

Henry Groover

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Career Summary

Experienced software engineer with strong embedded hardware development and debugging skills. In-depth experience includes embedded Linux, C++, C, kernel development, driver development, near real-time application development, and new hardware bringup. Thrives in a challenging, fast-paced product development environment. Additional expertise includes C++/Qt application development (both embedded and desktop/server), embedded open source package management, and low-level embedded device support. Reads schematics and datasheets and can map out and implement the best possible solution for embedded Linux development. A true generalist who can leverage a wide range of in-depth experience to create outstanding, innovative and reliable products.

Work Skills

Embedded Linux, Software development and architecture (C++/C/Python); Firmware and Linux kernel development; Open source package and build management; ARM multicore (Freescale, TI, Samsung, Marvell); Team leadership; Network security and analysis; Fiber optics and network architecture; Database design and development; Systems analysis and design; C++, Qt, Qt/Embedded, C#, Mono (Linux), ARM and Intel assembler, C, Java; circuit design; schematic reading and hardware debugging; Mercurial, Subversion, Git, Yocto, Ant, PHP, Perl, TCL, Python, MySQL, XHTML, Javascript, MFC, UML, Design patterns, Agile/Scrum

Work History

Senior Software Engineer MKS Instruments, Inc

May 2016 – Present
Austin, TX

Using *C++, C, Embedded Linux, Hardware debugging, Qt, Bitbake, Yocto, Git, Windows Embedded Compact 7, Linux, Python*:

- Performed extensive PCI kernel driver modification and debugging in Linux to address multicore concurrency issues
- Moved two Linux-based products to Git-based build using Yocto with extensive layer modification
- Worked on PCI network driver issues in Windows Embedded Compact 7
- Added EtherCAT capabilities to WEC7-based product

Embedded Linux Consultant HM Electronics, Inc

Jul 2015 – May 2016
Poway, CA (San Diego)

Used *C++, Qt, Qt/Embedded, C#, Mono, Postgres, Bitbake, Yocto, Intel SoC, Subversion, X11, Groovy*. Brought in-depth embedded Linux expertise to a team porting of Windows XP Embedded .NET software product to Yocto-built Linux:

- Designed and developed a system management component
- Designed and developed startup processes and daemons
- Developed security and encryption strategies for the product
- Debugged critical system flaws in Mono sources for Linux and implemented patches

- Designed and implemented secure update packaging and installation strategy for initial install and updates
- Debugged and root-caused hardware issues at the kernel and oscilloscope level. One difficult problem was caused by inexpensive SSD devices causing data corruption on power fail under certain edge conditions due to lack of write failsafes in the device's internal firmware.
- Implemented parameterized build system using Jenkins and GNU make

Senior Software Engineer
CrossFiber, Inc

Nov 2012 – Jul 2015
San Diego, CA

As the sole software developer working with two EE consultants, used C++, Qt, Qt/Embedded, Bitbake, Yocto, Mercurial, Gumstix, Arduino, Raspberry Pi, OpenEmbedded, OpenCV and OpenFlow:

- Debugged and updated custom and open-source Linux drivers
- Brought up and prepared two new products from hardware design to software implementation (near real-time userspace application)
- Implemented Yocto-based build from Mercurial sources using Jenkins
- Debugged and analyzed hardware issues using oscilloscope using board modifications for debugging
- Designed add-on to legacy product using OpenFlow adaptation
- Developed production assistance application using cross-platform C++/Qt application with image recognition for die yield improvement
- Developed web interface to embedded product using Python
- Performed basic circuit analysis and design functions when EE consultants were unavailable, and for subsidiary functions and business needs

Senior Firmware Engineer
DriveCam, Inc (now Lytx)

Feb 2011 – November 2012
San Diego, CA

As a senior team member, used C++, C, Qt, Qt/Embedded, Linux, Git, Accurev, ARM, TI OpenMax, OpenEmbedded, Arago, Freescale:

- Developed modules for new product with two real-time video encoding streams on TI DaVinci processor (ARM)
- Developed and participated in board bringup activities on TI, Freescale and other embedded SoC and chipset solutions
- Developed code using gstreamer API in C for video capture, transcoding, recoding and playback

Senior Software Engineer
Chumby Industries

Jan 2007 – Feb 2011
San Diego, CA

As a sole contributor member of a small, intensive team, used C++, C, ARM assembler, Linux, ActionScript, ARM, MIPS, MySQL, PHP, Subversion, Git, Embedded ARM Linux:

- Developed and maintained source-licensed Adobe Flash Lite player which forms the core of all Chumby products (C++ with extensive adaptations and customizations)
- Found many defects in Adobe code, implemented patches and reported back to Adobe
- Developed code using gstreamer C API for video encoding, capture and playback
- Participated in porting Chumby Linux to new hardware platforms (Samsung ARM11 and Marvell ARM7)
- Created Linux ALSA driver for Wolfson 8400 hardware codec

- Created build recipe system to manage build of over 300 open-source packages. Was quite happy to later switch to Arago then Yocto after maintaining this custom-built system for over 4 years...

Senior Software Engineer
DivX, Inc

Dec 2005 – Jan 2007
San Diego, CA

Used C++, C#, .NET, Linux, Windows, J2EE, Struts, Velocity, MySQL, PHP, UML, Oracle 9i, Ruby, Subversion, Ant:

- Refactored code for DivX media format library
- Developed tools for XML and AVI file manipulation
- Documented physical media characteristics for optical media formats
- Developed code validation tools
- Developed GUI front-end for massively automated testing of video sample processing

Software Engineer
Linspire, Inc

Jun 2005 – Dec 2005
San Diego, CA

Used C++, Linux, Tomcat, J2EE, Struts, Oracle 9i, Spring:

- Developed modem and audio drivers for Linux
- Developed build management best practices and systems
- Investigated security issues in network stack

MIS System Development Team Lead
Greenfield Online

Sep 2002 – May 2005
Gurgaon, INDIA

Hired and led a team developing a customized project management solution for quick turnaround projects.

Senior Software Engineer
Websense, Inc

Aug 2001 – Sep 2002
San Diego, CA

Used C++, Linux, Windows, UML, Java, J2EE, Swing, .NET, MFC, STL:

- Developed and implemented stream analysis for Websense Real Time Analysis of live logs
- Developed software for passive and active capture of TCP/IP traffic for instant messaging

Chief Technical Officer
Panchang, Ltd

Jul 1999 – Jul 2001
Bath, UK

Used C++, MFC, STL, Java, PHP, Linux:

- Developed and implemented technical strategy for operations and development
- Developed code for astronomical calculation, heuristics and content delivery
- Hired and led team of designers, writers, QA and software engineers to implement production website
- Hired and worked closely with network operations consultant to develop scalability

Senior Software Engineer
Orbital Sciences Corp

Apr 1998 – Jun 1999
Germantown, MD

Used C++/MFC, Windows NT:

- Added icon tooltips to MMSS software (C++)
- Worked on re-engineering of build processes
- Architected and lead team to move to use from structured storage to DBMS-based storage

MIS Development Consultant
MCI Worldcom and Mitchell Medical

Jun 1996 – Apr 1998
Arlington, VA

As a consultant worked on development of various information systems using a variety of languages, technologies and databases

Director R&D
Qualitas, Inc

Feb 1991 - May 1996
Bethesda, MD

Both as a senior team member and later as hands-on technical lead, used C, C++, C++/MFC, Pentium assembler, Linux:

- Led team effort to design and architect new product
- Hired and supervised developers and interns in later role as Director of R&D
- Contributed to development of many features of new product including object-oriented scripting language
- Performed extensive development on in-house debugger
- Added source-level symbolic debugging to in-house debugger
- Added customized heap management to 386MAX memory management product
- Performed extensive debugging and reverse-engineering of problematic software
- Added code for video adapter recognition
- Performed extensive development on MicroChannel architecture with extensive BIOS code analysis
- Participated in developing technical walkthrough peer review process

Other interests, specialties and hobbies

Astronomy (computational), Robotics, 3D printing, Circuit design, UAV development, Laser control systems, Geographic Information Systems (GIS), Compiler theory and design, Number theory, Cryptography, Geometric Origami, Photography, Animation using Blender, Learning Management Systems using Moodle