# Sabera Talukder

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## Education

**California Institute of Technology** *2019-Present*
Ph.D. in the Department of Neurobiology & Computing and Mathematical Sciences *Pasadena, CA*

**Stanford University** *2014-2018*
BS w/ Honors in Electrical Engineering *Stanford, CA*
BS w/ Honors in Biochemistry

Selected Coursework: *Neuroelectrical Engineering, Feedback Control Design, Control Design Techniques, Theoretical Neuroscience, Molecular & Cellular Neurobiology, Digital System Design, System Physiology & Design, Biodesign*

## Work Experience

**Chan Zuckerberg Biohub** *2018-2019*
Software Engineer *San Francisco, CA*
- Lead an initiative that studies AI & the brain via machine learning algorithms, deep learning models, and experimentation.
- Created Biohub's inaugural Neuroengineering Symposium to initiate collaboration between Stanford, UC Berkeley, and UCSF.

**Stanford Neuroscience** *2017-2018*
Researcher: Thomas Clandinin Lab *Palo Alto, CA*
- Modified lab's ball behavior rig to be closed loop in order to perform operant conditioning with *Drosophila melanogaster*.
- Created a new t-maze based visual paradigm to train *Drosophila melanogaster* on visual stimuli.
- Performed experiments to define visual pattern recognition circuitry, and attempted to artificially implant memories into *Drosophila melanogaster* brains.

**Stanford Electrical Engineering** *2016-2017*
Researcher: Stanford University Power Electronics Lab - Juan Rivas Lab *Palo Alto, CA*
- Created an end-to-end, portable electrostatic precipitator (ESP) that reduces illnesses attributable to household air pollution.
- ESP reduced particle emission of 2.5µm particles by >99.75% and of 10µm particles by >99.43%. ESP brought particle emissions under the World Health Organization and Global Alliance for Clean Cookstove standards

**Stanford Electrical Engineering** *2015 Summer*
Researcher: Brains in Silicon Lab - Kwabena Boahen Lab *Palo Alto, CA*
- Used Neurogrid, a neuromorphic chip, to create the then largest (~800,000 neurons) hardware model of the cortex and thalamus.

**Medtronic** *2013 Summer*
Deep Brain Stimulation Intern Minneapolis, *MN*
- Developed a pain threshold testing procedure that replaces the traditional "1 to 5" pain response method.

**Pani (Water) Purification Project** *2011-2013*
Field Researcher, Designer, Implementer *Los Gatos, CA & Dhaka, Bangladesh*
- Designed, developed and deployed an ultraviolet C, solar-powered, sub $25 water purification system in 2 of Sajida Foundation's day-care centers for street children. The water purification systems have since served water to ~400 children.
- Conducted field research and analyzed water contamination from 24 different drinking water sources throughout Bangladesh.

Coding Languages: *Python, MATLAB, Java, C++, Verilog, LTSpice, JavaScript, Simulink, HTML, CSS*

## Select Publications

**Architecture Agnostic Neural Networks** *Workshop Oral, Neurips 2020*
**Sabera Talukder***, Guruprasad Raghavan*, Yisong Yue https://arxiv.org/pdf/2011.02712.pdf

**On the Benefits of Early Fusion in Multimodal Representation Learning** *Workshop, Neurips 2020*
George Barnum*, **Sabera Talukder***, Yisong Yue https://arxiv.org/pdf/2011.07191.pdf

**A Portable Electrostatic Precipitator to Reduce Respiratory Death in...** *Oral, IEEE Compel 2017*
**Sabera Talukder**, Sanghyeon Park, Juan Rivas-Davila DOI: 10.1109/COMPEL.2017.8013316

## Honors

**National Science Foundation Graduate Research Fellow** *2020-Present*

**Tianqiao and Chrissy Chen Neuroscience Fellow** *March 2018*

**Benjamin M. Rosen Bioengineering Fellow** *March 2018*

**Stanford University Electrical Engineering Spotlight** *May 2017*
Featured alongside Stanford professors and graduate students: https://ee.stanford.edu/spotlight/sabera-talukder

**National Broadcasts and Presentations** *June 2012 - Present*
Guest on NPR Science Friday with Ira Flatow, PBS Newshour Special, California Academy of Sciences

**Google Science Fair Finalist** *June 2012*
1 of 5 international finalists in the 15-16 age category