

JOHN KELLEY

QUALIFICATIONS

- Expert in bare-metal firmware design and implementation
- Proficient in schematic capture and board layout
- Leading hardware and software teams from concept to production
- 15+ years designing and developing applications in C
- Proficient in reverse engineering software and embedded hardware devices
- Startup experience; founded three companies, one exit (2006)

SKILLS AND ACCOMPLISHMENTS

Condition One

- Lead Hardware Engineer focused on spherical 3D pano-video capture technologies for VR
- Designed and prototyped a next-generation 3D camera capture system using Xilinx Zynq FPGAs
- Reverse engineered GoPro 3D Hero system to understand configuration and sync abilities
- Designed a system to provide camera control, configuration, and genlock for many GoPro cameras
- Prototyped capture system designs with Chief Stereo Engineer using GoPro Hero 3+ Black cameras
- Optimized C++ video processing pipeline to deliver a 24x speedup
- Researched codecs and implementations for 75Hz 3D pano-video playback (discrete, OU, MVC)
- Researched foveal video decoding methods and codecs

Hello Inc

- Hired and managed EE team to develop products and test fixtures
- Interfaced with Industrial Design and Mobile Software teams to design product and protocols
- Schematic capture and layout of a rigid/flex PCB for a wearable device in Altium Designer
- Implemented wireless charging and Bluetooth Low Energy solutions
- Managed supplier and manufacturing relationships to ensure on-time delivery of product
- Test equipment and protocol design to validate boards at different factory stages
- Design and implementation of an efficient flash-friendly filesystem for use with NOR flash
- Cryptographic security design to ensure user and data security both at rest and in transit

Apple Inc

- A7 Secure Enclave Processor design and bring up
- Consulted with VLSI team on secure silicon design for embedded processors
- iOS firmware and OS bringup on new silicon
- Architecture Emulator work for A7 AARCH64 SoC and devices
- Hardware and software debug in a factory setting with a focus on improving yield
- Performed security-centric code audits of ROM, firmware and kernel extensions
- Taught courses on code auditing and xnu kernel / userspace debugging with lldb and gdb
- Secure embedded OS implementation (A7 SEP)
- Designed platform security features for iOS
- Reverse engineered iPhone Jailbreaks to identify relevant security fixes

DivX Inc

- Video codec R&D with a focus on H.264
- Launched DivX Plus standard, H.264 in a modified Matroska container
- Co-authored two patent applications regarding DivX Plus
- Assisted Business Development with partners technical requirements
- Conducted due diligence of companies and 3rd party technologies
- Prototyped numerous video related technologies and services using C++
- Designed infrastructure for a LAMP-based community powered HD video site (peak 150Gbps traffic)

Corporate Green

- Negotiated the sale of the company to DivX Inc in January 2006.
- Designed and implemented server infrastructure to run a 500k+ member community site
- Optimized our custom PHP community software platform (LAMP)
- Implemented mechanisms to accelerate the LAMP stack (eaccelerator, memcached, thttpd, etc...)

Arc-9 Interactive

- Co-founder, built a 9 employee indie game studio from the ground up
- Secured funding to enable the company to operate for 5 years and develop several game prototypes.
- Managed day to day operations of the company
- Technical lead on core game engine tech in C++

Personal Projects

- Design and layout of a Cortex-M3 based exploit development tool for the Nintendo DSi platform
- Aided design and assembly of a Spartan-3 FPGA / Cyclone USB based memory bus sniffer
- Nintendo Wii (PowerPC / ARM) reverse engineered bootloader and fixed bugs in 'Twilight Hack'
- Sony PSP (MIPS) exploited security holes to run custom code, developed the OpenSource PSPSDK
- Apple iPhone (ARM) reverse engineered mobile communications library to interface with the device, focusing on upgrade procedures. Culminated in a utility to control iPhone state and execute commands on device.

EXPERIENCE

LEAD HARDWARE ENGINEER, CONDITION ONE INC. BRISBANE, CA JUNE 2014 - OCTOBER 2014
ENGINEERING LEAD (EE & FW), HELLO INC. SAN FRANCISCO, CA MARCH 2013 - MARCH 2014
EMBEDDED SECURITY ENGINEER, APPLE INC. CUPERTINO, CA OCT 2008 - MARCH 2013
SENIOR R&D SOFTWARE ENGINEER, DIVX INC. SAN DIEGO, CA JAN 2006 - JUNE 2008
CTO, CORPORATE GREEN NEWPORT BEACH, CA MAY 2003 - JAN 2006
VICE PRESIDENT, ARC-9 INTERACTIVE HALIFAX, NOVA SCOTIA MAY 2001 - DEC 2005

TECHNICAL SKILLS

- Secure firmware design and implementation (ROM/Bootloader and device firmware)
- Hardware and software debugging
- Secure platform design
- C/C++ systems design and implementation
- Experience in x86 / x86-64 / armv7 / armv8 / MIPS / Cell assembly
- SMT schematic capture and layout in Altium Designer
- SMT soldering
- Reverse Engineering (file formats, network protocols, code)