4A ELECTRICAL ENGINEERING

Shiva Talwar

Design / Develop / Innovate

CONTACT DETAILS

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TECHNICAL PROFICIENCIES

- Excellent understanding of embedded systems, especially sync/async serial communication systems design
- Practical experience with application-specific IC systems, primarily ARM based FPGAs with Linux kernel development
- Proficient design knowledge of high-speed system-to-system communication using SPI, RS232, and I²C
- Deep understanding of the architectures, protocols and algorithms underlying modern distributed systems
- Working experience with full stack software development including node.js, mongoDB, express, jQuery, REST, AJAX
- Extensive work experience using EDA tools, specifically with PCB design and simulation
- Working knowledge of low-level programming on various microprocessor architectures (MSP430, ARM series, etc.) using JTAG debugging tools.
- Extensive experience with image processing such as template matching, finding contours, and object character recognition

EDUCATION AND SKILLS

University of Waterloo, Waterloo, ON - *Expected April 2016* Sep 2011 - Present
Bachelor of Applied Sciences, Electrical Engineering

Languages
C, C++, C#, VHDL, Java, Python, ASP.NET, SQL, MATLAB, Assembly, Javascript, HTML5, CSS3

Software
Visual Studio, Eclipse, VisualDSP++, Altium, NI Circuit Design Suite, MultiSim, Verilog, Xilinx Design Suite, Android SDK

Hardware
ARM Cortex M3, Arduino Uno, MSP430, FPGA (Altera Cyclone Series, ZedBoard)

Additional Miscellaneous
Client-Server (DNS, HTTP, REST, LDAP), RPCs (Thrift), Distributed File Systems(NFS,HDFS), Analytics Platforms (Hadoop,Spark), Analytics Computations (PageRank), NoSQL Storage (Cassandra,HBase), Distributed Databases (MySQL Cluster, Hive, Impala), Computer Vision (OpenCV, Tesseract-OCR)

WORK EXPERIENCES

Smart Technologies, *Electrical Engineer (Co-op)* Jan 2015 - Apr 2015
- Developed real-time pattern detection algorithm to detect cosmetic and performance defects on retro reflective tape.
- Used OpenCV computer vision image processing library to process images and determine if tape in image is defective.
- Designed prototype for Linux embedded system on ARM based FPGA SoC to work with a Bluetooth and Wi-Fi module .
- Used Xilinx Design Suite to map pins and generate bitstream to physically connect hardware to the FPGA's fabric.
- Modifications to U-boot, First Stage Bootloader, Linux Kernel, and Device Tree led to the completion of this prototype.

Smart Technologies, *Firmware Development Intern (Co-op)* May 2014 - Aug 2014
- Reverse Engineered an outsourced firmware upgrade of SMART boards using I²C Analyzer and oscilloscope.
- Developed I²C driver to send/receive firmware upgrade of RAW bin file in 256 byte chunks with checkbit.
- Implemented full stack(node,mongoDB) service to send sticky notes from mobile device to SMART boards through Java Native Interface layer with sticky note text/drawing sent in JSON.

ON Semiconductor, *Firmware Tools Developer (Co-op)* Sep 2013 - Dec 2013
- Worked on live signal debugging for RS232 and I²C transmission to high speed hearing aid programmers.
- Designed I²C & RS232 drivers to allow support of three more high speed hearing aid programmers, resulting in over 1000 employees and suppliers being able to develop DSP tools on hearing aid devices more conveniently.

BlackBerry, *Software Engineer Intern (Co-op)* Jan 2013 - Apr 2013
- Proposed and implemented automated monthly project reports now used by over 100 managers each month.
- Developed aforementioned reports via asynchronous document with jQuery using AJAX in an ASP.NET environment.

Wicked Interactive Ltd, *Web Developer (Co-op)* Apr 2012 - Aug 2012
- Designed and Implemented a cart system and several animated landing pages in ASP.NET with CSS3 transforms.
- Managed user and product databases using MySQL and quadrupled the number of hits to the site.

RELEVANT PROJECTS

Non-GMO Project -Assisted local retailer with event. Design of webpage & volunteer (nongmoproject.org)
GitHub Side Projects -Dota 2 Twitch Image Processing, Face and Eye Detection,Dota 2 Drafting Simulator(Android)
HackTheNorth(hackathon) -Participated in hackthenorth.com. Design & code of intelligent preference magazine
IEEE Robotics Competition -Placed 2nd place and earned an IEEE Student Membership. Design of algorithm(ieee-sb.ca)