VINAY PADMA / ELECTRICAL ENGINEERING

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Technical Skills

Electrical Hardware:

- Proficient at PCB rework, testing and debugging, acquired from prior electrical R&D lab experience
- Fundamental EE skills (i.e. circuit analysis, power, control, basic analog/digital comm., RF/microwave)
- Experience using test equipment including oscilloscopes, VNAs, and spectrum analyzers
- Experience with NI Multisim, Keysight ADS

Development:

- Proficient in embedded systems design and development (C++/C design, STL, Linux/FreeBSD)
- Experience scripting with Python, Tcl, bash
- Software tools used include Git, Clearcase, Vim, Eclipse, Visual Studio, GNU tools, CxxTest

Soft Skills

- Adaptive skills - learned C++ design skills needed at Sandvine through self-study (Meyer's *Effective C++* series) and tinkering.
- Communication Skills - demonstrated through projects completed at Apple; success hinged on effectively communicating with several teams and vendors abroad.
- Leadership Skills - developed through chairing and organizing several initiatives (First Year Conference, Waterloo Engineering Competition, etc).
- Results-oriented ethic gained through time at a start-up; measure work in deliverables not hours.
- Dedicated to continuous learning; there's always room to improve and more to learn.

Work Experience

Wireless/RF Engineer - Apple Inc, Cupertino — Aug 2015 - Apr 2015

- Developed test equipment used to automate the process of calibrating pathloss of RF fixtures
- Designed and implemented library (C++) for control and data acquisition using the new hardware
- HW control library written in C++; robust design compensates for operator error (i.e. for factory operators)
- Worked with vendors to aid the design (i.e. restraints) and construction of the new test equipment
- Final product to reduce station calibration time from ~40 minutes to ~5 minutes

Skills/Tech Used: C++, Python (to validate new system), STL, Perforce, API design, RF test instrumentation

Embedded Software Engineer - Sandvine Inc, Waterloo — Jan 2015 - Apr 2015

- Embedded C++ development on the Switch Fabric Controller (OSI Layer 2-3), focused on Layer 2 switching
- Designed and implemented multi-constraint traffic load-balancing system (and associated infrastructure); achieved a solution (a configurable approximation) to a NP-hard problem
- Gained experience with test-driven development; learned to emphasize reliable, clean code from the start
- Other tasks included managing teams to tackle unique problems (i.e. fixing software rot when upgrading GCC compilers)

Skills/Tech Used: C/C++, Python, STL, Boost Library, Embedded Development, Algorithm Design, Clearcase, Vim

Integration Engineer - Solink Corp, Kanata — May 2014 - Aug 2014

- Developed client wrappers integrating 3rd party cameras into Solink product (utilise vendor APIs)
- Integrated both desktop (.NET framework, C#) and web (JavaScript) SDKs into product
- Embraced a start-up and a results oriented culture, oversaw integration projects from start to finish

Skills/Tech Used: C#, JavaScript, Git, API integration, Programming for Big Data, Event-Driven Architecture

R&D Lab/Jr. Design Technologist - Cooper Controls, Mississauga — Aug 2013 - Dec 2013

- Responsible for PCB assembly (rework, through-hole/SMT) and testing, as well developing/utilising test units
- Wired and developed circuits as part of an interface to test lighting control products (DALI)
- Gained experience with power tools and electrical standards while building test units

Skills/Tech Used: PCB Rework, PCB Inspection/Testing, Test Unit Construction, Power tools, AutoCAD

Projects, Assignments and Hackathons

Low Noise Amplifier (LNA) — Jul 2016

- Designed a LNA using lumped components in order to meet certain specification (gain, stability, noise figure, S11, S22)
- Lumped components (capacitors & chokes) were first characterized at required frequency (creating S2P).
- Using Keysight ADS, designed input/output matching networks with PCB layout to capture non-idealities on board
- Tested design after soldering LNA together. Iterative design used to compensate for unexpected behavior

RIT BrickHacks 2 — Feb 2016

- Designed and developed proximity-based Bluetooth replacement for car keys (i.e. lock/unlock using phone)
- Use with any RFID car key fob, enclosed in switchable faraday cage controlled through proximity (using RSSI)
- Finalist for Best Hack (view demo video)

Design and Build Multistage Amplifier (BJT) — Nov 2014

- Utilize IC building blocks such as current mirrors and cascodes along with biases to meet specifications
- Implementation utilised multistage differential pairs with pull down resistors replacing current sources
- Completed as part of ECE 242 project, physical implementation passed all criteria (view schematic)

The Next 36 - Wearable Tech Hackathon — Sep 2014

- Designed and developed proximity notification Android app interfacing with the Nymi wearable

PCB Rework and Circuitry - Build a Lighting Testing Wall — Dec 2013

- Built/wired wall with over 300 DALI protocol devices for product validation at Cooper (formerly Fifth Light)
- PCB rework and soldering controller modules in order to network wall devices together
- Experience with terminals and power supplies; were used to power the validation test wall

Design Traffic Light Controller (VHDL) — Nov 2013

- Implemented sequential/non-sequential design in order to create traffic light controller
- Programmed an Altera FPGA using Quartus II (view code)

Volunteering and Extracurriculars

Waterloo Engineering Competition Director - Senior Design — Jul 2015

- Organizing a revamped WEC for senior students, introducing Arduinos - Challenge: Automated pH regulator
- Developing Arduino libraries to be used for competition; also designed hardware modules to be used this year

Waterloo Engineering Competition Director - Junior Design — Nov 2014

- Organized an engineering design competition for 1st and 2nd year students - Challenge: Controlled flight

Chair - First Year Engineering Leadership Conference — Oct 2014

- Designed, developed and organized the inaugural FYELC for the Faculty of Engineering
- Overall feedback overwhelmingly positive, conference will become yearly event (visit site)

Education Outreach Director — Mar 2014

University of Waterloo Orientation Leader — Sep 2013 - Sept 2014

University of Waterloo Engineering Ambassador — Oct 2012 - Apr 2015

Education

Candidate for Bachelor's Degree of Applied Science (BASc) — 2012 - 2017

Electrical Engineering, University of Waterloo

Relevant Courses: Linear/Electronic Circuits, Data Structures & Algorithms, Digital Systems (intro. discrete circuits), Digital Computers, Intro. Control Systems, Electronic Devices, Electromagnetism & Waves, Analog & Digital Comm., Microprocessors and Embedded Computers, OS & Systems Programming, RF & Microwave Circuits

International Baccalaureate Diploma — 2008 - 2012

Turner Fenton Secondary School, Brampton, ON