Venkata Sai Sricharan Kasturi

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EDUCATION

University of Maryland, College Park, MD — January 2023 - December 2024
Master of Engineering in Robotics — GPA: 3.53/4.0

Guru Nanak Institutions Technical Campus, Hyderabad, India — July 2018 - July 2022
Bachelor of Technology in Mechanical Engineering — GPA: 8.35/10

SKILLS

Programming Languages: Python, C++, CUDA, Bash, HTML/CSS, MATLAB
Development & Platforms: Git, GitHub, Linux, Docker, CI/CD, Jupyter Notebook, CMake, Raspberry Pi, Arduino IDE, Windows
Robotics & Control: ROS1/ROS2 (MoveIt, RViz, Gazebo, URDF), SLAM, PID, Kalman Filtering, System Modeling, CARLA
AI & ML: YOLO, Reinforcement/Transfer Learning, CNN/RNN, Supervised/Unsupervised Learning, Clustering, PCA, t-tests
Frameworks & Libraries: PyTorch, TensorFlow, Keras, OpenCV, scikit-learn, NumPy, pandas, Matplotlib, Eigen
CAD & Simulation: SolidWorks, MATLAB/Simulink, AutoCAD
Sensor & Embedded Systems: LIDAR, Depth Cameras, IMU, Encoders, Ultrasonic Sensors
Software: Microsoft Office (Excel, Word, PowerPoint), Google Workspace (Docs, Sheets, Slides), Adobe Photoshop

WORK EXPERIENCE

Perception Intern — Hyderabad, India
XMachines — May 2023 – December 2023

- Collected and processed data from LIDAR, stereo cameras, and proximity sensors, enhancing AI-based robot accuracy by 20% and reducing solar power plant inspection time by 30% through advanced computer vision and AI deployment.

PROJECTS

DQN-Based Autonomous Navigation System | *PyTorch, Keras, CNN, DQN, Path Planning, Reinforcement Learning, Gazebo, ROS2*

- Developed a DQN-based autonomous navigation framework in ROS2 and Gazebo, reducing collisions by 25% and improving navigation success by 20% using prioritized experience replay and dueling networks.
- Optimized trajectory planning with RGB and LIDAR inputs, achieving 90% success in 100+ simulations, while fine-tuning rewards to accelerate convergence by 15% and improve trajectory adherence by 10%.

Improved Bi-directional RRT* for Robot Path Planning | *Turtlebot3, Gazebo, A*, Dynamic Window, Sensor Fusion, ROS2, Matplotlib*

- Engineered and optimized the Double Tree RRT* algorithm, achieving a 62% reduction in computation time, 35% shorter paths, and 30% faster convergence in real-time ROS and Gazebo simulations for efficient path planning in complex environments.
- Integrated SLAM with LIDAR data to generate occupancy grid maps with 95% accuracy, enabling precise localization and obstacle avoidance with a 200mm clearance, achieving a 98% navigation success rate on a TurtleBot3 Burger while reducing path planning failure by 40%.

Integrated Obstacle Recognition and Autonomous Navigation System | *SLAM, YOLOv8, OpenCV, Raspberry Pi, Embedded Control*

- Led a team to develop an autonomous differential drive robot with real-time pick-and-place, achieving 92% detection accuracy using YOLOv8 and 98% odometry reliability with closed-loop control.
- Integrated multi-sensor fusion with SLAM, improving navigation precision by 30% and path-following accuracy by 92%, while optimizing Raspberry Pi multi-threading to cut execution time by 25% and keep sensor latency under 50ms.

Mobile Manipulator Robot Design & Control | *ROS2, MATLAB, SolidWorks, UR10, LIDAR, URDF, Kinematics, Dynamics, Gazebo*

- Designed a 6-DOF mobile manipulator with a UR10 arm and differential drive, enhancing load stability by 20% and achieving 98% pick-and-place accuracy (±1 mm) using Jacobian-based trajectory planning.
- Developed ROS2-based navigation with LIDAR fusion for real-time control (20ms latency), validated in Gazebo, and improved end-effector performance with a vacuum gripper, boosting grasp reliability by 25% and motion stability by 30%.

My Derma: Mobile Deep Learning for Skin Cancer Detection | *TensorFlow Lite, ResNet-50, InceptionV3, DenseNet201, Flutter*

- Developed an ensemble deep learning model (ResNet-50, InceptionV3, DenseNet201, MobileNetV2) achieving 97.15% test accuracy and an F1-score of 0.99 for melanoma detection using HAM10000.
- Deployed as a TensorFlow Lite app with a Flutter interface, reducing latency by 30% via compression and quantization, and enhancing robustness with ablation studies, hyperparameter tuning, and SMOTE.

ACTIVITIES

Robotics President — Hyderabad, India
Team Roboccon, ***Guru Nanak Institutions Technical Campus*** — 2020 - 2022

- Runner-up in the Inter-College Robotics Competition "Robout-2k19" (Pick and Place) and finalist in Aliens Tech-Robo Competition (ATRC); participated in Roboveda events like Robo Soccer, Robo Sumo, and Drone competitions, while leading Team Roboccon as President, mentoring 50+ students in robotics projects.

CERTIFICATIONS

A Deep Understanding of Deep Learning - *Udemy* — October 2024
Aerial Robotics – *Coursera-Upenn* — June 2023