Pablo Cacho

R&D Software Engineer - Engility Corporation

North Wales, PA - Email me on Indeed: indeed.com/r/Pablo-Cacho/f2886b3d716b5d32

To secure a position with an employer utilizing my strong embedded engineering background, organizational skills, and commitment to succeed in a challenging and fast paced engineering environment.
Authorized to work in the US for any employer

WORK EXPERIENCE

Embedded Software Engineer

Intel Corporation   -   King of Prussia, PA - May 2014 to Present

Responsibilities
Intel Omni-Path High Performance Computing Fabric
• Firmware lead on a joint project with Cray for the Argonne National Laboratory Aurora Supercomputer. This project consists of creating the Board Support Package (BSP) for a Freescale ARM processor running Yocto Embedded Linux. Tasks for this project include U-Boot support code, and Linux Device Tree file generation. This project also requires user-space tools for board validation, interfacing with the SPI interface to the management FPGAs, and developing interfaces for communicating with the switch ASICs over I2C.
• Developed ARM microcontroller firmware for the Host Fabric Interface PCIe card that performs management functions over SMBUS. Tasks for this project include a PLDM implementation over SMBUS and patches to the Linux kernel that added variable offset functionality to the bit-bang I2C controller.
• Developed VxWorks device drivers for a Cypress USB to I2C bridge.
• Worked closely with hardware teams during schematic design and board layouts for the single board switch and the enterprise-level switch offering insight on software/hardware interface feasibility.
• Member of tiger-team for initial switch ASIC power-on. During this time we systematically powered on the ASIC beginning at board level voltage regulator programming all the way up to bringing node links up and passing packets.

R&D Software Engineer

Engility Corporation   -   Horsham, PA - April 2010 to Present

NAVAIR Anti-Submarine Warfare (ASW) PMA-264/PMA-290
• Responsible for the simulation and performance analysis of acoustic signal processing routines. Analysis and performance tests are performed in MATLAB and in a Linux environment using C++ and Intel's IPP library.
• Part of a research team investigating novel signal detection techniques for passive and active sonar. Research tasks include mathematical derivation of algorithms and performance bounds. Monte Carlo simulations of the algorithms are performed for the derivation of Receiver Operating Characteristic (ROC) curves. Additional tasks include the development of C++ based ambient noise estimation algorithms of oceanic environments.
• Quality Assurance (QA) Lead on two products being delivered to the NAVAIR fleet. QA tasks are composed of test plans, test procedures, and testing to validate the functionality of the product. QA project also includes the development of a Linux based Object Oriented C++ automated test suite. The test suite communicates via a Linux Middleware wrapper to a Common Interface that allows for message passing (subscription/publishing) between applications.
• Project responsibilities also include the system administration and security audits of a Linux/Windows network.

E-MIDDAS Wireless Vital Signs Sensor
• Responsible for design of the 3rd generation E-MIDDAS medical sensor suite prototype.
• Design tasks include sensor specifications, firmware development, and circuit design.
• Development of firmware in C for interfacing and controlling sensors, timing for data acquisition, data manipulation, and bi-directional wireless transmission of sensor data via Bluetooth.
• Responsible for all phases of hardware development. Phases include schematic design, part selection, and Printed Circuit Board (PCB) layout and routing.
• Recent tasks include the design of Electrocardiogram (ECG) signal processing routines for noise reduction and parameter estimation. Noise reduction algorithms include adaptive filters such as Least Mean Square (LMS), Least Squares, and Recursive Least Squares (RLS). Parameter estimation algorithms include matched filter designs for detecting the QRS waveform that allow for the calculation of the RR Interval. A Kalman filter is currently under investigation for state estimation of the heart rate.
• Design of a novel wireless pulse-oximeter sensor consisting of LED timing, signal acquisition, digital filtering, and parameter estimation.
• Development of a Windows Graphical User Interface (GUI) for debugging Bluetooth communications. Interfaces for accessing the hardware device and parsing device messages written in C++ and C#.
• Generate enterprise level documentation that describes the functional aspects of the E-MIDDAS project.
• Direct the work of technical support staff to conduct testing.

Test Engineer Intern
Lockheed Martin Advanced Technologies Laboratory - Cherry Hill, NJ - March 2008 to November 2008

Worked in the Distributed Operations (DisOPS) division of ATL as part of a development team testing a handheld communications device for real-time mission updates destined for military use.
• Responsible for system functionality and usability testing in an embedded environment.
• Responsible for regression testing to ensure compatibility through the software design cycle.
• Adherence to quality assurance through bug discovery and documentation.
• Performed integration tests to guarantee successful end-user functionality.
• Composed and edited technical documentation for DisOPS handheld device.

EDUCATION

Bachelor of Science in Electrical Engineering
Temple University - Philadelphia, PA
May 2009

ADDITIONAL INFORMATION

SKILLS
• Strong knowledge of software development, digital signal processing fundamentals, MIMO radar systems, acoustic signal processing, adaptive filters, image processing, telecommunications engineering, speech processing, and embedded systems development.
• Solid programming skills in C, C++, C#, Verilog, and MATLAB.
• Extensive software knowledge: MATLAB, Linux, Intel IPP, and IAR Studio.
• Hardware experience: TI Bluetooth Low Energy (BLE), ARM, FPGA, and PIC.