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
- Integrating IBM Maximo Visual Inspection pipeline into client manufacturing workflow for real-time anomaly detection.
- Developing computer vision modules in Maximo, automating defect analysis and process optimization.
- Collaborating with IBM engineers to submit feature improvements for production review and deployment.
- Integrating MLOps pipelines in Python + OpenCV + TensorFlow for scalable enterprise data flows.

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

Yonder Dynamics, Autonomous Systems Developer – La Jolla, CA   Oct. 2024 – Present
- Developed robust traversal routines and a return-to-base fail-safe, cutting mission failures by **30%** in URC missions.
- Integrated RTK GPS with Pixhawk, boosting accuracy from **10m → 10cm**, eliminating **30%** navigation failures.
- Engineered software for rover hardware including Jetson/PI, Pixhawk, and various sensors for competition readiness.
- Managed project timelines and sprint planning using Agile methodologies in Notion, improving team coordination.

Wheelhouse Robotics, FIRST/VEX Robotics Instructor – Coppell, TX   Jun. 2025 – Sep. 2025
- Coached **28** students across **3** VEX teams and **1** FRC team, teaching CAD and Java, Python, Git, CV, and OOP.
- Guided FRC team to make swerve robot in **1** week, vision-based autonomous in **2**, accelerating competition readiness.
- Improved technical collaboration and design reviews by organizing PDRs, debugging sessions, and Git workflows.
- Boosted student outcomes by making hands-on lessons that increased retention and improved competition performance.

Brains4Drones, Software Engineering Intern – 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 & PORTFOLIO HIGHLIGHTS

SideKick | *Python, Flask, React, GCP, Firebase, PostgreSQL, Docker*   **Lead Architect, Backend Dev**
- 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*   **Team Lead, Backend Dev**
- 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*   **Lead Developer**
- 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.

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