José Hiram Soltren

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Synopsis

System Software Engineer and MIT alum. **Ten years' experience** in various areas: Linux, kernel development, device drivers, computer graphics, firmware, video decoding, end user software, systems administration, Apache Spark.
Additional specialties: automotive, aviation, machining, CAD, CAM.

Experience

Software Engineer
Cloudera, Inc., Austin, TX (work from home) 2016-2017

- Engineering development work on Apache Spark, a distributed computation platform with fault tolerance billed as the successor to MapReduce.
- Worked on fault tolerance and reliability in Spark core code by working with colleagues to implement a blacklisting mechanism for faulty compute resources.
- Designed an addition to Apache Spark that would allow compute resources to report on memory utilization in real time.
- Worked with several teams to scope work needed to support hardware accelerators as first class citizens at deployment and execution time in Apache Spark.
- Worked with QA teams to design, implement, and adopt an internal fault injection framework for endurance and vulnerability testing on Apache Spark.
- Bug and feature work in Apache Spark. Worked on customer escalations.
- *Technologies used: Spark, Scala, Java, JVM, Python, Jenkins, git*

Senior System Software Engineer
NVIDIA Corporation, Santa Clara, CA and Austin, TX 2011-2016

- Firmware and device driver development for resource management, 2D graphics, 3D graphics, and accelerated video decode for NVIDIA desktop/mobile GPUs on Linux/UNIX hosts.
- Technical lead for VDPAU, the accelerated hardware video decoder stack on Linux.
- Technical lead for H.265/HEVC video decoder format implementation on Linux. Added hardware accelerated H.265/HEVC video playback support to the NVIDIA Linux driver stack. Wrote a simple stream parser to play H.265/HEVC video and released it under an open source license.
- Worked with firmware, kernel, hardware, and ASIC engineers around the clock and around the world on FPGA Quickturn emulators to root cause and fix a critical, stop ship issue related to video decoding on Maxwell GPUs.
- Refactored the NVIDIA Linux video decode driver stack to add hardware support for Maxwell and Pascal GPUs. Worked with firmware, hardware, and ASIC engineers to sort out hardware differences from previous generations.
- Rewrote video shaders used in the video decode pipeline from Cg into GLSL, allowing the video shaders to move to a leaner implementation using a new shader compiler.
- Served as company-wide expert and point person for H.264 and H.265 format questions. Helped to set direction for video decoding hardware in future NVIDIA hardware products.
- Worked on the critical path for new hardware bringup. Designed and executed bringup tests for 2D and 3D graphics and video decoding. Worked to right-size and automate bringup testing, with a direct result of shortened test times and faster time to market. Ported these improvements to pre-silicon early validation tests to shorten delivery times for future hardware generations.
- Root caused and fixed a critical bug that would sometimes cause 3D driver initialization to fail. This bug, when fixed, unblocked content creation for a major motion picture studio.

EXPERIENCE, CONTINUED

- Fixed a critical video decoding issue that would result in system hangs when decoding corrupted video streams. This bug, when fixed, enabled hospital patients to enjoy a first-class video playback experience on nearly end-of-lifed hardware.
- Discovered, root caused, and fixed a critical race condition bug that prevented the NVIDIA Linux driver from performing reliably with more than four GPUs in a system, by introducing a fine grained lock in a crucial code path. Fixing this bug made it possible to place multiple GPUs into one system, an important workflow for machine learning. In so doing, implemented a novel debugger that worked closely with the kernel to register hardware breakpoints after certain conditions were met.
- Worked closely with kernel engineers on hwsnoop, an in-system PCIe debugger. It could, via PCI bus mastery, investigate the state of a halted CPU or GPU, so long as the system's memory controller remained active. Used hwsnoop to gather information on system crash type bugs that could not be investigated any other way.
- Performance and QA work for hardware and driver support on Google's ChromeOS.
- Discovered a number of potential stop-ship issues that slipped by our QA teams. Fixed them even if they were outside my domain.
- Authored and maintained tools for bug triage and bringup testing.
- Worked with customer facing QA teams to improve practices, leading to reduced engineering time spent on issues.
- Fixed multiple bugs in the NVIDIA Linux driver graphics stack related to performance, system reliability, video quality, and memory economy.
- Served as technical mentor to several engineers over the years. Mentees have gone on to make substantial contributions to OpenGL, Vulkan, X.org, and the Linux kernel.
- *Technologies used: C, C++, OpenGL, Cg, GLSL, assembly (numerous variants), FPGA hardware emulation, Linux kernel, gdb, Perforce, git*

Member of Technical Staff Model N, Inc., Redwood Shores, CA 2009-2010

- Backend and UI engineering work on Model N's revenue management software solution for the pharmaceutical and semiconductor verticals.
- Fixed numerous bugs and implemented numerous features in the areas of pricing, customers, commitments, contracts, and compliance.
- *Technologies used: Java, Oracle SQL, WebSphere, JavaScript, Perforce*

EDUCATION

Massachusetts Institute of Technology, Cambridge, MA

Master of Engineering, Electrical Engineering and Computer Science 2009

- Course work in operating systems, biomedical informatics, network protocols, scientific computation, signal processing, power electronics.
- Wrote thesis on using Semantic Web technologies to determine privacy policy compliance of database queries using a rules-based reasoner.

Bachelor of Science, Electrical Engineering and Computer Science 2007

- Minor in Science, Technology, and Society.

LANGUAGES

Fluent in: English, Spanish, C.
Proficient in: OpenGL, Java, JavaScript, R, C++, Scheme, Perl, Python, PHP, MATLAB, Cg, GLSL, CUDA.

CITIZENSHIP

United States

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