

SURIYA KASIYALAN SIVA

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EDUCATION

Northeastern University, Boston, MA

Sep 2023 – May 2025

Master of Science in Robotics

Courses: Robot Mechanics & Controls, Control Systems Engineering, Pattern Recognition & Computer Vision, Robot Sensing & Navigation, Autonomous Field Robotics, Reinforcement Learning

Panimalar Engineering College, Chennai, India

Aug 2018 – June 2022

Bachelor of Engineering in Mechanical Engineering

SKILLS

Programming Languages: Python, C++

Frameworks & Libraries: OpenCV, TensorFlow, PyTorch

Tools & Software: Linux, Git, Visual Studio, MATLAB, Simulink, ROS, SolidWorks, Gazebo, Arduino, Fusion 360

Additional Skills: Image Processing, Feature Extraction, Model Validation

Certification: Programming for Everybody, Robotics: Aerial Robotics, AI Foundation with IBM badge, Machine Learning

EXPERIENCE

HCL Technologies, India | *Graduate Engineer Trainee, Full-time*

Nov 2022 – July 2023

- Designed a comprehensive wellhead system by utilizing advanced design tools including PTC Creo, ensuring the system meets client specifications, enhancing project efficiency.
- Facilitated seamless coordination between onshore and offshore teams, ensuring project success through weekly scheduled meetings. Spearheaded the initiation of strategic, optimized processes, contributing 20% to the successful completion of the project within a dynamic team environment.

Roboram Education, India | *Research Intern*

Jan 2022 – Mar 2022

- Designed and built an exoskeleton suit handling data from multiple ultrasonic sensors for accurate obstacle detection, resulting in a 50% improvement over existing cane model.
- Utilized firmware development with ultrasonic sensors, Arduino MEGA, and mobile vibration motors for precise obstacle detection, surpassing traditional speaker-based method.

ACADEMIC PROJECTS

Photomosaicking and Image Registration Using Factor Graphs | *Python, OpenCV, gtsam*

Sep 2024 – Oct 2024

- Designed a robust photomosaicking pipeline for low-contrast images, employing RANSAC-based outlier rejection, Levenberg-Marquardt optimization, and feature matching techniques.
- Modeled image registration as a factor graph, optimized with GTSAM to improve camera poses and generate globally consistent photomosaics, with analyses of covariance and odometry pre- and post-optimization.

Automated Segmentation & Labeling of Insect Legs | *Python, OpenCV*

Jan 2024 – Apr 2024

- Automated insect leg labeling in DeepLabCut using Canny edge detection, morphological operations, and Shi-Tomasi Corner Detection, reducing manual labeling time by 40%.
- Evaluated accuracy with a confusion matrix, demonstrating high precision and scalability for research automation.

Computer Vision | *C++, OpenCV, Python, PyTorch, NumPy* [GitHub](#)

Jan 2024 – Apr 2024

- Designed content-based image retrieval systems using classic features, deep network embeddings for pattern recognition.
- Developed real-time 2D object recognition system, evaluated performance, implemented KNN matching for improved accuracy.
- Engineered camera calibration system, integrating corner detection & pose estimation for accurate AR Application.
- Designed and trained CNN for digit recognition using the MNIST dataset, achieving high accuracy. Conducted model evaluation, implemented transfer learning for Greek letter recognition, visualized network layers, experimented with architectural changes.

Visual SLAM Implementation | *Python, ROS, Rviz*

Jan 2024 – Apr 2024

- Implemented SG-SLAM for real-time localization and mapping with RGB-D datasets, integrating 2D semantic and 3D point cloud data, and benchmarking performance against existing algorithms.
- Leveraging a dynamic feature detection algorithm for real-time localization and mapping, optimizing data exchange and enabling efficient navigation and exploration of expansive environments.