

# Andrew Russell

4B Software Engineer

[ajrussell.ca](http://ajrussell.ca)

[deadhead.russell@gmail.com](mailto:deadhead.russell@gmail.com)

1-226-789-3957

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## EDUCATION

**University of Waterloo;** Sep 2008 - Apr 2013

*Candidate for Bachelor of Software Engineering, Honours Software Engineering*

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## RELEVANT COURSES

### **Second Screen** (Design Project)

- Developed an application for Android that identifies what TV you are watching
- Modified the open source audio fingerprinter Echoprint to return where the match occurs in the source audio
- Designed the back end database that handles metadata for TV shows

### **Research Project** (SE 499)

- Investigated the use of the Stockwell transformation in audio fingerprinting
- Modified Codegen for Echoprint to use either the Stockwell transform, or the already existing filter bank analysis
- Performed multiple tests against both algorithms and analysed the results

### **Computational Vision** (CS 484)

- Learned digital signal processing techniques for image processing
- Developed a program for recognizing how images go together and composed the images into a panorama
- Implemented a panoramic stitching program in Matlab

### **Introduction to Computer Graphics** (CS 488)

- Lectures gave a broad overview of many graphics concepts
- Developed a final project implementing flocking, L-System, terrain erosion and water rippling systems

### **Other Related Courses**

- Digital Signal Processing (ECE 413)
  - Numerical Computation (CS 370)
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## AWARDS

- President's International Experience Award; Spring 2012
- Leslie Klein Engineering Entrance Scholarship; Fall 2008 & Winter 2009
- University of Waterloo President's Scholarship of Distinction; Fall 2008

# TECHNICAL SKILLS

## Software Development

- Strong understanding of developing device drivers for different types of hardware
- Extensive experience of audio and image signal processing in C/C++ and Matlab
- Good knowledge of computer graphics programming techniques

## Web Development

- Very strong client-side web application development skills (HTML, JavaScript and CSS)
  - Familiar with a number of server-side languages including Google Go, JavaScript (node.js) and Java
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# WORK EXPERIENCE

## Research Intern, Primal Inc., Waterloo, Ontario; Sep - Dec 2012

- Investigated a new algorithm for scoring web content against concepts
- Designed a new algorithm for converting user queries into concepts and then synthesising new concepts
- Researched combining synthesis results together to store user intent over multiple queries
- Will be listed as a collaborator on multiple patent applications

## Software Engineer Intern, Microsoft Corp., Redmond, Washington; Jan - Apr 2012

- Ported a virtual surround sound processing library from Windows to an Xbox 360 device driver
- Improved CPU performance by over 750x and memory usage by over 5200x with help from a code profiler
- Worked with testing engineers to ensure code quality and program managers to ensure that the code met the spec

## Software Engineer Intern, Google Inc., Mountain View, California; May - Aug 2011

- Added accessibility for low-vision and blind users to the Pepper Plugin API (PPAPI)
- Modified existing Native Client applications to work with the new PPAPI version
- Added accessibility to existing Native Client applications

## Software Engineer Intern, Sybase iAnywhere, Waterloo, Ontario; Sep - Dec 2010

- Researched the possibility of replacing native mobile applications with web applications
- Developed a JavaScript library to create native quality mobile web applications
- Cloned a CRM native application as a web application, matching performance

## Software Engineer Intern, Qualcomm Innovations Center, San Diego, California; Jan - Apr 2010

- Worked with the Symbian OS Multimedia Audio Team
- Designed and developed a physical device driver for the Windows emulator
- Wrote a debugging tool to log running processes on the target device

## Ground Segment Intern, Canadian Space Agency, Saint-Hubert, Quebec; Apr - Aug 2009

- Launched an internal development application using Java, JSP and JavaScript
- Wrote SQL queries for Oracle 10g Database

# PERSONAL PROJECTS

Source code for most personal projects can be found at: [github.com/deadheadrussell](https://github.com/deadheadrussell)

## Personal Website

- Used node.js and Google Go to implement the server
- Strong focus on client side JavaScript
- Used HTML5 (JavaScript and CSS3) technologies with fallbacks for legacy browsers

## Soccer Emulator

- Created a text-based soccer game simulation that takes team stats as input
  - Outputs play by play game summary and final scores
  - Simulated various single game issues such as morale
  - Developed a learning mechanism so that teams would improve after each game
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# OTHER INTERESTS

## Music

- Perform, compose and record music on various instruments
- Have played piano in multiple musical theatre performances
- Instruments include the guitar, piano, upright bass, drums, vocals and mandolin

## Sports

- Class athletic representative, organizing teams, liaisoning with the league and developing plays
- Captain of soccer, volleyball, ultimate frisbee and slo-pitch intramural teams
- Played many competitive sports including allstar teams in soccer and baseball