farita.me

Farita Tasnim

High Efficiency, Nanopower Voltage Step-Up Converter

Current Job: Researcher, MIT Media Lab

Conformable Decoders Group: Feb 2018 - : Designing and microfabricating MEMS energy harvesters to generate power from human bodily movements for use in self-powered sensors, especially for disease detection and therapy.

Ordering Information

East Campus W210,
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Cambridge, 02139

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U.S. Citizen

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

Farita Tasnim, et al., Canan Dagdeviren. 2018. Towards personalized medicine: The evolution of imperceptible health-care technologies. *Foresight.* https://doi.org/10.1108/FS-08-2018-0075

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

PCB Design	●●●●●	Adobe Photoshop	●●●●
PCB Layout	●●●●●	Adobe Illustrator	●●●●●
SolidWorks	●●●●●	Autodesk Inventor	●●●●
PTC Creo	●●●	Ham Radio	●●●●
C	●●●●●	Objective-C	●●●
Java	●●●●	LTSpice	●●●●●

Courses

6.003 6.011
6.301 6.036
6.525 6.021
6.101 6.320
6.009

Electrical Characteristics

Electrical/Energy Engineering Intern, Microsoft Research: June 2017 - Jan 2018: Worked on developing body energy harvesting solutions in order to reduce form factor and energy needs of wearables. Created a novel electronic outfit, Kinetic Peacock, that is powered entirely by the body. When walking, the outfit harvests energy via a knee energy harvester and powers a stunning peacock display. The outfit is made entirely out of recyclable materials and has a low impact environmental life cycle.

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.

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