

Sundar Sripada V S

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Education

The University of Texas at Austin

M.S. Electrical and Computer Engineering; Advisor: Dr. Sandeep Chinchali

May 2024
Austin, USA

Anna University

B.Eng, Electronics and Communication Engineering; GPA: 8.54/10; Honor: First Class with Distinction

Apr 2020
Chennai, India

Skills and Relevant Coursework

Languages Python, C/C++, MATLAB, Julia, Bash

Frameworks PyTorch, TensorFlow, Keras, Robot Operating System (ROS), CARLA Simulator, Gazebo

Libraries numpy, pandas, matplotlib, seaborn, OpenCV, Pillow, scikit-learn, plotly, networkx

Coursework Machine Learning on Real-World Networks, Convex Optimization, Learning-based Optimal Control

Publications

- Mohd Omama, **Sundar Sripada V S**, Sandeep Chinchali, A. Kumar Singh, K. Madhava Krishna. [Drift Reduced Navigation using Deep Explainable Features](#). In *International Conference on Intelligent Robots and Systems*, 2022.
- Mohd Omama, **Sundar Sripada V S**, Sandeep Chinchali, K. Madhava Krishna. [LADFN: Learning Actions for Drift-Free Navigation in Highly Dynamic Scenes](#). In *American Controls Conference*, 2022.

Experience

The University of Texas at Austin

Graduate Research Assistant

Austin, USA
Aug 2022 - Present

- Tuning various classification models to predict common tasks in a rotary 'smart tool' (routing, sanding, cutting, engraving) to obtain platform-agnostic inference performance and run-time
- Designing a platform for multi-robot autonomous navigation using DuckieTown to perform various tasks such as object detection, lane following and indefinite navigation; intended to conduct a class in the following semester

The International Institute of Information Technology - Hyderabad

Research Intern

Hyderabad, India
Oct 2020 - Jun 2022

- Designed classification and regression models in scikit-learn to predict the presence and amount of drift accumulated by a self-driving vehicle
- Obtained prediction accuracy up to 92% using PyTorch, given input pose and velocity obtained from CARLA
- Formulated a Reinforcement Learning (RL) model using Proximal Policy Optimization (PPO) for controlling an autonomous car by utilizing the stable-baselines library
- Designed the RL reward using stable-baselines which enabled RL controller to clearly outperform a vanilla Stanley controller in reducing drift over 1.63 times in autonomous driving (ACC 2022)
- Generated drift heat-maps showing regions of probability of drift accumulation around a self-driving car using a multi-modal Convolutional Neural Network (CNN) in PyTorch
- Facilitated a ranking loss function to train a multi-modal CNN in PyTorch to minimize drift in autonomous driving, beating previous state-of-the-art by up to 76.76% (IROS 2022)
- Developed API-level functions and automation scripts in Python to collect contrived scenes containing more than 100,000 data points using CARLA simulator for prototyping and testing
- Ported the Lidar Odometry And Mapping (LOAM) package from C++11 to C++14 to conduct necessary research in the new ROS version (ROS Noetic)

Indian Institute of Technology - Madras

Summer Research Fellow

Chennai, India
May - Jul 2019

- Tracked the pose of a tooltip found in a drill bit used in Surgical Navigation Systems (SNS) with the aid of fiducial markers, by experimenting on 500 data points obtained from a stereo camera
- Developed MATLAB functions for the transformation of the tooltip from world to image coordinate frames of reference using Homogeneous Transformation Matrices and the pseudoinverse function