

Vishal Shankar Jadhav

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OBJECTIVE:

As a graduate student in Automotive Engineering, I am focusing on autonomous and robotics technologies and looking for an internship starting in Fall 2022. Proficient in C++, Python, ROS, and MATLAB.

EDUCATION:

Clemson University – International Center for Automotive Research **GPA 3.54/4.00**

Master of Science in Automotive Engineering May 2023

Coursework: Automotive Electronics Integration | Computing & Simulation for Autonomy | Automotive System Integration | Deep Learning | Autonomous Technologies | Machine Perception & Intelligence

SDGCT's Sanjay Ghodawat Group of Institution, Kolhapur **GPA 3.52/4.00**

Bachelor's in mechanical engineering June 2018

Coursework: Control Engineering | Industrial Product Design | Testing & Measurements | Mechatronics

TECHNICAL SKILLS:

Programming: C, C++, Python, MATLAB

Software: MATLAB, Simulink, Catia V5, Auto CAD, Solid Works, NX

Tools: Docker, Singularity, PLM, Siemen's Teamcenter, Vim, Bash

Other Software: GitHub, AWS Machine Learning, SLAM (EKF and FAST)

Operating system: Windows, Linux, Robot Operating System (ROS), Ubuntu

Machine Learning algorithms: Deep Neural Network, Convolutional Neural Network, Recurrent Neural Network

Libraries: NumPy, OpenCV, Keras, Tensorflow, Multi-threading, PyCUDA, Pandas, Open3D

EXPERIENCE:

ARM Lab, Research Assistant **Oct 2021-Present**

[Automation, Robotics, and Mechatronics Lab \(ARM Lab\)](#), CUICAR

- Build AWS Deep Racer models and train those reinforcement learning (RL) models using Pure pursuit and Stanley controller. Define a reward function for different models.
- On TurtleBot 3, using ROS-MATLAB toolboxes did maneuvers like object detection, SLAM mapping, etc.
- Deploy ROS-based docker images like Husky in high performance computing environment (HPC) using singularity for computation and simulation visualization. Reinforcement Learning test simulation over clustered computing nodes (Palmetto Cluster).

Associate Engineer – SQA **June 2020 – Dec 2020**

Tata AutoComp Systems Ltd (IPD), Pune

- As a supplier quality assurance engineer in a new product development department, coordinate periodic supplier performance reviews and provide a recommendation to reevaluate supplier status.
- Quality inspection of the suppliers' plastic, metal, and foam automotive interior parts.
- Failure mode and effects analysis (FMEA) of automotive parts and managing the Supplier Production Part Approval (SPPAP) to ensure effective and efficient review and disposition of supplier submittals.

Graduate Engineering Trainee **Feb 2019 – Feb 2020**

Tata Technologies Limited (Engineering Research & Development), Pune

- 3D wiring harness routing and packaging of - Engine WH, Cockpit WH, Console WH, Front, Main, Battery, Driver, Doors WH, Floor WH, Rear bumper, Chassis WH.
 - Interaction and collaboration with the interdisciplinary teams for achieving design release deadlines.
 - Designing wiring harness using Capital Harness XC and defining electrical and electronics hardware properties. Created Info Fitment Drawings for the assembly production line.
 - Professional Teamcenter for visualization & Product Lifecycle Management (PLM) for design release and data management.
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ACADEMIC PROJECTS:

Autonomous Navigation on Road Using F1/10th Vehicle

May 2022

- Autonomously track the lane using a first camera and PID controller. Recognize a stop sign and school sign with second camera using a deep learning (R-CNN) technique. Established UDP communication protocol.

Autonomous Maneuver Using the Turtle Bot 3 Burger

April 2022

- ROS based Turtle Bot 3 autonomously navigates and complete tasks through the Gazebo and real-world environments using LiDAR and camera as perception sensors. Develop and test different algorithms which uses lidar and camera data to complete given tasks. Hardware-software integration in the robot.

Multitask Learning of Deep Neural Networks in Vehicle Perception

April 2022

- Our model can simultaneously perform two tasks on KITTI & NYUD datasets, performing depth estimation and segmentation with a single model. This model has its application in autonomous vehicles.

Anomaly Detection in Manufacturing Data Using Recurrent Neural Network

March 2022

- Build an RNN model to classify text and an LSTM model for anomaly detection (also outlier detection) on the temperature sensor data. In this task, predicted the possible failure of the system based on the temperature data. And this failure can be detected by check if they follow the trend of most of the data.

Behavioural Cloning: End to End Learning for Self-driving Cars

December 2021

- The project aimed to train an end-to-end deep learning model that would let a car drive around the track in a driving simulator. Data collection, data-pre-processing, and data augmentation for training convolutional neural network. Project based on Nvidia's end to end leaning technique for autonomous vehicle.

Adaptive Cruise Control and Autonomous Lane-keeping with RC Vehicle

December 2021

- Maintain a safe distance from obstacles with the help of an ultrasonic sensor and Kalman filter implemented to obtain accurate distance. A steering control and electronic speed control carried out using PID controller. Microcontroller programming in C++ using Arduino.

System-Level Design of Two-seater Battery Electric Roadster

December 2021

- Design powertrain subsystem using MATLAB and Simulink. Design choice and integration of six different subsystems: Structures, Packaging, Vehicle Dynamics, Powertrain, Human Factors, and System Integration. The goal was to satisfy all the requirements and ultimately maximize the profit.

Reinforcement Learning for Car-Racing Simulation in 2D Environment

December 2021

- In 2D racing, simulators learn a racing controller directly from raw LiDAR observations. Comparing model-based versus model-free Reinforcement learning algorithm's performance on different tracks.

Sensor Fusion and Calibration

November 2021

- Calibration of HC-SR04 ultrasonic sensor. Sensor fusion of multiple ultrasonic sensors using Kalman filter for converging in less than 5 sec with an accuracy of 2 mm.

Design and Build an Electric Cart

April 2018

- Design drivetrain for cart with a range of 100km and a top speed of 40kmph. Managed the team of 25 members, planning and scheduling objectives for the cart including yearly agenda and setting deadlines.
- Oversaw vehicle integration considering five subsystems to design light weight electric cart.

CERTIFICATIONS:

- Machine Learning - Coursera (Stanford Online)
- AWS Machine Learning – Coursera (AWS)
- Fundamentals of Deep Learning – Nvidia DLI
- Self-Driving Car (Applied Deep Learning) - Udemy
- Road Dynamics Simulation Modeling – Dorle Controls LLC
- Electric and Hybrid Electric Vehicles – Devise Electronics