



# High Efficiency, Nanopower Voltage Step-Up Converter

Current Endeavor: Research

## Ordering Information

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## Papers

### Published:

Lili Wang, Eugen Panaitescu, Farita Tasnim, Enrico Fontana, and Latika Menon. 2017. Iron Oxide Decorated Titania Nanotubes for Solar Energy Harvesting Applications. *Journal of Nanoscience and Nanotechnology* 17, 3, Article 7 (March 2017), 27 pages. <https://doi.org/10.1166/jnn.2017.12824>

### Working:

Farita Tasnim, Gabe Cohn, Sidhant Gupta, and Asta Roseway. 2018. A Low-Profile, Do-It-Yourself Knee Energy Harvester. *ACM IMWUT*.

Farita Tasnim, Asta Roseway. 2018. Kinetic Peacock. *TEI*.

## Teaching Experience

### YEP (Youth Electronics Program) Bangladesh

**Founder:** Jan 2017 - : Started a new initiative at MIT, partnered with JAAGO Foundation, aimed at stopping the cycle of poverty through education. Obtained funding from MIT's D-Lab, created a custom curriculum for a three week workshop to teach Bangladeshi Class VI students coming from Dhaka slums how to design basic circuits and build them on breadboards. The students' culminating project is a heartbeat monitor built around a PPG sensor.

**MIT MISTI GTL Israel:** Jan 2017: Taught first year Israeli college students at ORT Yami to read and understand datasheets as well as debug circuits.

**6.01, 6.169, 6.101(x2) Lab Assistant:** Feb - May 2018: Taught MIT students: how to break down complex electronics and programming problems into do-able chunks, how to design, test, and debug analog and digital circuits. Helped run lab sessions and shape teaching methods.

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

## 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 Columbus High School  
Major: Electrical Engineering Valedictorian  
Class of 2019; In-Major GPA: 4.9 Class of 2015

## Maximum Ratings

## Courses

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

## Electrical Characteristics

**Electrical/Energy Engineering Intern, Microsoft Research:** June 2017 - Jan 2018: 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 2017 - : 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.