

JUSTIN SAPUN

justin.sapun.th@dartmouth.edu | <https://justinsapun.com/>

EDUCATION

Dartmouth College, Hanover, NH

June 2025

Bachelor of Engineering, Major in Computer Engineering:

GPA 3.93/4.0

Relevant Coursework: Embedded Systems, Digital Electronics, Software Development

Honors/Awards: Tau Beta Pi, Academic Distinction Citation in Modern Statistic Computing

Bard College, Annandale-On-Hudson, NY

June 2024

Bachelor of Arts, Major in Computer Science:

GPA 3.85/4.0

Relevant Coursework: Operating Systems, Algorithms and Data Structures, Machine Learning

Honors/Awards: Dean's List 6/6 Semesters, Johns Hopkins Center for Talented Youth Annual Scholarship Recipient

PROFESSIONAL EXPERIENCE

Nucular Tech, Remote

August 2025 - Present

Embedded Software Engineer

- Leading the development of a 15W wireless power system for electric motorbikes that transfers energy to rotating wheels and powers integrated rim lighting effects, integrating embedded control, power electronics, and communication interfaces
- Architected and programmed embedded firmware in C/C++ (ESP32, STM32) integrating BLE, CAN, UART for wireless diagnostics, control, and WPT power regulation
- Overseeing hardware and PCB design for the WPT resonance circuitry, current sense, and protection circuits
- Coordinated prototype demos and data reviews to guide next phase design decisions

DALI Lab, Hanover, NH

December 2024 - June 2025

Software Engineer

- Developed a wearable sensor system to detect femoral nerve palsy in infants with developmental dysplasia of the hip, aiming to improve early diagnosis for patients using Pavlik harnesses using accelerometers and gyroscopes for medical analysis
- Designed and implemented a backend system for a web application, integrating a MongoDB database with NodeJS, Bluetooth, and the frontend dashboard to sync and visualize patient data from the wearable via a user's smartphone
- Collaborated across teams to test, debug, and improve system performance before deployment in healthcare trials

Electrified Garage, Amesbury, MA

June 2023 - August 2024

EV Technician

- Conducted comprehensive diagnostics, repairs, and software updates for electric vehicles. Demonstrated strong customer service skills and prioritized safety compliance during high voltage repair or electric vehicle conversions

TECHNICAL PROJECTS

Predicting Neighborhood Gentrification

September 2023 - May 2024

- Built a Python ML pipeline leveraging traditional census stats and novel computer vision techniques to detect change in Google Street View images with 95% accuracy to predict neighborhood transformation in New Jersey
- Conducted rigorous statistical evaluation, comparing model performance with existing studies, and used spatial analysis to validate predictive accuracy. Strong skills in Pandas, Scikit-learn, OpenCV, regression diagnostics, and feature engineering

High Power Deicing for Heat Pumps

September 2024 - March 2025

- Developed and tested electrothermal control hardware integrating PETD into heat pumps to improve cold climate efficiency
- Built 2.4mΩ condenser coil prototypes which reduced deicing energy from 1140 kJ to 272 kJ per cycle
- Conducted user research and market studies, presenting deployment recommendations to sponsors and industry stakeholders.

Ride Sharing Platform

July 2025 - Present

- Sole developer designing and building a full stack ride sharing platform, initially launching as an iOS app
- Building scalable backend services in Node.js with Express and Prisma ORM, connected to a PostgreSQL database
- Implementing secure phone based user verification using Twilio Verify API during signup, and integrating Mapbox API for location search, route mapping, and trip visualization

Micromouse Maze Solving Robot

March 2025 - June 2025

- Programmed embedded firmware in C/C++ for an AVR microcontroller robot that navigates mazes autonomously using time of flight (TOF) sensors, an inertial measurement unit (IMU), encoders, and custom feedback loops
- Implemented a custom flood fill pathfinding algorithm and designed digital control compensators for constant speed, 0% error turning, and precise wall following to ensure stable and reliable operation

LEADERSHIP, SKILLS & INTERESTS

Leadership: Dartmouth Club of New York Tech Committee, Volunteer Ski Patroller, Dartmouth Men's Volleyball

Programming Languages: Python, Java, SQL, Node.js, TypeScript, Swift, C, C++

Skills: AI/ML pipelines, data analytics, full stack development, backend API design, database modeling, cloud deployment (AWS, Cloudflare, Vercel), authentication systems, client facing communication, Linux, Git, CLI, SSH, system performance