

Jonathan Mash

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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, CouchDB,
RTOS, ★Linux

design tools

★Altium, Matlab, PSIM,
★Notepad++, Keil, IAR,
Sketchup, Eclipse,
Visual Studio,
★Git/GitHub

interests

Electronics, Robotics,
★Multirotor Drones,
Solar Power Systems,
★Microcontrollers,
Single-Board
Computers, IoT,
★Embedded Systems,
Linux, 3D Printing

skills

core: problem solving, project management, product development, effective communication.

electronics: system design, embedded systems, simulation, prototyping, manufacturing.

hardware: specifications, pcb design, assembly & rework, testing & debugging, production.

software: specifications, design, programming, testing & debugging, deployment.

experience

2010 **SPARQ Systems**

Kingston, Ontario, Canada

▼ **Lead Product Developer**

- present**
- Given complete control over the design and implementation of a new monitoring platform developed using all new microinverter technology.
 - Developed an in-house **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 and 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 six highly talented developers and engineers.
 - Coordinated multiple teams and external contractors working on key projects.

Product Developer

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

2009 **Centre for Energy and Power Electronics Research**

Kingston, Ontario, Canada

▼ **Engineering Research Assistant**

- 2013
- 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 with custom workflows.

2004 **Queen's University Solar Vehicle Team**

Kingston, Ontario, Canada

▼ **Project Manager**

2008 Competitions: **World Solar Challenge Australia & 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.
- Was the team's expert on power systems, lithium-based batteries, and solar cells.