JonathanMash

contact

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programming

⋆Node.JS, Python
Javascript, HTML5,
CSS3, C/C++, C#,
⋆Git/GitHub

design tools

⋆Altium, Matlab, PSIM,
⋆Notepad++

interests

electronics, robotics, drones, solar power, microcontrollers, single-board computers, linux, embedded systems, IoT

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 **SPARQ Systems** Kingston, Ontario, Canada

Product Developer

present

- Designed, prototyped, and manufactured a compact in-home device for solar panel monitoring.
- Managed and monitored external contractors working on our web portal.
- Developed a novel protocol over Power Line Communication using FEC coding for robust communication with the microinverters.
- Developed the manufacturing, assembly, and testing procedures to ensure only high quality products are delivered to our customers.
- Trusted by senior management to provide independent engineering support to customers due to in-depth knowledge of the entire system.

Lead Product Developer

- Given complete control over the design and implementation of an all-new monitoring platform.
- Actively involved in high-level market research, feature requirements derivation, and product requirements specifications.
- Specified hardware components, designed PCBs, produced & tested prototypes, and saw the designs through to manufacturing.
- Grew the group from just myself to a team of over six highly talented developers and engineers (both hardware and software).
- Managed and contracted external parties to help in the development of some key aspects of the product.

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.
- Developed novel non-linear control schemes for PMSG connected wind turbine systems.

2004 **Queen's University Solar Vehicle Team** Kingston, Ontario Canada

Project Manager

2008 Competitions: *Panasonic World Solar Challenge* & *North American Solar Challenge*

Responsibilities:

- 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 financial planning, purchasing, cash flow, and budgeting.

Skills and Innovative Approaches:

- Reorganized team structure for improved efficiency and communication.
- Led fundraising efforts, raising over $500,000 worth of cash and donations.
- Knowledge of all vehicle design incl.: electrical, mechanical, and software.
- Team's expert on power systems, lithium-based batteries, and solar cells.

education

2009 **M.Sc.** in Electrical Engineering — Queen's University @ Kingston

Queen's Centre for Energy and Power Electronics Research

2013 Supervisor: Dr. Praveen Jain

Course Average: 92%

2004 **B.Sc.** in Electrical Engineering — Queen's University @ Kingston

Ranks: 2nd/45 in Electrical Engineering and 5th/576 in Engineering.

2009 Final Year Average: 93%

awards

2010 **Ontario Graduate Scholarship**
A merit-based research grant awarded by the Province of Ontario. Selection based on academic achievement and research potential.

2009 **NSERC - Alexander Graham Bell Canada Graduate Scholarships**
A merit-based research grant awarded by the Government of Canada. Selection based on academic achievement and research potential.

2009 **IEEE Eastern Ontario Student Paper Competition**
Represented Queen's University at a team-based project competition between universities across eastern Ontario. Selection was weighted heavily toward presentation skills and quality of work.

publications

2013 **Nonlinear Control of Wind Energy Conversion System Based on Control-Lyapunov Functions** Jonathan Mash, Majid Pahlevaninezhad, Praveen Jain
Presented at a major IEEE Conference (ECCE 2013, Denver, CO)

2013 **Advanced Nonlinear Control Techniques for Wind Energy Conversions Systems**
Jonathan Mash
Thesis — Master, Electrical & Computer Engineering (Mar. 2013)

2014 **Adaptive Passivity-Based Nonlinear Controller for Wind Energy Conversion Systems** Jonathan Mash, Majid Pahlevaninezhad, Praveen Jain
Presented at a major IEEE Conference (APEC 2014, Ft. Worth, TX)

2014 **Port-Controlled Hamiltonian (PCH)-based control approach for wind energy conversion systems** Majid Pahlevaninezhad, Shangzhi Pan, Jonathan Mash, Praveen Jain
Presented at a major IEEE Conference (PEDG 2014, Galway, Ireland)

affiliations

Professional Engineers Ontario (PEO), Ontario Society of Professional Engineers (OSPE), Institute of Electrical and Electronics Engineers (IEEE)