Tanishq Aggarwal

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Programmer | Engineer | Physicist
"People are mistaken when they think technology automatically improves." — Elon Musk

Education

Cornell University M. Eng Computer Science (exp. May 2021). GPA 3.39. *Sept. 2020 - Present*

Cornell University B.S. Engineering. Applied Physics and Computer Science. GPA 3.67. *Aug. 2017 – Dec. 2020*

- Teaching Assistant for Discrete Mathematics (CS2800) for Fall 2018, Fall 2019, Spring 2020.

Princeton University Took mathematics courses in 12th grade after finishing available school courses. *Sep. 2016 – Feb. 2017*

Skills

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

Technical Experience

SpaceX *Hawthorne, CA*
Flight Software Intern *May. - Aug. 2020*

- Wrote and thoroughly tested an entire simulation for a Starlink-derived satellite's power system, including loads, power sources, and accurate battery charge/discharge.
- Implemented GNC algorithms in Flight Software for the project's prototype milestone.
- Made significant improvements to software infrastructure and build processes—cut down CI simulation build time by 15 minutes across the entire software organization.

SpaceX *Hawthorne, CA*
Flight Software Intern *May - Aug. 2019*

- Wrote flight software for Crew Dragon spacecraft's Environmental Control and Life Support Systems: integrated toxicity sensors, tank mass estimation, and emergency life support features into the spacecraft's code.
- Developed a full-stack understanding of SpaceX's software system and onboarded myself about 2x as fast as expected.
- Worked across ~60 issue tickets, opened 60 pull requests, contributed ~2500 lines of code.

Space Systems Design Studio *Cornell University*
Project Co-Lead—Pathfinding Autonomous Navigation (3U CubeSat) *Aug. 2018 – Dec. 2020*

- Lead developer for flight software in C++ and Python. Currently codebase consists of 50,000+ lines of code.
- Spearheaded effort for ground software development and integration testing of satellite software stack.
- Managed a team of 10+ developers and created software development roadmaps for delivery to Air Force partners.
- Created procedures for spacecraft integration and mission operations.

Cornell Mars Rover *Cornell University*
Mechanical Engineer--Drives/Frame Subteam *Aug. – Oct. 2018*

- Designed, CAD-drafted and ANSYS-tested a vibration-isolating carbon fiber mount for the drive camera.

Carbon-12 Labs *New York, NY*
Software and Blockchain Engineer *Jun. – Aug. 2018*

- Lead developer for company's crypto product, using Solidity on the Ethereum blockchain.
- Delivered quality, well-tested code, with 99 percent code coverage and ~100 test cases across 2000 lines of code.
- Passed security audit by New Alchemy, Inc. with 0 critical issues.
- Developed backend (using Flask and Node.JS) for the fiat-onramps for CarbonUSD. (5000 lines of code)

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

- Significant progress on a 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 (500W throughput), 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 designs.

Honors and Awards

2017-19	**Dean's List** Cornell University, College of Engineering	*Ithaca, NY*
2017	**10th Place**, National Science Bowl (Team Captain)	*Washington, D.C.*
2016	**Gold Division Qualifier**, USA Computing Olympiad	*Worldwide*
2016	**Semfinalist**, PennApps XIV	*Philadelphia, PA*