JonathanMash

contact

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education

Queen's University

2009 – 2013

M.Sc. in Electrical Eng.
Queen's Centre for Energy and Power Electronics Research
Thesis: Advanced Nonlinear Control Techniques for Wind Energy Conversions Systems
Course Avg: 92%

2004 – 2009

B.Sc. in Electrical Eng.
2nd/45 in Elec. Eng.
5th/576 in Eng.
Final Year Avg: 93%

programming

⋆Node.JS, Python, PHP Javascript, HTML5, CSS3, C/C++, C#, TCP/IP, HTTP, Zigbee, MySQL, DB2, CouchDB, RTOS, ⋆Linux, Windows, ⋆Git,

design tools

⋆Altium, Matlab, PSIM, ⋆Notepad++, Keil, IAR, Sketchup, Eclipse, Visual Studio, ⋆GitHub

interests

electronics, robotics, ⋆multi-rotors, drones, solar power systems, ⋆micro-controllers, single-board computers, IoT, ⋆embedded systems, linux, 3d printing

skills

core: problem solving, project management, product development, effective communication.
electronics: system design, embedded systems, prototyping, manufacturing.
hardware: specifications, pcb design, assembly & rework, testing & debugging, production.
software: specifications, design, programming, testing, deployment.

experience

2010 – *present*

SPARQ Systems — Kingston, Ontario, Canada

Lead Product Developer

- Given complete control over the design and implementation of an all-new monitoring platform developed using all new microinverter technology.
- Developed an in-home ***embedded Linux*** device utilizing advanced ***Zigbee*** communication, USB, 802.11 ***WiFi***, and a ***Websocket*** API to connect to cloud servers.
- Built an Amazon ***Cloud*** based monitoring and control solution based on ***Node.JS***, CouchDB ***NoSQL*** database, and a modern ***HTML5*** web front end.
- Actively involved in high-level market research, feature requirements derivation, and product requirements specifications.
- Component selection, ***PCB*** design, aided mechanical design, produced & tested ***prototypes***, and oversaw the entire process from ***design*** through to ***manufacturing***.
- Led and supported the deployment of field trials at sites across North America.
- Recruited and trained new employees to grow the group from just myself to a team of over six highly talented developers and engineers.
- Coordinated multiple teams and external contractors working on key projects.

Product Developer

- Designed, prototyped, and manufactured an in-home embedded device for solar panel and inverter monitoring.
- Developed a novel Power Line Communication protocol using Forward Error Correcting codes for robust communication the microinverters.
- Developed the manufacturing, assembly, and testing procedures to ensure only high quality products are delivered to customers.
- Trusted by senior management to provide independent engineering support to customers due to in-depth knowledge of the entire product line.

2009 – 2013

Centre for Energy and Power Electronics Research — Kingston, Ontario, Canada

Engineering Research Assistant

- Researched and designed a medium-power front-end converter for telecommunications equipment using simulation tools.
- Developed a wind turbine emulator using an induction motor connected to a permanent magnet synchronous generator for use in research activities.
- Derived novel non-linear control schemes for a PMSG-connected wind turbine.

2008

Ontario Power Generation — Pickering, Ontario, Canada

Student - Computers and Controls Division

- Developed and deployed an online portal to aid in knowledge retention.
- Identified project requirements, researched possible solutions, and implemented the chosen solution: Microsoft's Sharepoint and custom workflows.

2004 – 2008

Queen's University Solar Vehicle Team — Kingston, Ontario, Canada

Project Manager

Competitions: *Panasonic World Solar Challenge* & *North American Solar Challenge*

- Oversaw all aspects of a semi-professional racing team.
- Supervised the design, fabrication and testing of the vehicle.
- Directed efforts in marketing, sponsorship, event planning, and PR.
- Managed all financial planning, purchasing, cash flow, and budgeting.
- Led fund-raising efforts, raising over $500,000 in cash and in-kind donations.
- Knowledge of all vehicle design including electrical, mechanical, and software.
- Team's expert on power systems, lithium-based batteries, and solar cells.