

Jonathan Mash

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++, Sketchup

interests

electronics, robotics,
multirotors, 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 a *Websocket* API to connect to our 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.
- Recruited and trained new employees to grow the group from just myself to a team of over six highly talented developers and engineers.
- Managed external resources aiding the work on 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.

other experience

2007 **Faculty of Applied Science**

Kingston, Ontario, Canada

✓ *Senior Teaching Assistant*

2011 **Project Manager**

- Managed and taught six teams of four students the process of design, implementation, and prototyping in a team environment.

Lab Manager

- Facilitated labs in four undergraduate ECE courses. Assisted in the development and execution of a new robotics project-based course for second year ECE students.

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), and
Institute of Electrical and Electronics Engineers (IEEE)