Robert Quattlebaum

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Professional Objective

I am passionate about working on interesting products that people enjoy using. I take great pride in the quality of my work, and hope to work with others who feel the same.

General Skills

Primary: Software Engineering, Object-Oriented Programming, Network Programming, Real-Time Interactive Simulation.

Secondary: Technical Documentation, Graphic Design, Website Design/Deployment, Small Business Management, IP Network Planning/Deployment/Maintenance, Ethernet Network Installation/Maintenance, Electronics, PCB Layout, Digital Video/Film Production/Editing, User Interface Design.

Specific Skills

Languages: C++, C, Objective-C/C++, PHP, XML(XSL, XPath, etc...), XSL-FO, CSS, XHTML, Parallax Spin, Javascript, regex, sed.

Technologies and Standards: 6LoWPAN, IEEE 802.15.4, CoAP, libdispatch+blocks, XMPP/Jabber, Cocoa, UIKit, DNS, mDNS, DNS-SD, IPv4, IPv6, USB CDC.

Platforms: MacOS X, iOS, Unix/Linux, Cygwin, Contiki, Windows2000/XP, Gnome/GTK+/GTKMM 2.x.

Other: GCC 2-4, Vim, Bash, Bind, Subversion, Git, SSH, CVS, MySQL 4-5, Apache 1-2.

Employment History

Software Engineer

Apple Inc.

January 2007– Present
(Cupertino, California)

Originally started on the QuickTime team, but eventually transitioned to a position working on low-level networking for FaceTime and Game Center. Developed several internal iOS apps.

- Stateless Authenticated Multicast Datagram Reflector: Developed the protocol, as well as both the server and client implementations. Protocol supports anycasting, for geographic redundancy. Patent pending.

Art Tools Engineer

Crystal Dynamics

October 2005–January 2007
(Menlo Park, California)

Crystal Dynamics is a video game production studio known for having published many extraordinarily successful titles such as **Legacy of Kain: Soul Reaver**, and **Tomb Raider: Legend**. Responsible for developing and maintaining the custom in-house tools used by our artists for creating art for use in production.

- Generic Graph Editor: Engineered/implemented a component for manipulating graph-like data structures visually.

Independent Contractor

Self Employed

December 2004–October 2005
(Sammamish, Washington)

Designed websites and logos for clients, as well as general computer and network maintenance.

- darcness: `<http://www.darcness.org/>` A modular content-engine written specifically for deepdarc.com.

Co-founder and Lead Developer
Voria Studios, LLC

August 2002–December 2004
(Bellevue, Washington)

Voria Studios was a small animation production and software company based out of Bellevue, Washington. Developed a deep understanding of digital film and video production, from digital color correction to debanding.

- Synfig Studio: <http://www.synfig.org/> Developed a complex feature-film quality vector animation software package from scratch. Some features: Spacial and temporal resolution independence, high dynamic-range color channels, physically accurate color mixing, beautiful antialiasing, modular plug-in architecture, etc.
- Animation Production: Produced and directed a number of animated short films.

Arcade Technician
Fun Factory (Arcade)

September1999–March2000
(Valdosta, Georgia)

Ensured that all of the video games were operational and safe to play. Activities included everything from fixing ticket dispensers, to replacing CRTs, to repairing force-feedback steering wheels.

Education

Associates Degree in the Science of Real-Time Interactive Simulation

August 2000–August 2002
DigiPen Institute of Technology
(Redmond, Washington)

Subjects: Video Game Design, Software Engineering, Linear Algebra, Calculus, Physics, Network Programming, Curved Surfaces, Ray-casting/Ray-tracing, Audio/Video Compression.

Personal Projects

- **IPv6-Based Home Automation**
  Finding existing home automation solutions inadequate, I am in the process of building an IPv6-based home automation system largely from scratch, including hardware and software. Several of the projects below are related to this task.

- **Contiki Jackdaw Firmware** <http://www.deepdarc.com/search/jackdaw>
  Contiki is an embedded operating system which is ideal for highly-embedded, battery-powered devices such as wireless sensor network nodes. One of the sub-projects of the Contiki project is Jackdaw: a custom firmware for the AVR RZUSBStick which lets computers participate in a local 6LoWPAN network.

  Contributions include adding support for CDC-ECM (required for MacOS X compatibility), improving EUI-64 to EUI-48 translation, adding an energy scan mode, as well as many bug fixes.

- **Smart Light Switch** <http://www.deepdarc.com/search/smart-switch?cat=6lowpan>
  This is an ongoing project to develop a safe, fully automatable, 6LoWPAN-based, capacitively-controlled light switch/dimmer which can fit inside of a standard US 1-gang wall box. Tasks include developing the user interaction model, the hardware and the software, as well as performing some basic safety testing to ensure safe operation under all circumstances. Currently at the prototyping stage.

- **ybox2** <http://www.deepdarc.com/ybox2>
  The ybox2 is a networked set-top box designed to fit inside of a common Altoids tin. It features a composite TV-out port, an ethernet jack, an IR receiver, a piezo speaker, an RGB status LED, and convenient headers for developing add-on modules. The concept was based on the original 'ybox' by Uncommon Projects, but designed to be more capable and much cheaper to build.

  Designed the hardware, based on the concept of the original 'ybox' device. Dramatically improved performance of TCP/IP stack. Implemented DHCP support, making it easier to initially configure and maintain. Wrote the ethernet bootloader program, which allows you to upload new programs to the device without any additional development hardware.

- **Reverse-engineering Christmas Lights**
  <http://www.deepdarc.com/hacking-christmas-lights/>
  One of the first people to reverse engineer the multi-color GE G-35 christmas lights, allowing complete individual control over the color and brightness of each of the fifty bulbs. The resulting blog post on the subject became the canonical resource for others interested in reverse-engineering these lights themselves.

- **Other Projects**
  See <http://www.deepdarc.com/category/projects/> for more information on other projects.

Personal Interests and Hobbies

- **Wireless Sensor Networks and Home Automation**
- **Electronics**
- **Machine Usability**
- **Jabber/XMPP**
- **Graphic Design**
- **Animation/Anime**
  I did start an animation studio after all. <http://voria.com/>
- **Snowboarding**

Awards

- **Imation Computer Arts Scholarship**, 1999–2000
  A national digital artwork scholarship for high school students. Twenty-Five finalists are chosen for the scholarship every year. Received this award two years in a row.

References

Available upon request.