

Brad Whitehead

Online Resume – <http://www.bradwhitehead.com>

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PERSONAL OVERVIEW

- ✓ **Major Accomplishments:** Created IPTV distributed broadcast system used by 100,000 worldwide users. Established large file caching business and lead successful product development and beta testing. Jointly created award-winning business plan. Four patents generated through original research.
- ✓ **Personal qualities:** Creative, self-motivated, enjoy working in skilled teams, like to “get things done”, excellent communication skills.
- ✓ **Expertise:** Algorithm design and research, multi-disciplinary approaches to problem solving, product start-up, system architecture. Main programming expertise areas; Client/Server, network, kernel-level (drivers), algorithms.

EDUCATION

- M. A. Sc, Computer Systems Engineering**, Carleton University 2007
- **Thesis:** Scalable techniques for filtering invalid TCP connections and tracking flow duration on resource limited embedded devices (e.g. routers).
 - **Notable Projects:** Scalability analysis of Linux socket select methods (asynchronous sockets, Epoll, poll, select). Context switching implementation in POSIX kernel.
 - Two patents-pending, one publication (ICC 2007), one pending publication.
- B. Eng, High Distinction, Computer Systems Engineering**, Carleton 2004
- **Project:** Developed and simulated scalable Anycast-style client connection method. Implemented mid-point TCP/IP stack to track large file transfer activity.
 - Top of class for FPGA-based Viterbi decoder design (Verilog on Xilinx).

TECHNICAL EXPERIENCE

- Architect and Programmer**, www.aguitartuner.com 2004, 2007
- Created a guitar and instrument tuning web-based service based on original custom designed DSP (digital signal processing) algorithms.
 - Conducted research and development of highly accurate DSP tuning algorithm.
 - Implemented GUI in AWT and Swing, mic recording using Java Sound API.
 - Developed in C (5,000 lines), ported to JAVA applet. Deployed using Apache/PHP on Linux.
- Architect and Programmer**, www.stucksong.com 2007
- Created patent-pending Query-By-Humming song search service.
 - Research and development resulted in Fourier transform replacement providing enhanced time and frequency resolution.
 - Created original search method based on fuzzy logic matching concepts.
 - Designed simple but effective server-side processing architecture resulting in scalable and distributed query processing system.
 - Implemented GUI in AWT and Swing, mic recording using Java Sound API, compression with Speex library, matching algorithm in C on Linux.
 - Developed in C (25,000 lines), JAVA (applet, 1,000 lines), SSE2 x86 assembly. Deployed using Apache/PHP/exe on Linux.
- Software Engineer/Researcher**, Alcatel-Lucent 2006
- Worked in 15 person team to develop next-generation XML-based web services network appliance focused on service deployment, security, and corp. governance.

- Developed in C++ (15,000 lines), shell scripts, JAVA, SQL, JSP, Hibernate, and Linux (CentOS and RedHat), followed Object Oriented Design (OOD/OOP).
- Led integration of the three major system components, responsible for overall system infrastructure.
- Developed system update solution, error handling, application startup and shutdown, debugging routines, runtime environment.

Graduate Researcher, Alcatel

2005

- Independently created two patent-pending technologies for monitoring network traffic on high-speed network devices (also in masters thesis).
- Developed network simulator in C based on packet traces, including implementations of Ethernet/IP/TCP parsing, Bloom filters, and d-left hashing.

Architect and Programmer, Xelif – www.xelif.com

2004-2005

- Conceived and developed a Peer-To-Peer and HTTP caching system.
- Developed in C (authored 75,000 lines of 105,000 lines total). Deployed on Linux (server), Win2000/XP (client and server), Apache/PHP (web page), cross-platform.
- Responsible for scalable client/server architecture including communications, custom protocol design (UDP and TCP/IP), encryption, client handling, server load balancing and selection, database design, custom file-system interface, library code.
- Analyzed and reverse engineered popular protocols; HTTP, FastTrack, BitTorrent, Gnutella, eDonkey. Implemented the listed protocols.
- Developed WinNT/Win2000/WinXP device driver (TDI and Protocol layers), including IRP connection “pausing”.
- Developed MAC-level pass-through Linux kernel network driver.
- Developed client using Win32 network, and GUI (GDI) libraries. Implemented driver communication routines, database design.

Architect and Programmer, GTV - www.geeteevee.com

2000-2003

- Created server to distribute real-time video data streams to users world-wide (IPTV).
- Reverse engineered quake 3 network protocol (UDP based).
- Designed flexible and scalable application-level multicast architecture to support thousands of concurrent real-time clients (peak loads of 4,000 users).
- Responsible for client/server architecture, advanced proxy design, and network/CPU optimization.
- Developed in C (30,000 lines), reverse engineering in x86 assembly, eventually re-architected and integrated directly into a larger code-base (Quake 3 - 500,000 lines). Deployed on both Linux and Win32 (all development was cross-platform).

BUSINESS EXPERIENCE

President and Founder, Ankora Technologies, Inc. – www.ankoratech.com

- Responsible for initial startup; secured first testing partnerships, obtained pre-seed funding from Carleton Foundry program.
- Conceived and developed several ideas from start to finish through design, implementation, testing, deployment, marketing, and user experience evaluation.
- Arranged testing agreements with Carleton University to beta test Xelif system.
- Our team competed in and won the 2004 \$20,000 Technology Venture Challenge, and 2004 \$10,000 Wes Nicol Business Plan Competitions.

Founder, GTV - www.geeteevee.com

- Handled media relations, marketing, and growth of user base, reaching 100,000+ worldwide users at peak. Managed 10 person broadcast team at events.
- Handled inter-company relationships and contract negotiation with *id Software*.

VOLUNTEER WORK and PERSONAL INTERESTS

- Speech recognition, artificial intelligence, 3d rendering (OpenGL), 3d representations (BSP trees).
- Hobbies: Guitar, Pottery, Astronomy, Electronics (Analog and FPGA).
- Learning Disabilities Association of Ontario - Set up province-wide BBS messaging system.
- Managed/Owned two rental properties.
- Carleton Masters Swimming.

References available upon request