JEFF CAMERON
SOFTWARE ENGINEER

Skills

Extensive experience and proficiency with all of the following

Languages

C, C++, Java, Python, Javascript, C#, PHP, SQL, Visual Basic, Tcl/Tk

Web

HTML, PHP, Javascript, ASP.NET, Ajax, Apache configuration, Java servlets, node.js

Cloud & Distributed Computing

Google MapReduce, Condor, Protocol Buffers, writing client/server software

Databases

MySQL, Microsoft SQL Server, Oracle, Sybase, Google BigTable

Machine Learning

Neural networks, deep learning (RBM and LSTM), genetic algorithms, decision trees, heuristic search algorithms, pathfinding, classification

More

Unit testing, version control, build systems, open source project management, well practiced with countless libraries and APIs

Experience

Google   2012-2014
Search Ranking

I focused on the heart of Google's search engine: ranking. The systems that I built had a direct effect on the ranking logic for Google's main property, web search. Additionally, I took full ownership of Google's app search property, which helps users find apps for their mobile devices. I contributed heavily to Google's app-indexing initiative to crawl and index the contents of mobile apps.

Scotia Capital   2010-2012
Equity Trader & Programmer

Licensed equity trader (TTC, CPH, CSC) responsible for operating high-frequency (HFT) strategies of my own design. Discovered and implemented several consistently profitable strategies. Designed scalable systems to cope with huge amounts of stock-market data in real time, allowing my team to scale up from trading a handful of stocks to hundreds. Introduced and popularized many collaborative development tools: source control (SVN), automated build (Ant), continuous integration (Google Buildbot), bug tracker (InDefero), and more.

Google AI Challenge   2009-2011
Founder & Lead Organizer

Founded the Google AI Challenge, a series of interactive online programming contests. Participants write a computer program that plays a strategy game. The programs compete in a round-the-clock automated tournament with continuously updated rankings displayed on a web-based leaderboard.

Early in the project, I wrote nearly all the code myself, including the whole website in PHP from scratch, a massively scalable backend for running the tournament on a cluster of servers, a system that securely compiles and executes arbitrary user-submitted code in almost any popular programming language, and several new algorithms for game scheduling, optimal opponent selection, and computing rankings.

Guided the project through rapid growth, attracting 13,000+ participants from nearly every country in the world, and tens of millions of pageviews. Negotiated a sponsorship agreement with Google to finance up to 48 servers at a time. Recruited and motivated an all-volunteer team to coordinate the work of dozens of contributors to this open source project.

Google

2009

Software Engineering Intern

Interned as a software engineer with the Web Search team, where I designed a new component for Google's document-scoring system.

Scotia Capital

On and off 2007-2009

Trading Floor Intern

Used databases and web programming tools to create successful business intelligence tools that are now used by senior managers. Developed and tested trading strategies that make use of a variety of artificial intelligence techniques.

National Research Council of Canada

On and off 2005-2006

Research Assistant

Independently identified new applications of the data-mining technologies invented by colleagues in the fields of cancer diagnosis and intensive care. Arranged meetings between specialists in medicine and NRC personnel on own initiative. Used data-mining techniques to investigate climate change, genetics, proteomics, and other fields. Developed interactive virtual reality software from scratch using OpenGL. Maintained parallel versions of C/C++ software on Windows and Linux. Used Linux clusters and Condor for high-throughput computing.

Lifeguard & Swimming Instructor

2002-2005

Taught classes at several pools in the Ottawa area. Qualifications: CPR, defibrillator, NLS, YMCA instructor, Red Cross instructor. Had particular success communicating with and handling autistic children, attracting a surge in enrollment from across the Ottawa region.

Personal Research Projects

3D Star Atlas
Uses real star position data from the Hipparcos mission. Allows the user to fly around and explore the stars within about 1000 light-years of the Earth. Uses an octree data structure to efficiently render a large number of stars with their correct apparent brightness from any point in space.

Computer-Generated Art
Generated beautiful and spooky images using various Artificial Intelligence techniques, then painted them by hand onto canvas.

Machine Vision
Two projects. One tracks the 3D position of objects using two cameras without knowing the relative positions of the cameras in advance. Another project records the 3D distribution of candle-smoke from a freshly extinguished candle using only an ordinary camera and mirror — no expensive precision equipment needed.

Game Theory
Author of several successful chess- and checkers-playing programs, including some that learn to evaluate board positions on their own without any human instruction.

Natural Language Processing
Created a system that gathers and analyzes news articles in real time to extract various insights. Was invited to present this work at the Canadian Security Traders Association (CSTA) conference 2014.

Education

University of Waterloo — Bachelor of Mathematics (Computer Science) **2005 - 2010**

Language

Fluent in English and French

Sports & Hobbies

Double provincial gold medalist in Alpine Ski Racing (OFSAA). Enjoys alpine ski racing, biking, rugby, track & field, ski jumping, curling, swimming, sailing, and other sports. Plays and writes songs for the guitar and piano. Extensive first-aid training. Several awards in programming, mathematics, athletics, and music.

Contact

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