SURIYA PRAKASH MURUGAN

1717S Dorsey Lane, Tempe, AZ 85281 | +1(602)-621-7891

Email: smurug12@asu.edu **Portfolio:** suriya-prakash-murugan.github.io

LinkedIn: linkedin.com/in/suriya-prakash-murugan/ **GitHub:** github.com/suriya-prakash-murugan

EDUCATION

Master of Science – Robotics and Autonomous Systems (Artificial Intelligence) *August 2022 – May 2024*

Arizona State University | Tempe, AZ GPA: 3.44/4.0

Courses: Modelling and Control of Robots, Perception in Robotics, Autonomous Exploration Systems, Robotics Systems II, Planning and Learning Methods AI, Linear Algebra in Engineering

Bachelor of Engineering – Electronics and Instrumentation Engineering *August 2015 – March 2019*

Karpagam College of Engineering | Coimbatore, India GPA: 8.45/10.0

Courses: Robotics and Automation, Advanced Data Structures, Design and Analysis of Algorithms, Embedded Systems

TECHNICAL SKILLS

- **Programming:** Python (NumPy, Pandas, Sci-kit Learn), C++, C, Java, PDDL, MATLAB/Simulink
- **Software Tools:** ROS, ROS2, TensorFlow 2.0, PyTorch, Gazebo, OpenCV, Docker, AWS, Git
- **Platforms:** Windows, Linux (Ubuntu)

ACADEMIC PROJECTS

Autonomous Drone Landing on moving object | *Aerial robotics* | *SLAM* | *ROS*

- Simulated a drone landing program using ROS and Gazebo with ORB-SLAM2 implementation which autonomously lands the UAV on moving target using Visual servoing technique.
- Collaborated with a group of 3 people and worked on the development of a Visual servoing program to adjust the translation of the drone based on the moving rover and April tag coordinate axis.
- Developing a program to improve the drone's capacity to land in a variety of objects by estimating their surface area, neural networks are being combined to make the drone more adaptable to various terrains.

Social assistive workspace robot to reduce stress and improve mental wellness | *Deep Learning* | *Python* | *Embedded C*

- Developed a workstation bot that implements a deep learning algorithm to detect the user's emotional state and uses an aerosol of natural oil as an aroma therapy to encourage mental clarity when the user is under stress at the workspace.
- Implemented the hardware prototype using Arduino Uno with esp-32 camera module for robot vision and mini servo motors for robot arm.
- Cooperated with the team in the development of the emotion detection algorithm and tuned its accuracy to 89% using boosting techniques.

Path detection and Navigation of mini drone | *Image processing* | *MATLAB*

- Implemented a flight controller algorithm from scratch and integrated it with the image processing program created using Simulink.
- Deployed the program successfully in the mini drone hardware setup and navigated the drone by detecting the real time defined path using the camera and altitude sensor inputs from the drone.

Distance estimation using Monocular camera | *Python* | *Affine transformation*.

- Implementation of the paper 'TTCDist: Fast Distance Estimation from an Active Monocular Camera Using Time-to- Contact' and extended further by replacing the Luenberger observer with Kalman filter increasing the efficiency up to 80%.
- Enhanced the authors program to work on diverse set of monocular camera hardware integrated with IMU.

Simulation for Forward and Inverse kinematics of Hexapod | *Robot Kinematics* | *Homogenous transformation*

- Representation of Hexapod kinematics by calculating the transformations dynamically based on the input provided by the user.
- Successfully created a simulator environment webpage to demonstrate the hexapod kinematics and deployed it on the web.

Food Mini – Classification model using Vision Transformer | *Image Augmentation* | *Transformers* | *Computer Vision*

- Created a PyTorch model by modifying the classification layer of the pretrained vision transformer which uses Image augmented dataset to train and identify the food object with 96% accuracy rate.
- Experimented with several developed and pretrained CNN, Transformer models using Tensorboard and improved model accuracy.

PROFESSIONAL EXPERIENCE

Infosys – Senior Systems Engineer | Mysore, India *May 2019 – July 2022*

- Exploratory Data Analysis and Machine Learning model construction with Python programming language
  - Successfully developed an ML based model forecasting the server crash information in advance and increased output production.
  - Handled 30% of data from an overall approximate of 1 million server logs and performed exploratory data analysis, data preprocessing and devised a well-defined dataset for model prediction.
  - Resolved 2/3rd of the server crash issues and improved the production efficiency by 67% in a short period of time.
- Data abstraction from Atlassian tool (JIRA) to develop process monitoring dashboard for workflow management.
  - Developed a data migration program using Python and SQLAlchemy and moved millions of JIRA API data to specified database locations requested by the client.
  - Boosted the development process by about 75% by automating data migration program to transfer every new data without user interaction.