

Michael R. Lewis

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EDUCATION **Rochester Institute of Technology**, Rochester, NY
B.S., Computer Science

- *Focus:* Systems programming, graphics/imaging
- Studied Cognitive Science at Universität Osnabrück

SKILLS

Languages

- C, C++, ObjC, Python, Ruby
- Java, Ruby, SQL, XML, JavaScript

Systems Technologies

- POSIX, OpenMP, SIMD (SSE, etc.)

Graphics Technologies

- OpenGL, SVG, Quartz Composer
- ImageMagick, Inkscape, Fireworks

Data (internals)

- Postgres, Redis
- HDFS, Hive, HBase

Web Technologies

- Rails, Pylons, WSGI, Tornado Web, nginx, Scribe Logging
- SASS/Compass, Protovis, jQuery, Prototype, Canvas

Environments

- Linux, OS X, Solaris, Windows

Tools

- Make, Vim, Eclipse, Xcode
- Git, Subversion, Pivotal Tracker

PROFESSIONAL EXPERIENCE **Scribd, Inc.**, San Francisco, CA **January 2010 to Present**
Software Engineer

- Primary contributor for Scribd's HTML5¹PDF rendering. Designed and implemented HTML and CSS generation for documents as well as optimized front-end javascript to dynamically load large documents. Also was responsible for creating web infrastructure to proxy and aggregate several font and HTML assets and Data URI encode them into one file.
- Implemented front end and back end of simple, high performance, sessionized event-logging framework. Back end handles up between 20,000 and 40,000 concurrent HTTP connections simultaneously at any time (on one server). Logs over 100,000,000 Events/day to HDFS. Project makes extensive use of Redis and Tornado Web.
- Designed and implemented stats product³. Back end workflow uses Hadoop and Hive and stores data in HBase. Front end uses protovis and CSS3 (and svgweb in IE).
- Contributor for mobile reading application on iOS. Worked extensively with CoreText, CoreAnimation Layers, and other lower level iOS libraries. Prototyped and created high performance text rendering view. (current project)

¹TechCrunch - Scribd CTO: We Are Scrapping Flash And Betting The Company On HTML5

²TechCrunch - Scribds Decision To Dump Flash Pays Off, User Engagement Triples

³TechCrunch - Scribd Stats: A Google Analytics For Documents

Kickball Labs Inc., Palo Alto, CA

Product Engineer

July 2009 to December 2009

- Designed and implemented image processing pipeline using SVG images and XSL transforms to allow for lossless composition of images, and the ability to make thumbnail *templates* from plain SVGs and on-demand, resolution-independent image generation. Also, found and reported several bugs in ImageMagick and RSVG.
- Created cross-browser image collage library that allowed scaling, rotating, and translating composition of images in JavaScript.
- Optimized several performance bottlenecks in SQL and other areas. Solved other bottlenecks by using memoization, memcached, and parallelization.
- Worked with analytics and A/B testing, writing several A/B tests, optimizing web properties for virality (and succeeding), as well as writing several reports and implementing multivariate testing.

Truviso, Inc., Foster City, CA

Software Engineer

April 2008 to July 2009

- Successfully designed new SMP processing model for database engine that achieved almost linear performance improvements per core and allowed for a map/reduce model of decomposing queries. (e.g. 8x performance improvement on 8-core machine)
- Responsible for designing and implementing several features in C in software based off of PostgreSQL. These include, but were not limited to SQL language extensions, interprocess communication, parsing.

Intel Corporation, Santa Clara, CA

Software Engineer Intern

March 2007 to Sept. 2007

- Recruited to help design, implement, and present demo for lecture at Apples Worldwide Developer Conference. Enabled particle simulator to utilize POSIX Threads and OpenMP to demonstrate processor scaling on an 8-Way Intel Xeon based Mac Pro.
- Tasked with analyzing the CHUD sample application, Noble Ape. Wrote two threading algorithms (POSIX and OpenMP) to increase performance. Also discovered logic errors in vectorized code and race conditions. Co-wrote correct vectorized code using SIMD intrinsics and resolved race conditions.
- Augmented MacCPUID utility with the ability to access CPU mapping with a kernel extension which was previously unavailable. It was used by engineers to fix threading issues on multi-core platforms.
- Developed an application to allow injection of assembly code into an arbitrary Mach-O or ELF binary and append a segment to the end.
- Analyzed cache related performance issues in an Intel threading library. Isolated core problems, wrote examples with workarounds as proof of concept for library engineers.

CNC Software Inc., Tolland, CT

Software Engineer Intern

Summers 2003-2006

PERSONAL
PROJECTS

Reccage Recommendation Engine

- Designed and developed recommendation engine in Python and C++. Features included REST API written in Python that wrapped internal C++, parallelization using POSIX threads, internal string pools, and excellent performance.

SIMD Conway's Game of Life

- Conway's game of life implementation using several optimizations such as bit packing with SSE2 instructions to reduce memory bandwidth, multithreading, and many more. It also contains a compatibility layer that reimplements the SSE intrinsics that the project uses in C. This allows it to run (slowly) on computers without the required instructions.