuoDB, Protocol Buffers, PostgreSQL, MySQL
Android, Chromium

tools

gcc/g++, make
gdb, git, gerrit
adb, mosh

education

2012–2016 **Bachelor of Computer Science** – California Institute of Technology

experience

Jul-Sept 2013 **Amazon Lab126** Sunnyvale, California

Software Development Engineer Intern

I worked on video streaming performance for Amazon WebView, a fork of Chromium, and assisted with the Mayday project for Amazon's Kindle Fire HDX devices. (NDA)

- I learned how to effectively use version control and issue tracking software in a professional environment.
- I studied Chromium's source and traced program execution on production devices to document and optimize Chromium's multimedia internals

projects

Jan-June 2014 **CryptoBot**

Cryptocurrency trading platform and algorithmic trading bot engine

Automated bots analyze the Bitcoin market to detect the presence of other trading strategies; this information can be used to exploit discovered trading strategies.

- I designed and implemented a distributed, load-balancing framework to run bots on our computing cluster using Apache Thrift.
- I wrote a Django frontend, which leverages Cython to create a native Python interface to our C++ framework.
- I act as sysadmin for our servers, and DBA for our NuoDB deployment, providing large numbers of bots with concurrent access to real-time trade data in a fault-tolerant manner.

Aug 2013 **BatStats**

Battery widget written in C, using Linux kernel headers

- I use the Linux kernel's C API to query the device's power supply.
- If discharging, the program extrapolates the estimated total battery life.
- If charging, it displays the estimated time of charge completion, and the day of the week if that time crosses the date line.

Sept 2014 - **Introsort**

Hybrid sorting algorithm

- Quicksorts until a recursion depth of log(n), then heapsorts
- Small chunks are passed to an assembly implementation of shellsort
- Outperforms C++ std::sort and std::unstable_sort for most test cases

Hackathons

Google 24 Hours of Good - LA (November 2012), LA Hacks (April 2013), Hacktech (January 2014)

courses

California Institute of Technology

Course listings:

- *CS 21*: Decidability and Tractability. Exploring the fundamental limits of (efficient) computation
- *CS 24*: Computer Systems. Hardware-software interface, computer architecture, and operating systems
- *CS 38*: Algorithms. Major algorithm design techniques and methods for identifying intractibility
- *CS 11*: Coding Project. Framework/middleware development for CryptoBot
- *CS 90*: Research. Developing algorithmic trading strategies in cryptocurrency markets like Bitcoin for use by CryptoBot, with Prof. Adam Wierman
- *CS/EE 145*: Networking Project. Deliverables include a functional CryptoBot project, and accompanying research paper, with Prof. Wierman
- *CS 115*: Functional Programming. Haskell, functional programming theory
- *CS 121*: Relational Databases. Extensive practical work with SQL
- *CS/EE 143*: Communication Networks. Mechanisms and protocols in communication networks, and mathematical models for their analysis
- *CS/CNS/EE 156A*: Learning Systems. Theory, algorithms, and applications of automated learning
- *CS 179*: GPU Programming. CUDA & OpenGL visualization and simulation
- *ACM/EE/CMS 116*: Stochastic Processes & Modeling. Fundamental ideas and techniques of stochastic analysis & modeling
- *CS 11*: Computer language workshop. C, C++

leadership & communication skills

2008-2012 **Speech & Debate** — Team Captain
I successfully competed in public speaking and debate events at league and charity tournaments at the state and national level.

Summer 2013 **Lab126 "Brown Bag" Presentation** — Information and QA session
I presented details of my work and relevant systems to co-workers & managers over the course of an informal lunch session, followed by a period of questions.

Fall 2014 **CS 143 Project** — Project Manager
I led the design & development of my group's network simulator, managed the division of development responsibilities, and organized & led team meetings.

interests

professional: leadership training, backend/framework development, distributed systems, machine learning, web development, automation, concurrent programming, parallel programming, OS/systems development, functional programming
personal: long-distance running, cooking, Aikido, fencing, billiards, hiking, backpacking