

VINAY PADMA / ELECTRICAL ENGINEERING

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Technical Skills

Development:

- Proficient with C++, C, Python
- Knowledge of OS/Systems programming (Unix)
- Data analysis and processing with MATLAB
- Knowledge of introductory computational intelligence principles gained through course and personal projects
- Software tools used include Git, Perforce, Clearcase, Vim, XCode, GNU tools, CxxTest

Other:

- PCB rework and testing for prototyping, acquired from prior electrical R&D lab experience
- Fundamental EE skills (i.e. basic EM, microwave circuits, circuit analysis, power, communication)
- Experience using test equipment including oscilloscopes, VNAs, and spectrum analyzers
- Keysight Microwave Industry-Ready Certification 2017

Soft Skills

- Passionate about working in low-levelled environments and enjoy learning the needed skills.
- Adaptive skills - learned C++ design skills needed at Sandvine through self-study 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

RF Instrumentation Software Engineer - Apple Inc, Cupertino

Aug 2016 – Dec 2016

- Architected and developed a system to provide dynamic and extensible control of components on new test hardware
- Leveraged C++ for core IO with hardware, wrapped to Python to provide better scriptability
- Wrapped solution to web server to achieve multiple-interface system, concurrently controlling single hardware instance
- Other responsibilities included thermal characterization of hardware and data analysis in MATLAB

Skills/Tech Used: Python, Boost.Python, Systems Programming (OS, processes), Hardware interfacing, Radio systems architecture

Wireless/RF Engineer - Apple Inc, Cupertino

Aug 2015 - Dec 2015

- Developed test equipment software used to automate the process of calibrating pathloss of RF fixtures
- Designed and implemented C++ library used for control and function (i.e. data acquisition) of the new hardware
- 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, Hardware test instrumentation

Embedded Software Engineer - Sandvine Inc, Waterloo

Jan 2015 - Apr 2015

- Embedded C++ development: designed 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 compiler)

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 and Hackathons

CommBlocker	May 2015 - Present
<ul style="list-style-type: none"> ▪ Headset solution that performs noise reduction away from wearer (i.e. adjacent person cannot decipher wearer's speech) ▪ Wave models and simulations using MATLAB (i.e. multi-speaker placement vs. noise attenuation) 	
Various Projects – Computational Intelligence	Jun - Jul 2016
<ul style="list-style-type: none"> ▪ Researched various variants of the Particle Swarm Optimization and implemented in MATLAB (view code) ▪ Implemented several maze-solving algorithms using heuristic-based solutions (view code) ▪ Game-playing AI (for the game Conga) implemented using the Min-Max algorithm (view code) 	
NoKey - RIT BrickHacks 2	Feb 2016
<ul style="list-style-type: none"> ▪ 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
<ul style="list-style-type: none"> ▪ 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
<ul style="list-style-type: none"> ▪ Designed and developed proximity notification Android app interfacing with the Nymi wearable 	
PCB Rework and Circuitry - Build a Lighting Testing Wall	Dec 2013
<ul style="list-style-type: none"> ▪ 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 	

Volunteering and Extracurriculars

Waterloo Engineering Competition Director - Senior Design	Jul 2015
<ul style="list-style-type: none"> ▪ 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
<ul style="list-style-type: none"> ▪ Organized an engineering design competition for 1st and 2nd year students - Challenge: Controlled flight 	
Chair - First Year Engineering Leadership Conference	Oct 2014
<ul style="list-style-type: none"> ▪ 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 - Sep 2014
University of Waterloo Engineering Ambassador	Oct 2012 - Apr 2015

Education

Bachelor's Degree of Applied Science, Honors (BASc)	2012 - 2017
Electrical Engineering, University of Waterloo	
<i>Relevant Courses:</i> Linear/Electronic Circuits, Data Structures & Algorithms, Digital Circuits, Digital Computers (Assembly), Intro to Control Systems, Silicon Devices, Discrete Math, Communication Theory, Microprocessors and Embedded Computers, Operating Systems & Systems Programming, Coop. & Adaptive Algorithms, RF & Microwave Circuits, Radio and Wireless Systems	
International Baccalaureate Diploma	2008 - 2012
Turner Fenton Secondary School, Brampton, ON	