
Experience

Senior Video Software Engineer, iTunes Store

2004 – 2009 **Apple, Inc., Cupertino, CA.**

Summary Senior software engineer, responsible for the design, implementation, and continuous improvement of the iTunes Store media processing software stack.

Accomplishments Wrote the original iTunes Store video processing pipeline.
Wrote *all* video media analysis and transformation software currently in use by the iTunes Store.
Wrote a novel work queue scheduler for performing media-specific jobs, currently in use.
Served as sole technical ambassador for the iTunes Video Store to other groups at Apple.

Responsibilities Responsible for the engineering design of new video products; from mediating the needs of the various groups (hardware and software) to determine the optimal attributes of iTunes video products; to producing prototypes; to implementing the software used in production to create final, salable video bitstreams.

Responsible for video and audio bitstream quality; worked with production experts and QC teams to track down problems in production and pre-production media; proposed and implemented fixes. Researched new technologies, from hardware assisted scaling and encoding to third-party software packages to improve quality in areas like: scaling; de-interlacing and re-timing; and noise-reduction.

Served as the technical ambassador and subject matter expert for the iTunes Store, managing the relationships between iTunes Store engineering and the engineers at other groups within Apple. Responsible for the technical specifications of the deliverable MPEG-4 files; including implementing and testing feature prototypes, in concert with our hardware and software partners. Responsible for providing management with the expertise required to make technical decisions about iTunes video content.

Technologies QuickTime, H.264, MPEG-4, CoreAudio, OS X, ffmpeg, Objective-C, C, Python, Java, Oracle, Unix

Senior Database Engineer, turnitin.com

2002 – 2004 **iParadigms, LLC, Oakland, CA.**

Summary Senior database engineer for a extremely high-traffic Postgres database cluster; responsible for design, development, and operations in keeping the business-critical database on-line.

Accomplishments Designed and implemented an eight-node single-writer/many-reader Postgres cluster.
Wrote an application-layer load-balancer to sit in front of a single-writer/many-reader cluster.

Responsibilities Chief database architect and administrator, working with other engineers on designing database schemata and improving query performance; and managing a large number of very large Postgres instances, in both production and development environments.

Technologies PostgreSQL, Slony, Python, Perl, Linux

Contract Software Engineering

2001 – 2002 **Cisco Systems, San Jose, CA.**

Accomplishments Delivered a custom application-layer proxy to allow for legacy Perl web applications (developed in a mixture of mod_perl and CGI) to be integrated into a pure Java/J2EE web framework.

Built a Perl library to allow legacy applications to react to Java-initiated SOAP calls.

Administered the development team's Solaris server, including maintaining CVS and Apache services.

1999 – 2000 **Qwest, Minneapolis, MN.**

Accomplishments Web application development, in Java, Python, and Perl.

Designed an integration framework, based on XML-RPC, for legacy Smalltalk applications to make use of new, web-based services.

1998 – 1999 **Digital River, Inc., Eden Prairie, MN.**

Accomplishments Built the server side to the Digital River upgrade management and download tool; over 20,000 lines of object-oriented Perl, implementing a custom wire protocol; a high-performance cursor caching proxy for the DBI; flexible syslog and console logging; robust signal handling and runtime module loading.

Wrote a restartable, multi-threaded FTP-based file distribution mechanism for Digital River's partners to facilitate batch order processing.

Designed and prototyped a secure, asynchronous order processing and fulfillment system based on INN and NNTP, written in Perl and C.

1997 – 1998 **Genesys, LLC, St. Paul, MN.**

Accomplishments Built a PL/SQL regression testing tool, written in Perl, including a nearly-complete PL/SQL parser.

Developed and deployed a Quark Xpress plugin for the Macintosh that integrated with the company's flagship workflow management product.

Technologies C, Linux, Java, Oracle, Perl, SOAP, Solaris, Irix, XML-RPC, Python

Systems Programmer, Academic Computing

1993 – 1997 **The University Of Chicago, Chicago, IL.**

Accomplishments Designed, built, and managed the Center for Anthropological Computing, a unique multimedia data-collection and analysis facility; including video over IP; a simple object database (custom built); video, audio, and still image acquisition, indexing, and storage.

Developed a custom load-balancing library and accompanying tools, in C and Perl, for managing statistical software jobs (running in SPSS, SAS, Matlab) on a heterogeneous Unix cluster (IRIX, SunOS/Solaris, Digital Unix, AIX, Linux, OSF/1).

C, Python and Perl programming in support of 10,000 shell users of the University's central computing systems (SunOS, IRIX, HP-UX, Linux).

Technologies Perl, C, Python, Irix, SunOS, Linux

Patents

20080065691 Metadata for providing media content (Pending)

Education

1990 – 1994 **AB, Chinese, University of Chicago, Chicago, IL.**