
C. David Estes

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In my careers at Motorola and Qualcomm, I've had the privilege of working on several projects that were industry firsts. These challenges fostered innovations that are still unique to their respective companies' products and processes. At Motorola, my experience in the embedded space primarily covered user interface design and programmable platform development (Java ME MIDP, AJAX, Flash). However, my interests in XML and web technologies led me to create crossover projects ranging from web tools for process improvements to research into a completely new Mobile Web Application Framework. It eventually led to a Computer Science Masters Degree with a specialization in Web and Internet Programming. As my career shifted from mobile to the data center, I focused more on compilers starting with static compilers such as Clang/LLVM and moving to dynamic compilers like Dalvik and Facebook's HHVM. Eventually, my enthusiasm for multimedia and computer graphics led to the pursuit of another degree. As a part time Ph.D. candidate at the University of North Carolina at Chapel Hill, my research has focused on a new display interface abstraction to replace the framebuffer.

Objective. To work in a technical lead software engineering position with a Fortune 100 company leveraging my experience and knowledge of high efficiency computing for high performance applications. Ideally, the position would be a hybrid, balancing multiple facets of engineering: research, architecture, design, mentoring, management, and deep problem solving.

Work Experience

Senior Software Engineer - HHVM Lead

March 2015 - Present

QDT - Qualcomm Datacenter Technologies Inc., [Qualcomm Datacenter Technologies Inc.](#) (Raleigh, North Carolina, United States)

- Ported Facebook's HHVM (runtime, interpreter, and JIT compiler) to AArch64.
- Lead the team in our profiling and optimizing of HHVM for Centriq 2400.
- Built a continual integration system (Jenkins plus custom MEAN webapp) which tested, benchmarked, and profiled HHVM in order to track performance trends.
- Represented Qualcomm Datacenter Technologies Inc. as the HHVM community liason.

Senior Software Engineer - Compiler Engineer

November 2013 - March 2015

QUIC - Qualcomm Innovation Center Inc., [Qualcomm Innovation Center Inc.](#) (Raleigh, North Carolina, United States)

- Contributed optimizations to Android's Dalvik VM JIT Compiler.
- Designed the code cache for a high performance Dalvik JIT Compiler replacement.
- Implemented deopt for a high performance Dalvik JIT Compiler replacement, allowing for punting and recompiling of very large and deeply inlined compilation units.
- Delivered advanced Machine Models to the LLVM Machine Scheduler for the ARM Cortex-A53, ARM Cortex-A57, and Qualcomm Kryo CPUs.

Staff Software Engineer - Web Software Performance and Optimization

May 2009 - November 2013

QUIC - Qualcomm Innovation Center Inc., [Qualcomm Innovation Center Inc.](#) (Raleigh, North Carolina, United States)

- Optimized the Tamarin ActionScript virtual machine for ARM Cortex A8.
- Contributed heavily to the Flash 10 plugin for Mozilla/Linux for first the World's first Smartbooks.
- Reviewed and pushed numerous Linux kernel patches to Code Aurora Forum.

Staff Software Engineer - Web Software Performance and Optimization

June 2008 - May 2009

QCT - Qualcomm CDMA Technology, [Qualcomm Inc.](#) (Raleigh, North Carolina, United States)

- Developed an Adobe Flashlight plugin for Mozilla/Linux for Snapdragon processors.
- Contributed to the bring-up effort of various Linux distributions on Snapdragon hardware.

Principal Staff Software Engineer - WiMAX Java Platform Manager

September 2006 - June 2008

Future Solutions and Technologies, [Motorola Inc.](#) (Plantation, Florida, United States)

- Designed advanced Java Feature to handle display re-orientation.
- Integrated Aplix's JBlend Java Platform.
- Integrated OMA 1.0 DRM for WiMAX.
- Architected, designed, and implemented AGLX, a functioning prototype of a complete, xml-based documentation management tool used for authoring, viewing, reviewing, editing, reporting, and version control of software development documentation.
- Led the AGLX team through an Agile Software Development Process (Scrum, Modified XP - Extreme Programming).

Senior Staff Software Engineer - iDEN Java Platform Lead

February 2002 - September 2006

iDEN Mobile Devices, [Motorola Inc.](#) (Plantation, Florida, United States)

- Architected, designed, and implemented Motorola's first Java Application Management Software (AMS) for a MIDP device.
- Designed and implemented the 2D Raster Graphics Library for the Java Platform.
- Developed prototype handset for JavaOne which was featured in a keynote presentation as well as Motorola's first J2ME Developers Contest.
- Shipped the World's first MIDP 1.0 compliant device (iDEN i85 Handset).
- Enhanced Java AMS to support multiple, concurrently running MIDlets.
- Shipped World's first MIDP Device capable of running multiple MIDlets (MVM) concurrently (iDEN i730 Handset).

- Specified, architected, designed, and implemented the Helper MIDlet Framework (HMF), a Motorola Proprietary API similar to the later Standard: JSR 211 (CHAPI).
- Created a custom API for a Text-to-Speech (TTS) prototype.
- Prototyped JSR 184 (3D for MIDP) using HI Corp's Mobile 3D Engine for JavaOne.
- Specified, architected, designed, and implemented Enterprise AMS, a set of custom extensions to AMS that allowed enterprise administrators to remotely configure their users handsets.
- Introduced and championed the use of wikis in the iDEN Mobile Devices Group as part of our formal process.
- Championed and deployed Doxygen as a part of the formal process for the iDEN Mobile Devices Group.
- Designed and managed the development of iDEN's first Advanced Music Application with support for metadata, podcast, and playlists.
- Designed a web-based automated test framework using iTunes, Xalan, Xerces, JSP, and Java SE for testing the handset multimedia subsystem.

Software Engineer - Mobile User Interface Team

January 1998 - February 2002

iDEN Mobile Devices, [Motorola Inc.](#) (Plantation, Florida, United States)

- Shipped the World's first Dual Digital (iDEN/GSM) handset (iDEN i2000 Handset).
- Performed various Software Maintenance in the UI Layer (iDEN i2000 Handset).
- Developed UI for Multiple Network Registration Algorithms (iDEN i2000 Handset).
- Developed a PC Application that utilized a Subscriber as a SIM Card Reader.
- Developed UI for SIM Card User Information Management (iDEN i2000 Handset).
- Developed UI for SIM Card Security (iDEN i2000 Handset).
- Headed a Process Improvement Team that redesigned the iDEN Division Intranet Web Site.
- Designed Web Interface for hundreds of version controlled development documents.

Software Developer - DOT Software Group

June 1997 - December 1997

Info Tech, [Info Tech](#) (Gainesville, Florida, United States)

- As an intern at Info Tech, I developed a Windows CE HPC component of an existing client server system that helped job foreman track the consumption and ordering of materials and people power. The Windows CE application supported remote data collection, update and synchronization from the field via a tethered download or a modem connection.

Education

Doctor of Philosophy in Computer Science

2019 (*expected*)

University of North Carolina (Chapel Hill, North Carolina, United States)

Concentration in Graphics and Display Technologies

Master of Science in Computer Science <i>Florida Atlantic University (Boca Raton, Florida, United States)</i> Concentration in Web and Internet Programming	2007
Bachelor of Science in Computer Engineering (Graduated with High Honors) <i>University of Florida (Gainesville, Florida, United States)</i> Concentration in Computer Science	1997
High School Diploma (Valedictorian) <i>A. Crawford Mosley High School (Panama City, Florida, United States)</i>	1993

Publications

Conference Papers

- “[n-Dimensional Display Interface](#)” Charles D. Estes. *ACM MM*, Amsterdam, Netherlands, 2016.
- “[Video Killed The Data Store - Extending the n-Dimensional Display Interface for Full Screen Video](#)” Charles D. Estes and Ketan Mayer-Patel. *ACM MM*, Brisbane, Australia, 2015.
- “[The n-Dimensional Display Interface - A More Elastic Narrow Waist for the Display Pipeline](#)” Charles D. Estes and Ketan Mayer-Patel. *MMSys*, Chapel Hill, NC, USA, 2012.
- “[Moving Beyond the Framebuffer](#)” Charles D. Estes and Ketan Mayer-Patel. *NOSSDAV*, Vancouver BC, Canada, 2011.

Other Publications

- “[GitHub \(Qualcomm\) HHVM PRs](#)” dave-estes-QCOM.
- “[GitHub \(UNC\) Research Repos](#)” dave-estes-UNC.
- “[LLVM \(Qualcomm\) Revisions](#)” cestes.

Speaking Events

- “[Adding and Optimizing a Subtarget for MIScheduler](#)” LLVM Dev Meeting. San Jose, CA. 2014.
- “Using JSR 226 for Declarative UI on iDEN Mobile Devices” Sprint Developer's Conference. Fort Lauderdale, FL. 2005.
- “Exploring JSR 184: Mobile 3D Graphics” Nextel Developer's Conference. Washington DC. 2003.

Qualifications

- **Programming Languages:** Java, C, C++, Javascript, PHP, PERL, OpenCL, Python, Objective C, ActionScript, Fortran
- **Web Programming:** AJAX, REST, XSLT, XML Schema, XHTML, XPath, HTML, CSS, DOM, JSON, SAX, XQuery, XUpdate

- **Development Environments:** J2ME MIDP, RTOS, Linux, Unix, Android, Windows Mobile, Windows
- **Other:** SQL, MongoDB, UML, OpenMP, OpenGL
- **Tools:** Eclipse, MS Visual Studio, Git, SVN, Rational Clearcase, Rational ClearQuest, Sourceforge, Wikis, Jira, Bugzilla
- **Professional Competencies:** Mentoring, Innovation, Communication, Problem-Solving, Self-Motivated, Analytical, Collaborative, Agile, Responsible

Achievements

- Engineering Excellence Level A Award for Designing an SD Card caching scheme for speeding up searching for files.. Motorola iDEN Engineering Excellence Committee, July 1, 2006
- Engineering Excellence Level A Award for Dramatically Improving the Multimedia Validation Time on iDEN Handsets.. Motorola iDEN Engineering Excellence Committee, June 8, 2006
- Engineering Excellence Level B Award for creating the Vibrator Lifecycle Test application.. Motorola iDEN Engineering Excellence Committee, November 23, 2004

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