

# Sam Belliveau

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## EDUCATION

### Cornell University

Bachelor of Engineering in Electrical Computer Engineering

Ithaca, NY

Aug. 2023 – May 2026

### Stuyvesant High School

Regents Diploma with Advanced Designation with Honors

New York, NY

Sept. 2018 – Jun. 2022

**Related Courses:** Discrete Structures Computer Science I - III, Digital Logic & Computer Organization, Differential Equations, Linear Algebra, Signals & Systems, Physics Mechanics, Data Science for Engineers, Electromagnetic Fields and Waves

## TECHNICAL SKILLS

**Languages:** C, C++, C#, Python, Java, Rust, Swift, Go, JavaScript, Verilog HDL, SQL, HTML, GLSL, Bash / ZSH

**Technologies:** Git, Linux, Docker, VS Code, Robot OS (ROS), Cassandra, BigQuery, Numpy, Scipy, PyTorch

## EXPERIENCE

### Undergraduate Researcher

Abe Davis's Group @ Cornell University

June 2024 – Present

Ithaca, NY

- Rewrote 7,252 lines of code to build a well documented, expandable foundation for the ReCapture project in Swift
- Implemented a relational database allowing for the storage and indexing of 20+ features over a large set of images

### Robotics Software Engineer

Cornell University Autonomous Underwater Vehicles

November 2023 – Present

Ithaca, NY

- Reduced CPU usage by 80% by implementing Kalman Filtering using Nvidia's CUDA framework for linear algebra
- Improved submarine movement by implementing least squares optimization for determining thruster speeds

### Signal Analysis Intern

Feinstein Institute for Medical Research

January 2023 – May 2023

Manhasset, NY

- Automated Sharp Wave Ripple (SWR) detection using Python and SciPy to analyze EEG data
- Researched SWRs, which help predict the onset of seizures, in order to improve the accuracy of the detection

### VEX Robotics Coach / Mentor

PLAYIDEAs NY.

October 2022 – May 2023

Great Neck, NY and Manhattan, NY

- Coached 3 local VEX robotics of 6-8 students each, teaching them the basics of robotics and programming
- Developed lesson plans to teach students about PID control, Odometry, and very simple digital filtering

### President of Software Engineering

StuyPulse Robotics

December 2018 – June 2022

Manhattan, NY

- Led and taught team of 50 members to write software for a 120lb robot that competed in FRC Championships
- Implemented, taught, and documented PID control, Odometry, Digital Filtering, and Motion Profiling
- Communicated software design to competition judges and won 4 Innovation in Control Awards

## PROJECTS

**iOS Application: ReCapture** | Swift, SwiftUI, iOS, Json, OpenCV, Computer Vision

June 2024 – August 2024

- Rewrote ReCapture, an application that helps users take photos of subjects over time in order to create timelapses
- Implemented Computer Vision algorithms that indexed the metadata to automatically create unique visualizations

**UCI Chess Engine in Rust** | Rust, Min Max, Alpha Beta Pruning, Chess

June 2023 – July 2023

- Developed a Chess Engine in Rust that achieved an Elo of 2700 (Grand Master level)
- Implemented Alpha Beta Pruning using high performance Rust to achieve a higher elo rating

**StuyLib** | Java, JavaDocs, JitPack, Control Theory, Digital Filtering

January 2020 – August 2022

- Initiated and led the development of StuyLib, an award-winning Control Theory Library
- Heavily maintained and documented the library to ensure its longevity and ease of use