Prerana Gowda

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Education

University of California, San Diego — Expected Graduation: **Jun. 2027**
B.S. in Computer Science, Provost Honors, GPA: 3.8 — *La Jolla, CA*

- **Relevant Coursework:** Adv. Data Structures | Design of Algorithms | Software Eng. | AI Search & Reasoning | ML Algorithms | Deep Reinforcement Learning | Recommender Systems | Operating Systems | Database Systems
- Conducting research on Interpretable ML under Dr. Sanjoy Dasgupta; Tutor for CSE 151A: ML Algorithms

Experience

Equinix — Jun. 2025 – Sept. 2025
Network Orchestration Intern — *Redwood City, CA*

- Won the Equinix Intern Shark Tank among 60+ global participants by developing a network operations AI assistant with **React/TypeScript website** and **Slack integration**, enabling natural language issue resolution.
- Built **agentic RAG** pipeline for tailored Jira tickets, using **HuggingFace transformers** for vector embeddings.
- Reduced ticket resolution time by **65%**. Developed a custom **MCP server** exposing live **Cisco NSO** network data via **Restconf APIs** with conversation threading to translate user queries into automated terminal commands.
- Built a **Java Spring Boot microservice** with custom **REST APIs** to visualize network package data from **YANG** data models; designed **Kafka** message dispatch deployed using **Docker**, with UI changes using **Angular**.

Scale AI — May 2025 – Present
Gen AI Technical Advisor Intern — *San Francisco, CA*

- Fine-tuned **multimodal LLMs** on complex Olympiad-level algorithm datasets to improve reasoning accuracy.
- Developed a Python-based data extraction tool to scrape .onion sites using **Requests**, **BeautifulSoup**, **Tor** and custom **HTTP** headers, applying regex filtering to output structured **JSON** datasets for secure data analysis.
- Implemented **Pytest** and **JUnit** tests for high-quality reference solutions for the **Aider Benchmark dataset**.
- Promoted to **L1 reviewer**, responsible for evaluating and helping peer contributors uphold solution code quality.

MIT Lincoln Laboratory — Jun. 2024 – Aug. 2024
Co-Lead Instructor — *Boston, MA*

- Taught the Natural Language Processing (NLP) unit of the Cog*Works course to 40+ high school students and assisted with **ML/DL** topics related to **audio analysis** and **computer vision**, such as Convolutional Neural Networks, Recurrent Neural Networks, TF-IDF Vectorization, Spectrogram Analysis, and Clustering Algorithms.
- Created 10+ hours of lecture material and practice Jupyter notebooks with solutions on **Transformer models**.

Projects

Multi-Agent Traffic Simulation | *Python, PyTorch, Gymnasium, Highway-Env* | ***link***

- Designed a simulation of autonomous vehicles using multi-agent reinforcement learning (**MARL**) in the **Highway-Env** environment to study the impact of policy coordination on traffic flow and safety.
- Developed and scaled multi-agent systems using **Behavior Cloning** and **REINFORCE** policy gradient, evaluating performance on the **Waymo Open Dataset** across metrics like goal completion and lane adherence.

PunchLines | **UCLA Hackathon** | *React, Gemini API, Roblox Studio* | ***link***

- Built a voice-driven web interface that captured audio input, processed speech-to-text, and streamed parsed speeches to a custom **Roblox** game server via real-time APIs, enabling debate and boxing match simulations.
- Created an AI-powered evaluation pipeline using **Gemini API** and **prompt engineering** to assess live arguments, and developed modular **React.js** components and hooks for interactive input fields and scalable UI design.

Multimodal Recognition Systems | *Python, PyTorch, NumPy, Scikit-learn, Whisper, Git* | ***link***

- Built a high-speed Python audio fingerprinting system using NFFT-4096 spectrograms and fanout-based matching, achieving sub-100ms **song recognition** across a 1,000+ track database with logarithmic query time.
- Developed a **face recognition** pipeline with MTCNN and InceptionResnetV1 embeddings, reaching **95%** accuracy and enabling unsupervised clustering of 10K+ profiles using cosine similarity and the **Whispers** algorithm.
- Engineered a **semantic image retrieval system** combining 512-D ResNet-18 visual descriptors and 200-D GloVe text embeddings, training a margin-ranking neural network on MSCOCO to achieve **85%** query-match accuracy.

Technical Skills

Languages and Frameworks: Java, Python, C/C++, JavaScript, TypeScript, HTML/CSS, SQL, Lua, Scheme, React, AngularJS, Node.js, Spring Boot, Tailwind CSS, YANG, JSON, XML
Libraries and Tools: PyTorch, NumPy, Scikit-learn, Matplotlib, Whisper, OpenAI/Azure OpenAI, Kafka, RESTCONF, Model Context Protocol (MCP), Cisco NSO, JUnit, Pytest, SQLite, Docker, Kubernetes, Jenkins, Git, GitHub, VS Code, Eclipse, Android Studio, Roblox Studio, Jira