contact

15 Windfield Cres
Kingston, ON, K7K 6G3
Canada

+1 (613)-329-0825

me@jonmash.ca
jonmash.ca
jonmash

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

education

Queen's University

2009 – 2013

M.Sc. in Electrical Eng.
Queen's Centre for Energy and Power Electronics Research
with Dr. Praveen Jain
Course Avg: 92%

2004 – 2009

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

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 an in-home *embedded device* for solar panel and inverter monitoring.
- Developed a novel protocol over Power Line Communication using Forward Error Correcting codes 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 product line.

Lead Product Developer
- Given complete control over the design and implementation of an all-new monitoring platform developed in conjunction with new microinverter technology.
- Developed an in-home embedded *Linux* device utilizing advanced *Zigbee* communication, USB, 802.11 *WiFi*, and an advanced *Websocket* API to connect to cloud servers.
- Built an Amazon *Cloud* based monitoring and control solution based on *Node.JS*, *CouchDB* NoSQL database, and modern *HTML5* web front end.
- Actively involved in high-level market research, feature requirements derivation, and product requirements specifications.
- Specified hardware components, designed PCBs, aided in mechanical design, produced & tested prototypes, and oversaw the designs through to manufacturing.
- Led and supported the deployment of field trials at sites across North America.
- Grew the group from just myself to a team of over six highly talented developers and engineers (both hardware and software).
- Managed external contractors helping 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.
- 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 at OPG.
- Identified project requirements, researched possible solutions, and implemented the chosen solution.

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

Project Manager

2008 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 financial planning, purchasing, cash flow, and budgeting.
- Led fund-raising 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.

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)