# Shawn Nematbakhsh

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## Summary

Experienced senior embedded software engineer. 5+ years of success in semiconductor and consumer electronics industries. Proven track record of superior on-site OEM support, leading multiple projects to mass production.

## Qualifications

- Superior knowledge of RTOS and embedded C.
- Experience working with embedded technologies including image processing, compression, H.264 video, image sensors, NAND, SD.
- Proficient in problem solving and resolving "impossible" bugs in high-pressure situations.
- M.S. degree in Computer Science with research focus on embedded hardware/software co-design.

## Skills

- **Languages**: C, C++, Perl, Python, VHDL, Verilog, SQL, MIPS + 8052 assembly, PHP, Java.
- **Development Tools**: gcc, gdb, Xilinx ISE, MPLAB, CCS PIC, KEIL C51, Visual C#.NET, VxWorks Tornado, Eclipse.
- **Hardware**: MIPS, ARM, PIC 16 / 18, Xilinx Spartan / Virtex, 8051 / 8052, PC104.
- **Misc**: H.264, JPEG, NAND, SD, MMC, MoviNAND, CMOS + CCD image sensors, LCD displays, ThreadX.

## Professional Experience

- **Senior Application Engineer**          Feb. 2008 - Current                              **Zoran Corp, Sunnyvale**
  - Developed firmware features for COACH (Camera On A Chip) digital camera SOC / DSP and COACHware firmware API, including image sensor drivers, storage media optimizations, API design, advanced video record features and power management features.
  - On-site OEM / ODM support in Asia for camera mass production. Lead firmware engineer for multiple customers and multiple completed projects, accounting for millions of shipped cameras.
  - Supported and mentored teams of field engineers at field offices and customer sites. Developed training sessions to help familiarize field engineers and new engineers with the inner-workings of COACH firmware.
  - Debugged and solved numerous time-critical "MP stop" hardware and software issues for nearly all COACH OEMs, including issues with RTOS / thread synchronization, DDR interface, closed-source customer libraries, etc.
  - Led effort to integrate WiFi media streaming technologies into firmware, including integration with Qik video streaming and Eye-Fi wireless SD cards.
  - Numerous outstanding reviews and awards, including top award in department for the year 2010. Recognized as one of the technical leaders in digital camera division.

- **Software Engineer**          Jul. 2006 – Jan. 2008          **MedLink Healthcare Networks, Los Angeles**
  - Designed and maintained database-driven web site used for hundreds of daily patient referrals from partner firms.
  - Lead programmer for electronic referral project allowing for automatic exchange of data in EDI and XML format.
  - Led project to increase call operator efficiency through custom software tools. Replaced numerous time-consuming manual tasks with custom scripts and automation.

- **Embedded Software Engineer**          Mar. 2005 - Jul. 2006                              **DNF Controls, Los Angeles**
  - Designed and implemented a custom control keyboard consisting of 40 multi-line LCD keys. Keyboard used to control and switch between video feeds for a major broadcast network.
  - Implemented RS422 / RS232 Advanced Media Protocol (AMP) in assembly for control of Thompson Grass Valley video servers on 8052 controller platform.
  - Created VxWorks web-accessible applications in C to configure and monitor controller hardware status and control video playback.
  - Wrote Windows applications in C# to interface with embedded controllers over RS232 serial

allowing for retrieval of runtime history from controllers.
  – Developed and maintained FPGA and PIC microcontroller code for peripheral control and glue logic on embedded PC104 systems.

- **Research Assistant**        Apr. 2002 -Mar. 2005        **U.C. Riverside, Comp. Sci. Dept.**
  – Designed custom modular monitor / control embedded devices for eBlocks project. Created a wide range of eBlock components such as DTMF phone dialer, Ethernet interface and PalmOS PDA interface. Performed power analysis and fault testing of eBlock components.
  – Wrote an eBlock simulator and schematic capture Java Applet for simulation and synthesis of eBlock systems.
  – Performed hardware / software partitioning on source code of SPEC benchmarks. Profiled execution of benchmarks to determine critical code segments, re-writing these segments in VHDL for implementation on a SOC device, measuring speedup compared with software implementation.

- **Teaching Assistant**        Sept. 2003 -Mar. 2005        **U.C. Riverside, Comp. Sci. Dept.**
  – Lead TA for senior-level embedded systems class, overseeing 2-4 other TAs assigned to class. Awarded Outstanding Teaching Assistant of the Year award for 2003-2004 school year.

- **Systems Administrator**        June 2004 -Mar. 2005        **U.C. Riverside, Comp. Sci. Dept.**
  – Built and maintained VMware image consisting of EDA tools for use in embedded systems laboratories. Tested and repaired damaged Xilinx Spartan2 FPGA development boards.

## Education
- **University of California, Riverside**
  **M.S. Computer Science, 2005**
  GPA: 3.7
  Thesis: External Interfaces and Software Tools for Electronic Blocks.

- **University of California, Riverside**
  **B.S. Computer Science, 2003**
  GPA: 3.5. Graduated Cum Laude.
  Project: UNIX Password Cracking with FPGAs.

## Publications
- G. Stitt, F.Vahid, S. Nematbakhsh -"Energy savings and speedups from partitioning critical loops to hardware in embedded systems". *ACM Transactions on Embedded Computing Systems (TECS)*, Feb. 2004.

- S. Nematbakhsh, F. Vahid, G. Stitt - "The Effect of FPGA Size on Software Speedup from Hardware / Software Partitioning". Technical Report, University of California Riverside, 2003.

- S. Nematbakhsh - "External Interfaces and Software Tools for Electronic Blocks". Master Thesis, University of California Riverside, 2005.

## Keywords
Software Engineer, Software Developer, Embedded Software Engineer, Embedded Developer, Applications Engineer, Field Application Engineer, Firmware Engineer, Firmware Developer, AE, FAE, Programmer, Bachelors Degree, Semiconductor Industry, CE, travel, Masters Degree, Research Experience, R&D, C, C++, Java, Perl, Linux, MySQL, Database.