

Sam Belliveau

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EDUCATION

Cornell University

Bachelor of Engineering in Electrical Computer Engineering

Ithaca, NY

Aug. 2023 – May 2026

Hofstra University

Bachelor of Engineering in Computer Engineering

Hempstead, NY

Aug. 2022 – May 2023

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, Introduction to Algorithms, Linear Algebra, Differential Equations, Data Science for Engineers, Signals & Systems

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

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, GenAI

EXPERIENCE

Undergraduate Researcher

June 2024 – Present

Abe Davis's Group @ Cornell University

Ithaca, NY

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

Robotics Software Engineer

November 2023 – Present

Cornell University Autonomous Underwater Vehicles

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

January 2023 – May 2023

Feinstein Institute for Medical Research

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

Mechanical Engineer

December 2022 - March 2023

ASME @ Hofstra University

Hempstead, NY

- Led game and infrastructure development for school events and charities
- Headed various design projects at the behest of the school

VEX Robotics Coach / Mentor

October 2022 – May 2023

PLAYIDEAs NY.

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

Software Intern on Consumer Product Team

July 2022 – September 2022

Reddit Inc.

Remote

- Worked with Taxonomy Group, which classified the safety of +138,000 subreddits on Reddit
- Developed a script that created realistic test data in order to verify the accuracy of the safety classification models
- Improved flagging of problematic content by adding statistics to the dashboard to find content that needed review

Software Intern on Consumer Product Team

July 2021 – September 2021

Reddit Inc.

Remote

- Created comprehensive unit tests to catch bugs before deploying to production
- Worked with tools such as BigQuery and Cassandra to send notifications reminding moderators to fill out surveys

President of Software Engineering

December 2018 – June 2022

StuyPulse Robotics

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
- Dolphin Emulator** | *C++, GLSL, JIT Recompilation* September 2022 – Present
- Improved performance of emulation software by scaling frequency of video interrupt signals for low-end hardware
 - Introduced 6 GPU accelerated resolution scaling algorithms to improve the image quality for all display resolution
- GameBoy Emulator** | *Rust, Z80 Assembly, Hardware Emulation* August 2021 – December 2021
- Implemented entire instruction set for the GameBoy's Z80 CPU using only publicly available documentation
 - Developed rudimentary PPU (Pixel Processing Unit) to render sprites and tiles on the screen
- 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