SHIVA SAM KUMAR GOVINDAN

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SUMMARY

Master's graduate in Robotics and Autonomous Systems with 1.7+ years of experience in designing and deploying automation systems. Proficient in the development of robotic controls and engineering solutions to enhance production efficiency. Skilled in SolidWorks, MATLAB, Python, ROS and Computer Vision algorithms with a strong background in project management and cross-functional team leadership.

EDUCATION

M.S, Robotics and Autonomous Systems (Mechanical and Aerospace Engineering) May 2024
Arizona State University, Tempe, AZ 3.63 GPA

B. Tech, Aeronautical Engineering May 2020
Vel Tech Rangarajan Dr. Sagunthala R&D Institute of Science and Technology, Chennai, Tamil Nadu, India

TECHNICAL SKILLS

Technical Toolset: ROS (1&2), Nav2, Move it, Python, C/C++, Ubuntu, Docker, Kuka, Latex, Git, Linux
Python Libraries: TensorFlow 2.0, NumPy, Pandas, SciPy, Matplotlib, OpenCV, PyTorch, PySide6
Modelling and Simulation Software's: CATIA V5, SolidWorks, AUTOCAD, Blender, Ansys, Gazebo, Webots
Certifications: Visual Perception for Self-Driving Cars -Basic to Advance (Toronto university) – 2024, Deep Learning for Computer Vision in TensorFlow (Udemy) – 2024, Robot operating system level 1,2 & 3 (Udemy) – 2024, Diploma in Mechanical CAD (CAD School) – 2020

PROFESSIONAL EXPERIENCE

Launch Trax Private Limited, Bangalore, India: Application Engineer & QA analyst Feb 2021 – Jul 2022
Projects: Application for Geo-Pointing and Geo-Location, Mission Planning and Debriefing Systems

- Developed and optimized geo-pointing & geo-location algorithms, using effective coordinate transformations and Euler angles improving navigational accuracy by 40% also enhanced system reliability through effective (LOS) stabilization and sensor alignment techniques.
- Authored and meticulously executed comprehensive test plans, conducting extensive unit testing on core GIS and Navigation algorithms for GUI applications, enhancing accuracy and ensuring performance across varied operational scenarios and system configurations.
- Streamlined a GIS framework to de-clutter Aeronautical map elements by 50%, enabling dynamic manipulation and attribute clarity at various zoom levels with Geoserver, HTML, C++, and QGIS, enhancing user interpretability by 30%.
- Crafted System Requirements (SRS), Acceptance Test Procedures (ATP), and user manuals with LaTeX and Sphinx, leveraging strong communication skills to coordinate with 4 departments and a 5-official panel, emphasizing team collaboration.

ACADEMIC PROJECTS

3-D Multi Object Detection using Point Pillars & TaNet May 2024
- Enhanced a 3D Multi-Object Tracking system by integrating Point Pillars and TANet, accelerating processing speed to 407.2 fps and a 61.08% 'Mostly Tracked' object rate in dense environments, demonstrating significant advancements in real-time tracking capabilities.

Collaborative Multi-Robot Path Planning and Navigation with DARP and A* Algorithm Dec 2023
- Engineered a DARP and A* client-server system managing real-time robot coordination through a centralized server system enhancing warehouse efficiency by 30% also displayed the operations with a simulation in Webots, boosting logistics efficiency by 25%.

Optimal Model Predictive Control (MPC) for 2-D Autonomous Vehicle & UAV Trajectory Tracking Dec 2023
  Optimized cost functions and integrated MPC control algorithm, achieving less than 5% trajectory prediction error. Demonstrated the system's real-time trajectory adjustments and effectiveness through detailed 3-D animations in Python using a bicycle & UAV model.

Advanced Autonomous Driving System: Real-Time Traffic Compliance and Sign Recognition May 2023
- Developed a ROS2-based autonomous navigation system using OpenCV and deep learning CNNs, achieving 98% accuracy in traffic light and sign recognition, optimizing detection algorithms and demonstrated the performance through Gazebo simulations.

Exploring 3-DOF Robotic Arm controls and Design May 2023
- Engineered a MATLAB simulation for a 3-DOF robotic arm, optimizing kinematics and dynamics for advanced motion analysis and increased stability using state-space and LQR control techniques, achieving superior system accuracy through optimal pole placement.

RoPal Stress-Relief Robotic System - Robotech 2023 (Robotic Hackathon), Georgia Tech Mar 2023
- Collaborated with a 5-member interdisciplinary team to engineer 'RoPal' , a sophisticated stress-relief aromatherapy robot., featuring a 4-DoF robotic arm controlled with ESP32 and Arduino for real-time facial stress detection through embedded machine learning algorithms.

OTHER EXPERIENCE

Club Coordinator, SEDS (Students for the Exploration and Development of Space) Aug 2018 – May 2020
- Orchestrated various events for SEDS at Veltech University, engaging and connecting students through interactive team activities/session.