



**farita.me**  
Farita Tasnim

## High Efficiency, Nanopower Voltage Step-Up Converter

**Current Endeavor: Creating MIT HackFashion**

### Ordering Information

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Cambridge, 02139 U.S. Citizen

### Electrical Characteristics, cont.

**NASA Space Program & High Altitude Balloon:** Sep 2011 - May 2015, 1,100+ hours: Lead systems engineer of a team of 15-20 students. Sent payloads equipped with custom APRS trackers and data loggers over 100,000 feet into the atmosphere to obtain data of the effect of rising altitude on physical and biological phenomena. Prepared to launch a 10 cc. nano-satellite to gather data on solar winds and sunspots for the NASA CubeSat program.

**Independent Laboratory Construction:** Constructed a microelectronics laboratory in my room in which I can design, manufacture, test, and debug professional caliber PCB's. Made my own reflow soldering oven, fixed a broken \$50 Tektronix 2440 oscilloscope, bought a boomscope.

### Teaching Experience

**6.101 Lab Assistant:** Feb 2017 - : Teaching students taking Introduction to Analog Electronics how to design, test, and debug circuits. Also helping them complete their final design projects.

**MIT MISTI GTL Israel:** Jan 2017: Taught college students with understanding datasheets and debugging circuits. Helped 10th graders build a miniature ocean wave energy harvester.

**6.169 Lab Assistant:** Sept - Dec 2016: Taught MIT students taking the Intro Circuits and Electronics lab class how to design, test, and debug circuits.

**6.01 Lab Assistant:** Feb - May 2016: Taught MIT students taking Intro to EECS how to break down complex electronics and programming problems into do-able chunks. Helped run lab sessions and shape teaching methods.

**Girls, Inc:** June 2013 - June 2015: Taught underprivileged kids, often minorities, various topics in math and science. Helped coach their FLL Robotics team as well.

**FIRST Robotics Training:** Aug 2012 - May 2015: Taught high school peers how to design robots in CAD software, program in Java, create electronic circuits, and use shop machines.

### Accolades

NCWIT Collegiate Award Honorable Mention (\$2.5K)	Georgia Governor's Honors Program: Mathematics
22 Under 22 Most Inspiring College Women	National Merit Scholar Semifinalist
Microsoft Scholarship (\$10K)	Research Science Institute Scholar (3% acceptance rate)
Proton Onsite Energy Scholarship Winner (\$36K)	Georgia ARML Team
Regional STAR Student	MIT THINK: Ntl. Runner Up
FIRST Robotics Regionals, First Place Alliance Captain and Regional Winner	FLAG French Foreign Language Spoken Contest Perfect Score
NCWIT Aspirations in Computing National Runner Up and State Winner	SAT Score of 2380 in 9th grade
Math Prize for Girls	FIRST Robotics Rookie-All Star Award
	Georgia MATHCOUNTS, 1 <sup>st</sup> Place Overall

### Features

Massachusetts Institute of Technology  
Major: Electrical Engineering  
Class of 2019; In-Major GPA: 4.9

Columbus High School  
Valedictorian  
Class of 2015

### Maximum Ratings

### Courses

PCB Design	●●●●●	Adobe Photoshop	●●●●●	6.334	<b>G</b>
PCB Layout	●●●●●	Adobe Illustrator	●●●●●	6.003	
SolidWorks	●●●●●	Autodesk Inventor	●●●●●	6.301	
PTC Creo	●●●	Ham Radio	●●●●●	6.525	<b>G</b>
C	●●●●●	Objective-C	●●●	6.101	
Java	●●●●●	LTSpice	●●●●●	6.009	

### Electrical Characteristics

**Electrical/Energy Engineering Intern, Microsoft Research:** June - Aug 2017: Working on developing body energy harvesting solutions as well as low power sensors in order to reduce form factor and energy needs of wearables.

**MIT HackFashion:** Sep 2016 - : Starting a new club whose purpose is to enable students to take part in fashion engineering by creating wearables or technology-inspired clothes and by developing an end-to-end fashion design software.

**Electrical Engineering Intern, Microsoft Hololens:** June - Aug 2016: Developed a flexible PCB for the bring-up and testing of internal Hololens motherboards. Involved digital circuitry design, PCB layout, system integration.

**Analog Electronics Lab Final Project:** March - May 2016: Developed a custom, high precision fluxgate magnetometer made with an amorphous metal core and its accompanying instrumentation circuit which gathers data on magnetic field using phase demodulation and can be used as an ammeter.

**Electrical/Energy Engineering Intern, Intel Corporation, New Devices Group:** June - Sep 2015: Created PCB's, firmware, and an integrated product to harvest and analyze natural sources of energy from action sports to a) charge phone batteries and b) power sensors without batteries, which reduces form factor, maintenance, and market advantage.

**Independent Research for Harvesting Ocean Wave Energy:** Aug 2014 - May 2015, 730+ hours: Developed a novel adaptive energy harvesting system. Designed and built the mechanical structure and PCB's, programmed in C. Device calculates raw input energy of waves and converts the generator's AC power into usable energy in one of three selectable modes: 1) battery charging, 2) electrolysis, and 3) resistor load. Sends the data via WiFi to a custom iPhone app.

**Independent Research for Increased Solar Energy Harvesting Efficiency:** Oct 2013 - present, 600+ hours: Constructed a compact solar site surveyor device (PCB, C firmware, and mechanical structure) that tracks the sun, measures the solar current generated for any given spot, and communicates via Bluetooth to an iPhone app to track solar output of different locations, helpful in determining the optimal placement of solar cells in cities.

**FIRST and BEST Robotics:** Jan 2012 - May 2015, 2,000+ hours: Captain of a team of 15-20 students. Every year, we created a 120-pound robot in 6 weeks in the spring and a 24-pound robot in 6 weeks in the fall. Instilled infallible work ethic and dedication in team members, ensured effective CAD design, wired the electronics, and wrote code in Java and C for sensor input, actuator control, vision processing, automated sequences, and joystick control.