

Casey Marshall

San Francisco, CA 94107

<http://metastatic.org/>

Interests

Cryptography and computer security, specifically secure operating systems and protocols. System-level treatment of metadata, data organization, and searching. Free and open-source software. User interface and information design. iPhone and iPod Touch application development.

Experience

Developer, WOD, Independent; 2009–

I wrote an application for the iPhone and iPod Touch, called WOD, for tracking CrossFit workouts and personal records. WOD has been praised by many in the CrossFit community, and currently holds a ★★★★★ rating in the App Store.

Software Engineer, Pacific Biosciences, Inc; Menlo Park, CA — 2008–

I am currently a software engineer at Pacific Biosciences, Inc., a company focused on a next-generation gene sequencing technology.

Software Engineer, Seagate Technology (formerly Mirra, Inc.); Sunnyvale, CA — 2004–2008

At Seagate I designed and implemented C and C++ software running on embedded Linux platforms which became a central feature of the Maxtor Central Axis remote access and sharing software. Prior to this I was the lead developer of the Mirra Personal Server, an award-winning data backup and synchronization appliance, and focused on Java development on an embedded Linux platform.

Summer of Code, Free Software Foundation/Google, 2006

I participated in the Google Summer of Code 2006 program, where I wrote an implementation of transport layer security (TLS, a descendant of SSL) for GNU Classpath, a free implementation of the Java class library, a part of the GNU Project.

Education

University of California, Santa Cruz — Bachelor of Arts, Computer Science, 2002.

University of California, Santa Cruz — Master of Science, Computer Science, 2008.

Skills

I have done most of my programming in Java, C# (using Mono), C, C++ and Objective-C (CocoaTouch primarily), and have some experience with Python, Ruby, and PHP. I am well familiar with a number of fundamental software engineering issues, most prominently scalability, speed, and security. My background includes work with a number of network protocols, including SSL and SSH, and I have a firm understanding of computer security issues. I have a passing interest in user interface and information design, and some aptitude in writing concise and fluid English.

Open-Source Projects

GNU Classpath is an ongoing effort to implement a free version of the Java 2 Standard Edition class library from scratch. My involvement has been centered around implementing the security infrastructure, including X.509 certificate parsing, and the access control mechanisms, as well as continuing to maintain software originally from GNU Crypto and Jessie. I also recently rewrote the NIO API, an advanced networking and IO API designed for fast, scalable systems. <http://www.gnu.org/software/classpath/>.

GNU Crypto was a project aiming to provide a complete Java cryptography toolkit. For this project I implemented a number of cryptographic algorithms, wrote programmer documentation, and was the official GNU maintainer of the project until we merged the project into GNU Classpath in early 2006.

Jessie was a project to implement a clean-room version of the Java Secure Sockets Extension, a Java API for the secure socket layer, SSL. Jessie is a complete implementation of the javax.net.ssl API, and contains a provider that implements SSL version 3, and TLS versions 1.0 and 1.1. In early 2006, Jessie was merged into GNU Classpath. I was the sole author of Jessie.

I rewrote Jessie, as a part of GNU Classpath, in the Summer of 2006, to adapt the code to the new, non-blocking IO API introduced by Sun in Java version 1.5. This work was done as a part of Google's Summer of Code program.

Notable Academic Works

Birch, a metadata search file system for Mac OS X, was my final project for the graduate course CS 221: Advanced Operating Systems, taken Fall quarter 2006. The implementation is available under the General Public License from <http://code.google.com/p/birchfs>. The final paper is available from <http://metastatic.org/Grad/Birch.pdf>.

My project for the course CS 229: Storage Systems, was to write a back-end data storage system with Berkeley DB for Ceph, a scalable, distributed file system. This code is included in Ceph, available from <http://ceph.sourceforge.net/>. The final paper is available from <http://metastatic.org/Grad/OSBDB.pdf>.

My Master's project was a data backup system that uses collision-resistant hash functions and error-correction codes to implement a de-duplicating, versioning, recoverable data backup system. The project report, Safe and efficient data backup with Arrow, is published as Technical Report UCSC- SSRC-08-02. <http://www.ssrc.ucsc.edu/Papers/ssrctr-08-02.pdf>.

This version was prepared on Tuesday, January 26, 2010.

References are available on request.