

**WORK  
EXPERIENCE****Khan Academy**  
Mountain View, CASoftware Developer Intern  
August 2011 - December 2011

- Proposed and implemented machine learning model for new proficiency model. Blog post (Hacker News frontpaged): <http://david-hu.com/ka-ml.html>
- Increased student proficiencies by 20%, hint usage by 55%, review problem usage by 22%
- Data visualization in Python; map reduce scripts; UI design; see <http://david-hu.com/ka-internship-post-mortem.html>

**University of Waterloo**  
Waterloo, ONUndergraduate Research Assistant  
May 2011 - August 2011

- Implemented algorithms for MapReduce to find clusters of near-duplicate documents in a web crawl
- Optimized runs on Amazon Elastic MapReduce

**Google**  
Mountain View, CASoftware Intern  
January - April, 2011

- Designed and implemented a multi-threaded cross-platform automation framework for Google Earth in C++

**Google**  
Waterloo, ONSoftware Intern - Mobile  
May - August, 2010

- Implemented product features for Google Mobile Docs by finding creative workarounds for browser bugs
- Derived cubic Bezier math for emulating native scrolling using CSS 3D transforms - <http://googlemobile.blogspot.com/2010/10/gmail-in-mobile-safari-now-even-more.html>
- Optimized speed by exploiting JavaScript implementations and improving data structures

**TD Bank Financial Group**  
Toronto, ONIT Student Analyst  
August 2009

- Developed data analysis tools to process business data and generate reports
- Developed automation software saving an estimated 65 minutes daily

**SKILLS****Technical Knowledge**

- Python (Django, Google App Engine): Khan Academy backend, social web startup, hobby projects
- JavaScript: Optimizations and browser bug workarounds for Google Docs
- C++: 6 years of experience through work, personal projects, contests, robotics, and school
- Experienced with HTML, CSS, C, C#, Qt, Google Closure Tools, MIPS assembly, AWS (EC2, Elastic MapReduce, S3), Hadoop, GNU Make
- Prior experience: Bash scripting, Scheme, L<sup>A</sup>T<sub>E</sub>X, XPath
- Platforms: Linux command line, Ubuntu, Mac OS X, Windows
- Tools: Proficient with Vim and Git; worked with Mercurial, Perforce, SVN, Visual Studio

**Projects**

- First place optimizing compiler for university competition
- Artificial intelligence bots: Gomoku, competition Tron, competition Rock-Paper-Scissors

- WEP/WPA penetration-testing GUI application on BackTrack 3
- Multiple web apps: backends in Django + MySQL and C# + ASP.NET
- Designed and implemented a trie-based word-prediction system for an educational toy robot
- MSN plugins: conversation bot, multiplayer display name game
- High school: FIRST Robotics controller, Xbox 360 game, tournament scheduler, automation scripts

#### General

- Regularly competes in programming contests, including ACM, Google AI contest, CCC, Project Euler, USACO
- Interested in artificial intelligence, compilers, algorithms, and functional programming

### UNIVERSITY ACTIVITIES

**Entrepreneurial Project Programmer** Winter, Fall 2010  
Developed a motivational learning website and professional network-building service in teams of three and four, respectively. <http://velocity.uwaterloo.ca/student-posts/heres-looking-at-you-cinq-me>

**ACM Programming Contest Competitor** 2009 Fall  
One of 9 students selected to represent U Waterloo. Trained five hours twice per week with teammates on algorithm problems. Rapidly wrote and debugged code during competition; attained 13th out of 115 at East Central North America.

**Software Engineering Class Representative** 2009 Fall - Present  
Took the initiative to write weekly email updates to the class. Co-founded the *Give Me Your Knowledge* student talks series. Founded course on open-source development (work in progress) - <http://os499.github.com>

**IEEE Student Branch Member** 2009 Fall - Present  
Designed and implemented a mailing system for U Waterloo's IEEE website in ASP.NET and C#.

### HIGH SCHOOL ACTIVITIES

**Programming Team Leader** 2007 - 2009  
Revitalized club: advertised, recruited, taught lessons, organized practices, motivated participants. Achieved top 5 in provincial competition.

**FIRST Robotics Team Leader** 2008 - 2009  
Facilitated communications, organized meetings, and headed programming team.

**Programming Competition Finalist** Mar. 2009  
National Bronze Medalist (top 20 in Canada) in the Canadian Computing Competition.

**Programming Competition Champion** Oct. 2008  
Bot coded in Java attained first place in Toronto-area high school AI competition. <https://www-927.ibm.com/ibm/cas/cascon2008/hspc/results.html>

**Peer Tutoring Club Lead Tutor** 2008 - 2009

**Xbox Media Trade Show Presenter** Aug. 2007  
Invited by Microsoft to present a video game developed using C# in XNA at X07 in Toronto. Was a hit with the blogs: <http://www.thebbps.com/articles/content/x07-warpong.html>

### EDUCATION

**Candidate for Bachelor of Software Engineering**  
University of Waterloo 2009 - 2014 (expected)

- Member of the VeloCity start-up incubator (<http://velocity.uwaterloo.ca>) for two terms

**High School Diploma**

Western Technical-Commercial School, Toronto

2009

- Enrolled in the gifted/enriched program; highest average in graduating class (97.5%)

**AWARDS**

- Math and Engineering Dean's Honour List for all terms, University of Waterloo
- Engineering Faculty Entrance Scholarship, University of Waterloo
- Queen Elizabeth II Aiming for the Top Scholarship
- Governor General's Academic Medal, Western Tech
- Euclid Mathematics Contest School Champion, Western Tech
- McCall Award for Computer Science and Engineering, Western Tech
- Student Recognition Award, Western Tech

**INTERESTS**

Ping pong, biking, swimming, jogging, camping, reading, free food