JonathanMash

contact

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programming

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

interests

electronics, robotics, drones, solar/alternative energies

skills

project management, product development, product design. electronics design, embedded systems, prototyping, manufacturing.

experience

2010–Now **SPARQ Systems** Kingston, Ontario, Canada

Product Development Lead

- Designed, prototyped, and manufactured a compact in-home device for solar panel monitoring. Involved in the design decisions of the associated web portal.
- Developed novel communication protocol over Power Line Communication using FEC coding for robust monitoring and control of 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.

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

2004–2008 **Queen's University Solar Vehicle Tam** Kingston, Ontario Canada

Project Manager

Competed at two international competitions:

- Panasonic World Solar Challenge, Australia (October 2007)
- North American Solar Challenge, USA and Canada (July 2005)

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 the team structure to increase efficiency and improve communication flow.
- Led fundraising efforts, raising over $500,000 worth of cash and donations.
- Knowledge of all vehicle design incl.: electrical, mechanical, and software.
- Designed and constructed a solar array producing over 1200 Watts.
- Team's expert on power systems, lithium-based batteries, and solar cells.

education

2009–2013 **M.Sc.** in Electrical Engineering Queen's University @ Kingston
Queen's Centre for Energy and Power Electronics Research
Supervisor: Dr. Praveen Jain
Course Average: 92%

2004–2009 **B.Sc.** in Electrical Engineering Queen's University @ Kingston
Ranked 2nd of 45 students in Electrical Engineering.
Ranked 5th of 576 students in all of Engineering.
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)