Tanishq Aggarwal

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Programmer | Engineer | Physicist

"People are mistaken when they think technology automatically improves." -- Elon Musk

Education

Cornell University B.S. Engineering (exp. 2021). Applied Physics and Computer Science. GPA 3.86. *Aug. 2017 - Present*

- Relevant Coursework: Digital Logic and Computer Organization; Embedded Systems; Objected-Oriented Programming and Data Structures; Rigid Body Mechanics; Honors Electrodynamics, Waves, Quantum Mechanics, and Thermodynamics; Mathematical Physics; Discrete Mathematics; Nanoscience and Nanoengineering; Differential Equations; Linear Algebra
- Teaching Assistant for Discrete Mathematics (CS2800) for Fall 2018.

Princeton University Student of Special Status (high school senior) in Mathematics. *Sep. 2016 – Feb. 2017*

West Windsor-Plainsboro High School South Graduated with distinction (top 5 percent of class). *Sep. 2013 – Jun. 2017*

Skills

Programming	Python, HTML5, React Native, Firebase, Google App Engine, MEAN, Javascript/JQuery, Node.JS, x86/ARM Assembly, C/C++, Verilog, Embedded Systems (Arduino, Beaglebone, Teensy, FRDM), Solidity/Truffle/Web3, Java, Android, LaTeX, Mathematica
Other	Blockchain, Cybersecurity, Linux System Administration, SOLIDWORKS, 3D Printing, Electrical Engineering/Manufacturing, Autodesk Eagle, ESD lab training
Hobbies	Badminton, weight lifting, mathematics, software projects, electronics projects, hackathons

Technical Experience

Space Systems Design Studio *Cornell University*
Control Systems Engineer--Pathfinding Autonomous Navigation *Aug. 2018 - Present*

- Developing control systems in C++ for two autonomously controlled CubeSats that will be launched into space on separate orbits and will be expected to autonomously dock to one another.

Carbon-12 Labs *New York, NY*
Software and Blockchain Engineer *Summer 2018*

- Lead Solidity (Ethereum blockchain) developer for CarbonUSD, an ERC-20 compliant stable-metatoken.
- Lead backend developer (using Flask and Node.JS) for the fiat-onramps for CarbonUSD.

Space Systems Design Studio *Cornell University*
Team Co-Lead--Control-Moment Gyroscope (CMG) Polyhedral Rover *Sep. 2017 - May 2018*

- Wrote a complete C++-based control system for this JPL-funded concept rover design, based on a CMG.
- Designed the electrical architecture for the rover, including sensors, power distribution systems, and PCB interfaces (capes) for the central microcontroller (BeagleBone Black), as well as certain subsystems with Arduino.
- Responsible for coordinating integration of mechanical and electrical architectures.

Princeton Plasma Physics Laboratory *Princeton University*
Project Intern--Interactive Plasma Physics Experience (IPPEX) *Spring 2017*

- Developed experience in physical computational simulation in Javascript using numerical methods and PIXI.JS.

New Jersey Governor's School of Engineering and Technology *Rutgers University*
Student Researcher--Experimental All-Terrain Rover *Summer 2016*

- As part of a four-person team, designed (using SOLIDWORKS) and partially constructed a 4-wheeled rover capable of navigating over rough terrain, with each wheel having 6 extendable linear actuator "spokes".
- Developed hierarchical control software, consisting of custom-written low-level Arduino libraries to control nearly 30 different mechanical components and sensors, as well as high-level Python code to orchestrate complex motion.

Hackathon Projects
Co-Developer

- Ratchet3D--a 3D printer concept made of materials such as cardboard, shirt straps, and LEGO Mindstorms motors that used hot glue as its additive substrate.
- EarLens--an Android app using speech-to-text and text-to-speech software in a way that enables deaf people to communicate more naturally. The app was recognized as among the top 15 developed at PennApps XIV, and it was my first time making an Android app.

Honors and Awards

2017,18	**Cornell University College of Engineering, Dean's List**	*Ithaca, NY*
2017	**10th Place**, National Science Bowl (Team Captain)	*Philadelphia, PA*
2016	**Gold Division Qualifier**, USA Computing Olympiad	*Worldwide*
2016	**Semfinalist**, PennApps XIV	*Washington, D.C.*
2016	**Honorable Mention**, Moody's Mega Math Challenge	*USA*
2015,17	**Semifinalist**, USA Biology Olympiad	*USA*
2015	**3rd Place,** HSCTF (Team Captain)	*USA*
2015,16,17	**Qualifier**, American Invitational Mathematics Exam. Highest Score: 8	*USA*