

Pranav Yadav

EDUCATION

University of California, Merced

Computer Science and Engineering

Merced, CA

Aug 2023 – Dec 2026

- Key Courses: DSA, Deep Learning, Natural Language Processing, Full-Stack Web Dev, Numerical Analysis
- Dean's Honor List (Fall 2023 - Spring 2025, Spring 2026), Chancellor's Honor List (2023-26)

EXPERIENCE

Robotics Intern

IoT4Ag

June 2026 – August 2026

Atwater, CA

- Containerized and deployed a vision-language model (Qwen3 VL 8B) in Docker on an NVIDIA Jetson AGX Orin, enabling on-device inference for real-time failure diagnosis in the agriculture Amiga robot from Farm-ng
- Built an event-driven inference pipeline triggered by ROS2 action failures, where the VLM performs visual reasoning over failure context (camera frames, error codes)
- 99% false-positive obstacle detection accuracy (200 samples) & correct action guidance accuracy of 96%

Undergraduate Research Assistant — CyberSTAR

UC Merced

May 2026 – June 2026

Merced, CA

- Developed a CARLA simulator training module covering setup and CARLA basics via Python scripting
- Built and documented traffic scenario generation workflows using CARLA's client-server architecture, enabling repeatable simulation environments for vehicular network research

Lab Manager — Evolab

UC Merced

May 2026 – Present

Merced, CA

- Oversee a lab of 10+ undergraduate researchers, coordinating weekly meetings and managing lab hours
- Lead onboarding for new members, establishing workflows and orienting them to ongoing research projects
- Collaborate directly with the PI through discussions on lab operations, research goals, and priorities

Undergraduate Research Assistant — Evolab

UC Merced

Feb 2025 – Present

Merced, CA

- Contributing towards building large language model support for quadruped robots by enabling a response to commands in natural language and using contextual information to make decisions (Python and ROS2)
- Experience with running participants and handling neuroimaging technology for experiments

PUBLICATIONS

HG-RAG: Hierarchy-Guided RAG for Structured Knowledge Graphs | *Python, NetworkX*

April 2026

<https://arxiv.org/abs/2607.14095>

- Designed and implemented a RAG framework that performs graph-traversal over hierarchical knowledge graphs to deliver structured context to LLMs.
- Evaluated across three world scales (18–800 nodes) and four query types against a baseline using Mistral 7B.
- HG-RAG achieved 1.86 factual accuracy vs. 0.02 baseline on large-scale graphs and demonstrated exceptional scaling on multi-hop reasoning (4.10 vs. 1.66 LLM judge score at large scale).

PROJECTS

BeamNG Tech Autonomous Driving Research | *BeamNG, Python, ReRun*

May 2026 - Present

<https://github.com/Pranubot/BeamNG-Experimentation>

- Autonomous Driving Project in BeamNG Tech Simulator to develop fluency in perception, scene-reconstruction, and autonomous model techniques used by modern autonomous-vehicle companies
- Designed and implemented a multi-modal sensor harness over BeamNG.tech, producing synchronized camera, LiDAR, depth, and pose streams for downstream perception research
- In process of reconstructing high-fidelity 3D scenes from multi-camera driving footage using 3D Gaussian Splatting

github.com/YeehawCuzzin/cse108_final_project

- SaaS finance web app for young adults and college students my group developed for our Full-Stack Web Dev Final Project.
- Parses financial documents for individual transactions and automatically pushes them to the app dashboard with Google Gemini API
- Features pluto AI assistant, powered by Claude Sonnet 4.6 refined through prompt engineering, who has the ability to access your transaction history and spending habits for personalized guidance
- Developed with React/Vite and Flask; Our team Implemented JWT-based authentication, SQLite data persistence, and a dynamic transaction dashboard

CatTracker | *Next.js, React, TypeScript, Tailwind CSS, Google Gemini API, Google Maps API*

Oct 2025

github.com/UCM-Transit-Assist/UCM-Trip-Assistant

- Built an AI-powered transit planning web app for UC Merced students using Google Gemini 2.5 Flash to process natural language queries and recommend CatTracks bus routes
- Integrated Google Maps Geocoding, Directions, and Distance Matrix APIs to calculate accurate bus paths and walking directions to bus stops
- Supported 9 bus routes with real-time schedule parsing and time-based trip planning given a user-specified arrival time

AI Resume Analysis | *Python, Node.Js, React*

June 2025

ai-resume-a3733.web.app/

- Worked with UCM ML club on Web app with React and Tailwind CSS frontend and a backend done in JavaScript; Database hosted in Firebase
- Analyzes user's resume by calling to ChatGPT API with detailed prompt and guidelines for feedback
- Gives helpful feedback and calls JSearch API using keywords to find jobs near user with high relevance

CERTIFICATIONS

Advanced Learning Algorithms | *DeepLearning.AI, Stanford University*

May 2024

- A set of 3 courses taught by Andrew Ng: Supervised Machine Learning, Regression and Classification — Unsupervised Learning, Recommenders, Reinforcement Learning — Machine Learning Specialization

SKILLS + ADDITIONAL

Languages: Python, C/C++, JavaScript, HTML/CSS, SQL**Frameworks:** React, Node.js, Material-UI, FastAPI, REST API**ML:** PyTorch, TensorFlow, Scikit-learn, Hugging Face, RAG, Pandas, NumPy, Matplotlib, YOLO**Full-Stack:** React, Next.js, REST, FastAPI, Web Sockets, SQLAlchemy**Vice President and SIG AI Lead of the Association of Computer Machinery Club at UC Merced**