Jorrel Rajan

848-242-0128 | jorrel@princeton.edu | linkedin.com/in/jorrel-rajan/ | github.com/jorrel1230 | jorrelrajan.com

Education

Princeton University Princeton, NJ
Bachelor of Engineering in Computer Science GPA: 3.9 / 4.0
Minor in Statistics and Machine Learning, Minor in Robotics August 2022 – May 2026

- Avionics sub-team lead in Princeton Rocketry Club. TA for Data Structures and Algorithms (COS226). TA for Intro to Systems Programming (COS217), Grader for Full-Stack Web Dev Course (COS333)

Experience

Software Engineering Intern May 2025 – Present
The Vanguard Group *Malvern, PA*

- Developed an full-stack application for tracking Amazon Web Service (AWS) accounts and services used across Github repositories. Leveraged AWS Lambdas, S3s for backend, and developed Angular frontend.
- Implemented an LLM-powered transaction classifier with AWS Bedrock for a personal finance dashboard with AWS Lambda. Built database schema for storing transaction data in DynamoDB, along with a RESTful API for interacting with this data.
- Leveraged Agile methodologies to streamline development and accelerate project delivery in a fast-paced environment.

AI & Backend Software Engineer Intern December 2024 – May 2025
PlayMaker Software *Remote*

- Engineered a contract analysis pipeline leveraging Google Cloud Services to ingest contract text, segment into chunks, generate vector embeddings, and store in PostgreSQL with pgvector extension for a vector database.
- Built a Retrieval Augmented Generation (RAG) chatbot with Gemini LLMs and a tool-calling agent loop to answer contract inquiries through similarity searches on vectorized contract data and integrating with company data.
- Created an automated Asset Extractor module that iteratively parses contracts using an LLM to identify and extract potentially sellable items or clauses, streamlining asset identification to store in a structured form.

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.
- Created a Hardware-in-the-loop pipeline with MATLAB, reducing development time by over 40%.

Research

Protein Homology Detection Using Protein Language Model Embeddings January 2025 – May 2025

- Developed a novel protein homology detection method utilizing fine-tuned protein language model (PLM) embeddings and contrastive learning, addressing scalability of traditional sequence alignment tools like BLAST.
- Achieved significant improvement in homology detection accuracy relative to BLAST, by optimizing the embedding space for protein homology discrimination.
- Engineered a solution that delivered a 5X speedup in homology search compared to BLAST with similarity search and Meta's FAISS library, allowed for scalable search over large protein databases.

Projects

Princeton Rocketry SRAD Flight Computer September 2024 – May 2025

- Pioneered idea for and spearheaded development of a fully student-developed flight computer, used successfuly in Princeton Rocketry's launch to 30,000 feet at the Spaceport America Cup in June 2025.
- Led team of 8 peers to develop computer powered by an STM32 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.

Technical Skills

Languages: Python, JavaScript, Java, C, C++, Assembly, SQL, HTML/CSS, R, MATLAB, Swift
Amazon Web Services: Lambda, S3, API Gateway, DynamoDB, SES
Frameworks: React, Angular, SvelteKit, Node, Express, Vite, Flask, Django
Libraries and Tools: Git, MongoDB, Docker, Linux, pandas, NumPy, PyTorch, TensorFlow