

# Pranav Puttagunta

469-999-5765 | [pputtagunta@ucsd.edu](mailto:pputtagunta@ucsd.edu) | [linkedin.com/in/pranav-puttagunta](https://www.linkedin.com/in/pranav-puttagunta) | [github.com/pranavputtagunta](https://github.com/pranavputtagunta) | [pranavputtagunta.github.io](https://pranavputtagunta.github.io)

## EDUCATION

**University of California San Diego, GPA 3.92, BS in Computer Science, Minor in Business** Sep 2024 – Present

## EXPERIENCE

**Undergraduate Research Assistant**, UCSD Advanced Robotics Control Lab – La Jolla, CA Mar. 2025 – Present

- Built motion planning achieving **200%** faster runtime, **10%** gauge savings, and **100%** wound coverage in robotic trials.
- Reconstructed 3D meshes from RGB-D scans with Open3D + SDFs, reaching **80%** accuracy for field medical robotics.
- Implemented MCTS + heuristics, cutting compute by **30%** and enabling near real-time robotic gauze tape application.
- Integrated algorithms into humanoid prototypes, collaborating with researchers on clinical feasibility testing.

**Autonomous Systems Developer**, Yonder Dynamics – La Jolla, CA Oct. 2024 – Present

- Created traversal routines for a Mars Rover on Jetson/PI, ensuring reliable waypoint completion in URC missions.
- Integrated RTK GPS with Pixhawk, boosting accuracy from **10m** → **10cm**, eliminating **30%** navigation failures.
- Built return-to-base fail-safe on ROS heartbeat loss, reducing rover mission failures by **30%** in testing.
- Developed React + ROS dashboards, accelerating debugging and providing real-time operator telemetry insights.

**Robotics Instructor**, Wheelhouse Robotics – Coppell, TX Jun. 2025 – Sep. 2025

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**Software Engineering Intern**, Brains4Drones – Plano, TX Mar. 2022 – Dec. 2024

- Led development of PreCheck LiDAR tool; cut drone mission failures by **60%** through terrain modeling and analysis.
- Built TensorFlow crack detection, automating inspections and reducing manual review time by **50%** for utilities.
- Designed GPU CUDA pipelines with KNN, accelerating point-cloud obstacle detection for safer drone missions.
- Attracted **2** enterprise clients by showcasing PreCheck flight video simulations and REST API-driven planning features.
- Connected React frontend to PreCheck with Google Maps APIs to visualize terrain, safe launch zones, and flight paths.

## PROJECTS

**SideKick** | *Python, Flask, React, GCP, Firebase, PostgreSQL, Docker* Aug. 2025 – Present

- Building a scalable AI coaching app on GCP, using a PostgreSQL database, React Native, and Redis + Celery.
- Built a REST API powered by an LLM to serve real-time video analysis and personalized feedback with Firebase auth.
- Engineered an OpenCV pipeline for gamified form analysis, integrating engaging ML insights with the UI.

**VisLink** | *Python, OpenCV, MediaPipe, HCI, Computer Vision, ML* Mar. 2025

- Developed a hackathon-winning HCI system with OpenCV + ML for hands-free desktop navigation for paralyzed users.
- Engineered a low-latency vision pipeline achieving **80%** accuracy in real-time facial signal processing for cursor control.
- Integrated vision controls, blink detection, smoothing algorithms, and speech recognition, boosting tool reliability.

**PrepNotch** | *React, Flask, AWS, LangChain, MongoDB* Jun. 2025 – Present

- Building a full-stack agentic tutoring system on AWS, featuring a responsive React frontend and a MongoDB database.
- Developed a scalable Flask API using LangChain to automate lessons, quizzes, and generate personalized user feedback.
- Created a custom table of contents-based indexing system which optimized LLM query efficiency for learning materials.

**MentalQuest** | *React, Flask, MongoDB, Gemini API* Oct. 2024

- Architected a full-stack mental health app with responsive React frontend, a Flask backend, and a MongoDB database.
- Integrated Gemini API to power AI-driven self-care recommendations and interactive user progress tracking features.
- Delivered a gamified user experience with daily quests, journaling, awards, and chatbots, securing 4th place.

## TECHNICAL SKILLS

**Languages:** Python, C++, Java, JavaScript/TypeScript, SQL/NoSQL, ROS, Linux, Git/GitHub, HTML/CSS  
**Frameworks/Tools:** React, Flask, Node.js, TensorFlow, PyTorch, OpenCV, FastAPI, Docker, AWS/GCP, YOLO, CUDA  
**Specialties:** Full-stack development, APIs, Microservices, Machine learning, Computer vision, Robotics perception, Motion planning, Data pipelines, Distributed systems, Algorithm optimization

## HONORS AND LEADERSHIP

SacHacks 1st Place • DiamondHacks 1st Place • NASA Moonshot System Lead • FIRST Robotics Team Founder • PURE Nonprofit Chapter Director • Presidential Gold Service Award • National Merit Finalist • Taekwondo National Medalist