

Sam Duong

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EDUCATION

Brown University, *Sc.B. Computer Engineering*, 3.8/4.0 GPA Providence, RI | **Expected Graduation May 2026**
Relevant Courses: Intro to Computer Syst Security (In Progress), Deep Learning (In Progress), Electrical Circuits + Signals (In Progress), Applied Cryptography (In Progress), Intro to Computer Systems, Prog Des: Data Structure & Alg, Electricity and Magnetism, Materials Science, Dynamics and Vibrations, Intro to Programming/Comp Sci, Intro to Engineering: Design, Linear Algebra, Multivariable Calculus, Applied ODEs, Statistical Inference I

EXPERIENCE

NASA Ames Research Center, *OSTEM Planning and Scheduling Group Intern* Mountain View, CA | June 2023 – August 2023

- Developed and integrated a portfolio of AI search/planning algorithms in C (flight code) for the Artemis Lunar Gateway ASO-VSM project (Autonomous Systems and Operations Vehicle System Management)
- Integrated A*, IDA*, RBFS, Beam, and BFS with a partial order planner. Memory load reduced by 86%, runtime by 10%
- Built a new search algorithm hybridization technique that dynamically switches between algorithms during search to optimize for a more extensive range of search scenarios
- Implemented an incremental multiset hashing system that detects and stores duplicate partial plans which further improved peak memory load by 38% and runtime by 57%
- Enhanced duplicate detection efficiency using a planner bit mask algorithm

Caterpillar Inc, *Software Development Intern*

Remote | June 2021 – August 2021

- Wrote a discrete event simulation in SimPy (Python) to optimize the battery manufacturing supply chain. Allows users to test different logistic parameters (ie. location of distribution centers, # of battery plants, etc.)
- Implemented a visual simulator using networkx and matplotlib to visualize the battery logistic simulation

Caterpillar Inc, *Software Development Intern*

Remote | June 2020 – August 2020

- Created a workflow in Python to generate 3D models of excavators from a MySQL database into a 3D simulator
- Developed a moving mean algorithm in Python to read hydraulic sensor data to determine the type of tool head being used on the excavator
- Designed CAD models (Onshape) of work tools for the simulator such as hammers, drills, and buckets

Kuriosity Robotics Inc, *Team Captain/Founder*

Palo Alto, CA | March 2018 – May 2022

- Responsible for all team operations such as building/programming robots, outreach initiatives, logistics, and recruitment
- Led the team from rookies to 2 world championships
- Built Catmull-Rom spline path generation, pure pursuit, and bitmap analysis of vision targets on Android (Java)
- Designed and manufactured 7 FTC competition robots using CAD (Fusion 360, OnShape), CNC, and 3D printing

KBiteLabs Startup (Stealth Mode), *Co-Founder*

Palo Alto, CA | July 2023 – Present

- In charge of technical development of products such as building the app architecture, research of new tools, and UI design

PROJECTS

Music Social Media App

- Currently working on a music-focused social media app using Flutter and Appwrite with 2 friends (KBiteLabs)
- Developing codebase infrastructure (ie. APIs, auth flow, controllers, database schema)

Smart Bike Lock (Stanford TreeHacks)

- Designed, manufactured, and programmed a smart bike lock that could be unlocked with a phone through RFID
- Programmed theft detection and crash detection using a piezo vibration sensor embedded in the lock

Mini Solar Car Project

- Worked with a team of 3 to design and test a mini solar car that would be able to scale different ramp grades
- Performed calculations based on solar panel output to optimize the gearbox, weight, and speed of the car using Matlab

Machine Learning Decision Tree for NFL Hall of Fame Players

- Made a decision tree algorithm in Python to predict if an NFL player would make it into the Hall of Fame

Custom Shell

- Wrote a shell in C with integrated commands (cd, ln, input-output redirection, append, fg, and bg) and command executions
- Implemented foreground and background process management using signal handling

SKILLS & INTERESTS

Programming Languages: Java, C, Python, Dart, Javascript, HTML, CSS, SQL, Matlab

Frameworks/Tools/OS - Flutter, React, Tailwind, Next.js, MySQL, Appwrite, Git, GDB, Docker, Linux, Android

Other Engineering Skills: CAD (Fusion 360, Onshape), CAM, CNC, 3D Printing, Electrical Wiring, Motors, Sensors, Arduino