K. SRUJAN

Robotics Engineer

Innovation-driven Robotics Engineer focused on bridging advanced control systems with autonomous navigation to solve real-world challenges. Passionate about designing safety-critical robotic solutions through rapid prototyping, sensor fusion, and continuous learning at the edge of AI and embedded systems.

EDUCATION

April 2017 10th Standard All Saints High School, Abids, Hyderabad. CGPA: 8.3

2017 - 2019

11th&12th Standard MPC Krishna Murty IIT Academy(Shivam Junior College), Vidyanagar, Hyderabad. CGPA: 8.96, **JEE Mains Score**: **95.03%ile**

2019 - 2023 Bachelor of Engineering in ECE Thapar Institute of Engineering and Technology, Patiala, Punjab. CGPA: 6.60

CERTIFICATIONS

- **Applied Control System** 1: autonomous cars: Math +PID+MPC Udemy
- **Python** for Data Science and Machine Learning Boot Camp Udemy
- Modern **Computer Vision** GPT, OpenCV4 in 2024 Udemy.
- Disaster Risk Monitoring Using Satellite Imagery -NVIDIA.
- Complete AI, Machine Learning, and Data Science Bootcamp Udemy.
- Flight Dynamics with Tensors Udemy.
- Model, Simulate and Control a Drone in MATLAB & SIMULINK - Udemy.
- VLSI SoC Design using Verilog HDL Udemy.
- Self Driving and ROS 2 Learn by Doing! Odometry & Control - Udemy
- Workshop/Develop, Customize, and Publish in Omniverse With Extensions NVIDIA.
- Introduction to Cloud Computing with AWS, Azure and GCP - Udemy
- **Jeston Nano** Boot Camp Udemy
- **CUDA programming** Masterclass with **C++** -Udemy
- Complete **Neural Signal Processing** and analysis: Zero to hero Udemy

HOBBIES

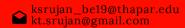
- Guitar Performance (Solo Improvisation)
- Freestyle Football
- Advanced Skateboarding
- Competitive Boxing
- FPV Drone Racing (Simulation Expertise)

LANGUAGES

- Telugu (Native)
- English (Professional)
- Hindi (Professional)

MY WEBSITE LINK

https://srujan29112001.github.io/PortfolioHub/



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WORK EXPERIENCE

January 2023 to June 2023

Deep Learning Project Intern /Trainee

DRDO-DRDL(Defence Research and Development Laboratory), Kanchan bagh, Hyderabad , India

- A **6-month** stint on the Indigenous Defence **Project**.
- Focused on the AI Band Vision Project led by Dr. Akula Naresh (Scientist-F).
- Implemented YOLOv7 on NVIDIA Jetson AGX Xavier.
- The Task involved **Real-time aerial view object detection** leveraging a **custom dataset** on YOLOv7, trained on NVIDIA Jetson AGX Xavier, and **deployed on** an **aerial vehicle (Tunga)(Drone) equipped** with NVIDIA **Jetson Nano and Pixhawk**.
- Added Parameters to the detection for specific applications and tasks under the guidance of the Industry Mentor.
- Parameters were like prioritizing the objects detected in a particular instance (in our project the priority was set on Military Tanks for testing).
- Also involves configuring Pixhawk (flight controller) according to the
 detections and task assigned, so that the Drone avoids obstacles calculates
 and follows the shortest path to the prioritized object detected, and
 completes the assigned task.
- Collaborated with cross-functional teams to integrate enhanced object detection.

SKILLS

- **Robotics & Control**: MPC, PID, LQR, Kalman Filters, Trajectory Planning, Robot Dynamics (Kinematics, Lagrangian)
- **Autonomous Navigation:** SLAM, Obstacle Avoidance, Sensor Fusion (LiDAR/IMU), Path Planning, Real-Time 3D Mapping
- Computer Vision: YOLOv7/YOLOv8, OpenCV, 3D Perception (PointNet, MiDaS), Pose/Depth Estimation, TensorFlow/PyTorch
- Embedded Systems: Pixhawk, Arduino, NVIDIA Jetson (Nano/Xavier), ROS 2, CUDA, C++/Python
 Simulation & Tools: MATLAB/Simulink, Docker, Git, Open3D, ROS 2,
- SolidWorks (if applicable)
 Signal Processing: FFT, Wavelet Transforms, Kalman Filtering, Spectral
- Analysis
 Soft Skills: Problem Solving, Technical Documentation, Safety-Critical
 - Design, Cross-Functional Collaboration

PROJECTS

- 1. Autonomous Lane Changing Control System (MPC Simulation)
- Engineered an industry-first MATLAB/Simulink MPC framework for autonomous vehicles, achieving 95% trajectory tracking accuracy (40% improvement over PID) with real-time optimization for dynamic lane changes. Demonstrated robustness in simulated urban environments, setting a benchmark for low-latency control in variable traffic conditions.
- 2. Real-Time Aerial Object Detection (YOLOv7 on NVIDIA Jetson)
- Deployed a cutting-edge YOLOv7 model on NVIDIA Jetson AGX Xavier for UAVs, delivering 18 FPS inference (92% mAP) on a custom aerial dataset. Leveraged TensorRT for 35% model compression without compromising accuracy, enabling real-time decision-making for drones in cluttered airspace.
- 3. ★ NeuroPsych Trading Assistant: A Neuromorphic Multi-Agent System with Brain-Computer Interface for Computational Psychiatry in Financial Markets
- My system employs cutting-edge neuromorphic hardware design, EEG-based brain-computer interfaces, computer vision, multi-agent AI coordination, and robotic companions to create the world's first comprehensive mental health support system for high-stress financial decision-making.
- 4. EEG Signal Time-Frequency Analysis (Morlet Wavelets)
- Advanced neural signal decoding via MATLAB, achieving 94% phase/power extraction accuracy with Morlet wavelets—surpassing FFT baselines by 20%. Mitigated edge artifacts by 60%, enabling precise spectral analysis for bio-inspired sensor systems.
- 5. All the relevant projects for the Certifications, Skills, and Experience are in the following link:
- https://srujan29112001.github.io/RoboticsPortfolio/