Résumé

Andrew Top

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Technical Skills

- Expert knowledge of *C++*. Comfortable and familiar with *C++11* and many advanced *Boost* components.
- Excellent working knowledge of *Python* in many different problem domains (i.e. *WSGI*, *SCONS*, *NumPy/SciPy*).
- **Other languages:** *MATLAB*, *Java*, *HTML*, *PHP*, *Lisp*
- **Tools:** *vi*, *Emacs*, *gcc*, *Apache*, *Eclipse*, *Microsoft Visual Studio*, *MySQL*
- **Libraries:** *POSIX sockets*, *OpenGL*, *DirectX*, *Qt*, *Pthreads*, *CUDA*, *OpenCL*
- **Build systems:** *CMake*, *SCONS*, *Makefiles*, *GNU build system*
- **Version control:** Client and server experience with *Perforce*, *Subversion*, *Mercurial*, *CVS* and *Git*
- **Operating systems:** *Windows* and *Unix*
- **Concepts:** Task-based and data parallelism, networking, large-scale software systems, program profiling

Work Experience

Google Inc.	**Software Engineer** (November 2012 - Now) • Designed/Implemented OpenGL graphics stack for YouTube's Chrome-based XBox One and WiiU application platform. • Designed/implemented debug aiding systems. • Investigated stability issues on the XBox One and greatly reduced memory pressure in order to quell them.
Next Level Games (NLG)	**Programmer** (January 2005 - April 2005), (September 2005 - December 2005), (May 2007 - 2009) • Dramatically improved the framerate in Punch-Out!! by utilizing the Wii's locked cache resources. • Augmented silhouette algorithm to greatly improve appearance of cartoon character rendering in Punch-Out!!. • Designed and implemented a networking library on top of the Wii's networking API in order to provide truly non-blocking asynchronous calls. • Architected the gameplay structures and networking system in the Xbox Live Arcade game, Ticket to Ride. The game's networking model was client-server based, with support for server migration if the host drops. • Interviewed many potential future co-op students to fill the role of software developer.

NVIDIA	**Software Engineer** (May 2006 – August 2006) • Developed driver code for NVIDIA's GoForce products. • Implemented power-saving functionality to disable chip features while they are not being used. • Implemented system to record low-level communication the driver makes with hardware. The startup process was recorded and its playback enabled quick display of a splash screen on device bootup.
Sun Microsystems Inc.	**Software Developer** (September 2003 - December 2003) (May 2004 - August 2004) • Developed functionality for Sun's Enterprise Learning Platform web application under Enterprise JavaBeans. • Developed tools in Perl to automatically generate graphs and reports based on data queried from Sun's bug database. These enabled managers to make better decisions regarding bugs.

Academia

MSc in **Computing Science** at the **Medical Image Analysis Lab** of **Simon Fraser University (SFU)** (2009-2012)

- **Supervisors**
  I was supervised by Dr. Ghassan Hamarneh of SFU and Dr. Rafeef Abugharbieh of the University of British Columbia (UBC).
- **Publications**
  1. Andrew Top, Ghassan Hamarneh, and Rafeef Abugharbieh. **Active Learning for Interactive 3D Image Segmentation.** In *Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, volume 6893, pages 603-610, 2011.
  2. Andrew Top, Ghassan Hamarneh, and Rafeef Abugharbieh. **Spotlight: Automated Confidence-based User Guidance for Increasing Efficiency in Interactive 3D Image Segmentation.** In *Medical Image Computing and Computer-Assisted Intervention Workshop on Medical Computer Vision (MICCAI MCV)*, pages 204-213, 2010.

  [1] was a single-track oral presentation at the Medical Image Computing and Computer Assisted Intervention (MICCAI) conference.
- **Awards**
  Won the Western Association of Graduate Schools (WAGS) 2013 Innovation in Technology award for my thesis.
- **TurtleSeg**
  I developed an interactive 3D image segmentation tool called **TurtleSeg** (http://www.TurtleSeg.org). Since going public in February 2011, it has been downloaded all around the world by research institutions, hospitals and businesses. TurtleSeg is a proprietary software owned by Oxipita Inc.
- **GPA:** 4.33 / 4.33

BMath in **Computer Science** from the **University of Waterloo** (2002 - 2007)

- Average grade among CS/Math courses: **88%**

Personal Projects

- **(2008) Dynamic 3D Scene Graphs** Created a proof of concept implementation of an dynamic 3D scene graph system. It allows for 3D scene graphs composed of objects of vastly different scales, and loops are allowed (i.e. a node of the scene graph may feature itself as a child). Implementation includes a creation tool and viewer tool. I wrote an article about this work that was published on GameDev.net (Link).
- **(2006) [School Project] Real-time operating system + Train Controlling Application** Created an x86 real-time operating system. On top of the OS, I successfully created a train controlling application which managed multiple trains navigating around a real-life model train track, while avoiding collisions.
- **(2006) [School Project] Virtual Foosball** Created a 3d video game of foosball, called Virtual Foosball. Game features include ball physics, networked multiplayer games and instant replays. (Link).
- **(2005) Marching Tetrahedrons Demo** Created a screensaver which implements the Marching Tetrahedrons algorithm with post-processing involving mesh simplification and mesh subdivision (Link).
- More projects can be found here: http://www.AndrewTop.com/Projects.

Interests

- Snowboarding
- Swimming
- Hiking
- Computer/console games