# Nikolai Nekrutenko

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## EDUCATION

**Cornell University, Ithaca, NY** <span style="float:right">Aug 2021 - Present</span>

Undergraduate pursuing a Major in Physics with a Minor in Computer Science

- Completed: Calculus II & III, Differential Equations, General Chemistry I & II, Honors Mechanics and Special Relativity, Honors Electricity and Magnetism, Introduction to Computing with Python
- Current Semester: Oscillations, Waves and Quantum Physics, Linear Algebra, Electronic Circuits

## EXPERIENCE

**Cornell University, Teaching Assistant** <span style="float:right">Aug 2022 - Present</span>

Lead office hours and a weekly lab section for an introductory applied physics course about nanoscience and nanotechnology. Regularly grade assignments, give constructive feedback, and mentor students.

**Cornell University, Student Researcher** <span style="float:right">Mar 2022 - Present</span>

Member of the Fatemi lab, an applied physics lab. Interfacing with older equipment and sensors by developing a package to programmatically run experiments, while sweeping over certain parameters.

**Cornell Blockchain, Research and Development Team Member** <span style="float:right">Sep 2021 - Present</span>

Working on gathering and analyzing on-chain data as part of a research paper about dark pools on a public blockchain and helping with club recruitment by interviewing applicants.

**The Rocket Lab Initiative, Payload Engineer** <span style="float:right">Sep 2020 - Jun 2021</span>

Prototyped a Raspberry Pi sensor payload in a team for a model rocket to assess the rocket's actual performance against that of computer-simulated models in a Pennsylvania State University outreach.

**State High Model Aeronautics Club, President and Co-Founder** <span style="float:right">Sep 2019 - Jun 2021</span>

Co-founded a club focused on learning about aeronautics through the design, construction, and flight of remote-controlled model aircraft. Wrote several grants to accumulate over two thousand dollars in funding.

**A Mountain Wind Martial Arts, Instructor** <span style="float:right">Feb 2013 - Present</span>

First Degree Black Belt in Tang Soo Do, a Korean Martial Art. Volunteer as an instructor, helping lead class and aid students with the practical and philosophical applications of the martial art.

## PROJECTS

**QCoDeS-Interfacing** <span style="float:right">Jun 2022 - Present</span>

Bundle of installation shell scripts, drivers, well-documented documentation and jupyter notebooks to setup a computer for programmatic interfacing with older lab equipment over the GPIB interface with Python and QCoDeS, a Python data acquisition framework. My current research project for the Fatemi Lab.

**Raspberry Pi NeoPixel Audio Visualizer** <span style="float:right">Jun 2022 - Present</span>

Co-designed and wrote a program that visualizes the waveform and intensity of music for a custom-built individually-addressable RGB led matrix using fast Fourier transforms in Python on a Raspberry Pi.

**Building and Maintaining a Personal Website** <span style="float:right">Apr 2020 - Present</span>

Build and regularly update my personal website using Hugo, Netlify and Google Analytics with an integrated photo gallery. Enabled the website to gain traffic with Google Search Console.

**Constructing and Flying FPV Drones and Aircraft** <span style="float:right">Oct 2019 - Present</span>

Built and flown several FPV drones and aircraft with autonomous flight capabilities from scratch using open-source flight software Betaflight and iNav with custom-designed 3D printed components.

## SKILLS/CERTIFICATIONS

- Certifications: FAA Part 107 Remote Pilot Certificate, Technician Level FCC Radio License
- Fluent in: Russian, French, English
- Languages and Tools: Python, Java, Javascript, Shell, git, Jupyter Lab, Pandas, Vega-lite, Observable
- Website Design: Hugo, Netlify, GitHub Pages, Google Analytics
- Software: Fusion 360, Cura, Blender, KiCad, Photoshop, Premiere Pro, DaVinci Resolve, OpenRocket
- Prototyping Skills: Soldering, CNC design and usage, CAD, 3D printing with SLA and FDM systems
- Misc: Arduino, Raspberry Pi, Photography, Cinematography, FPV drone construction and piloting