

# 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++

## 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: 2<sup>nd</sup>/45 in Electrical Engineering and 5<sup>th</sup>/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)