Pranav Puttagunta

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EDUCATION

University of California, San Diego, B.S. Computer Science — Sep 2024 - Present
GPA: 3.9
Relevant Coursework: Data Structures, Object-Oriented Programming, Systems, Machine Learning, Algorithms

TECHNICAL SKILLS

Languages: Advanced in Java, Python, C; Proficient in JavaScript, Assembly
Frameworks/Tools: Flask, React, MongoDB, Git, REST APIs, OpenCV, TensorFlow, PyTorch, ROS, LangChain, LangGraph, Open3D
Concepts: OOP, CI/CD, Agile, Computer Vision, Neural Networks, RAG, Agentic AI, Backend Dev

EXPERIENCE

UCSD Advanced Robotics Control Lab - *Research Assistant | Python, Point Clouds, Path Planning* — Mar 2025 - Present
- Designed motion planning algorithms to apply tape over wounds using RGB-D point cloud data for use in medical applications.
- Implemented surface fitting, mesh optimization, and path planning tools using Signed Distance Fields and Python for 3D digital wound reconstruction.
- Worked with optimization algorithms such as Monte Carlo Tree Search for wound treatment decisions.

Yonder Dynamics - *Autonomous Systems Developer | Python, ROS, RTK GPS, Vision, SolidWorks* — Oct 2024 - Present
- Developed a heartbeat fail-safe to autonomously return rover to base upon communication loss.
- Extracted RTK GPS data via pyubx2 and visualized rover state using Matplotlib and ROS.

STEM Robotics Mentor (VEX & FRC) - *Instructor & Coach | Python, Onshape, Vision, Java* — Summer 2025
- Taught Onshape CAD and Python programming to VEX teams; guided students through full robot design lifecycle.
- Mentored rookie FRC team in Limelight vision targeting and autonomous navigation fundamentals.

Brains4Drones - *Software Engineering Intern | Python, APIs, Open3D, OpenCV, YOLO, Point Clouds* — Mar 2022 - Dec 2024
- Built LiDAR processing pipelines with GDAL, Open3D, and Laspy to simulate drone flight missions and optimize paths.
- Developed TensorFlow-based crack detection and image analysis systems for aerial inspection automation.
- Integrated REST APIs, OpenCV, and Bing/Google Maps APIs to overlay mission paths and safe launch zones.

FIRST Robotics Challenge (Team 9088) - *Software Lead/Team Co-Founder | Java, SolidWorks, Vision* — Jun 2022 - May 2024
- Led development of modular Java control systems including PID-tuned swerve drive and elevator subsystems.
- Collaborated cross-functionally to integrate software with mechanical and vision hardware systems.

PROJECTS

PrepNotch - *LLM-Powered Personalized Tutoring Platform* — LangChain, LangGraph, RAG, Cursor, AWS
Designing an agentic tutoring system that creates dynamic learning plans from user goals and documents.
- Built a LangGraph-based multi-agent workflow for lesson generation, quiz creation, and feedback refinement.
- Developed a custom AWS Table of Contents-based indexing tool for LLMs to access educational materials.
- Engineered tool-using agents with context engineering, persistent memory, and progress tracking using Cursor
- https://github.com/pranavputtagunta/prep_notch

VisLink - *Vision-Powered Computer Assistance (1st Overall @ SacHacks VI)* — Python, OpenCV, MediaPipe
Created a machine learning-powered desktop navigation interface for users with limited mobility.
- Implemented facial tracking and voice recognition to allow hands-free computer navigation.
- Built gesture detection pipeline with MediaPipe and OpenCV; voice processing via speech recognition.
- https://github.com/pranavputtagunta/vislink

OpenLabel - *Vision & LLM-Powered Allergy and Diet Recommender (1st in Track @ DiamondHacks)* — Python, OpenCV, Gemini
Built a dietary preference agent that evaluates food packaging through image input and ingredient scanning.
- Built an image-processing pipeline to parse product images and ingredient labels using Gemini + CV.
- Generated user-specific buying recommendations using LLMs (Gemini API) based on allergies and goals.

- https://github.com/pranavputtagunta/OpenLabel

Alethiea - *Agentic-Driven Healthcare Management (Berkeley AI Hackathon)* Python, Streamlit, OpenCV, Gemini, Letta
Developed a personalized pill tracker that offers medication guidance and autonomous alerts.

- Used OpenCV and Gemini API to detect and classify pills from images; tracked dosage timelines with memory modules.
- Designed agent framework to auto-adjust routines and send alerts or contact physicians as needed.
- https://github.com/pranavputtagunta/aletheia

LEADERSHIP & AWARDS

National Merit Finalist • SacHacks VI 1st Place • DiamondHacks Winner • NASA Aerospace Scholars (Systems Lead)
FIRST Robotics Dean's List Nominee • PURE Nonprofit Chapter Director • Presidential Gold Service Award