Pranav Puttagunta

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Education

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

Technical Skills

Languages: Python, Java, C, C++, JavaScript/TypeScript, SQL/NoSQL, ROS, Linux, Git/GitHub, Swift, 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, Agile, CI/CD, Cloud Infrastructure

Experience

Pragma Edge (IBM Partner Company), AI Engineering Intern – Jacksonville, FL Oct. 2025 – Present
- Architected REST APIs for asset management, facilitating communication between IBM Maximo and external services.
- Integrated IBM Watsonx chatbot into Maximo workflows, enabling natural language querying of asset data.
- Developing computer vision modules to automate defect analysis, optimizing manufacturing inspection pipelines.
- Integrating MLOps pipelines in Python (OpenCV, TensorFlow) for scalable enterprise data flows for anomaly detection.

UCSD Advanced Robotics Control Lab, Research Assistant – La Jolla, CA Mar. 2025 – Sep. 2025
- Built motion planning algorithms achieving **200%** faster runtime, **10%** gauze savings, and **100%** wound coverage.
- 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.

Yonder Dynamics, Autonomous Systems Developer – La Jolla, CA Oct. 2024 – Present
- Integrated RTK GPS with Pixhawk, boosting accuracy from **10m** to **10cm** and eliminating **30%** of navigation failures.
- Designed physics-based simulations using custom URDF models for asynchronous testing of autonomous logic.
- Engineered robust traversal routines and a loss-of-signal fail-safes, reducing failures by **30%** during URC competitions.
- Managed agile sprint planning in Notion, improving cross-functional team coordination for the autonomous subsystem.

Wheelhouse Robotics, FIRST/VEX Robotics Instructor – Coppell, TX Jun. 2025 – Sep. 2025
- Coached **28** students across **4** teams, teaching CAD, Java, Python, Git workflows, and Computer Vision principles.
- Guided FRC team to prototype a swerve robot in **1** week and deploy vision-based autonomous navigation in **2** weeks.
- Improved technical collaboration and design reviews by organizing PDRs, debugging sessions, and Git workflows.

Brains4Drones, Software Engineering Intern – Plano, TX Mar. 2022 – Dec. 2024
- Led development of "PreCheck" LiDAR tool, cutting drone mission failures by **60%** with terrain modeling and analysis.
- Built TensorFlow crack detection pipelines, automating utility inspections and reducing manual review time by **50%**.
- Designed GPU CUDA pipelines with KNN, increasing point-cloud obstacle detection speed for safer autonomous flight.
- Attracted **2** enterprise clients by showing PreCheck's simulation capabilities and REST API-driven planning features.

Projects & Portfolio Highlights

SideKick | ***Python, FastAPI, React, GCP, Firebase, PostgreSQL, Docker*** **Lead Architect**
- Building a scalable AI coaching app on GCP using React Native and Redis + Celery for task management.
- 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 directly into the UI.

VisLink | ***Python, OpenCV, MediaPipe, HCI, Computer Vision*** **Team Lead**
- Developed an award-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 smoothing algorithms and speech recognition, significantly boosting tool reliability and user accessibility.

PrepNotch | ***React, Flask, AWS, LangChain, MongoDB*** **Lead Developer**
- Building a full-stack agentic tutoring system on AWS, featuring a responsive React frontend and MongoDB database.
- Developed a scalable Flask API using LangChain to automate lesson generation, quizzes, and personalized feedback.
- Created a custom table-of-contents indexing system which optimized LLM query efficiency for large learning materials.

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