Jorrel Rajan

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Education

Princeton University — Princeton, NJ
Bachelor of Engineering in Computer Science — GPA: 3.905 / 4.0
Minor in Statistics and Machine Learning — August 2022 – May 2026

- Relevant Coursework: COS333: Full-stack Development, COS226: Algorithms and Data Structures, COS217: Systems Programming, COS324: Introduction to Machine Learning, MAT202: Linear Algebra

Experience

Incoming Software Engineer Intern — May 2025 – August 2025
The Vanguard Group — *Radnor, PA*

Computer Science Intro Lab TA — September 2024 – Present
Princeton University — *Princeton, NJ*

- Facilitating tutoring sessions for COS 226 (Data Structures and Algorithms) and COS 217 (Systems Programming)
- Guiding about 20 students weekly with assignments, concepts, and debugging.

Electronics and Control Systems Intern — May 2023 – September 2023
Princeton University Department of Physics — *Princeton, NJ*

- Implemented control systems in C++ on an autonomous glider. Worked with team of 3, under a NASA contract.
- Engineered a web app using Flask, Python, HTML, and JavaScript to ease orienting ground-station antenna by tracking position relative to user.
- Executed over 30 Hardware-in-the-Loop simulations with MATLAB, validating control systems and achieving a 40% reduction in development time for subsequent hardware iterations.

Relevant Club Experience

Avionics Team Lead — February 2022 – Present
Princeton Rocketry Club — *Princeton, NJ*

- Pioneered idea for development of a fully student-developed flight computer in lieu of commercially available flight computers, for use in Princeton Rocketry's launch to 30,000 feet at the Spaceport America Cup in June 2025.
- Developing computer with capabilities of controlling air-brakes for accurate flight paths, managing a custom radio protocol, and filtering of on-board sensor data with Kalman filters.
- Extensive electronics experience with I2C and SPI communication protocols and circuit-board development.
- Directing team of 8 peers to design, and manufacture the computer and circuit board.

Technical Skills

Languages: Python, JavaScript, Java, C, C++, ARM Assembly, SQL, HTML/CSS, R, Swift
Frameworks: React, Node.js, Express.js, Vite, Flask, Django
Libraries and Tools: Git, MongoDB, Docker, Linux, pandas, NumPy, PyTorch, TensorFlow

Projects

NeuralCar | *Javascript, HTML, Vite, Node.js, Git* — August 2024

- Developed a self-driving car simulation using an evolutionary algorithm to tune/optimize a neural network.
- Created a 2D Physics Engine and Neural Network architecture without use of external libraries; implemented from scratch from first principles.
- Structured using object-oriented programming principles to parallelize training of the network by instantiating 1000+ agents to significantly decrease training time.

TelemViz | *React.js, Flask, Websocket API, Python, Node.js, C++, Git* — July 2024

- Designed a full-stack web application to display live telemetry data on a dashboard using Python WebSockets as back-end and React as front-end.
- Constructed a Python script as back-end to relay live telemetry data from a micro-controller to a WebSocket for rapid data communication. Originally utilized Flask but pivoted to WebSockets to reduce latency to 10ms.
- Designed front-end with React.js, Three.js, and Recharts.
- Created for use for in Princeton Rocketry Club's many future launches.