

Aadhar Chauhan

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Summary

I am pursuing MS at the University of Washington, Seattle, with a focus on Machine Learning and Computer Vision. I am working as a research assistant at the Autonomous Flight Systems Lab at UW to develop a robust system to detect humans in wilderness search and rescue missions.

Education

University of Washington

Seattle, WA, USA

M.S. IN DATA SCIENCE MECHANICAL ENGINEERING - GPA 3.85/4.0

Sept. 2021 - Present

National Institute of Technology

Kurukshetra, India

B.TECH IN MECHANICAL ENGINEERING - GPA 9.14/10

Jul. 2013 - Jun. 2017

Skills

Programming Python, MATLAB, C
ML Frameworks PyTorch, Tensorflow, OpenCV, NumPy, Pandas, Matplotlib
Developer Tools VS Code, PyCharm

Relevant Experience

Autonomous Flight System Lab (AFSL)

University of Washington, Seattle

RESEARCH ASSISTANT

Jun 2022 - Present

- Fused thermal and visual images (Multi-modal data) utilizing the autoencoder architecture with mutual cross attention at the bottleneck, in an unsupervised manner for the human detection in search and rescue mission.
- Working on developing an end-to-end pipeline for the fusion of misaligned thermal and visual images using Generative Adversarial Network (GAN) architecture.

Mahindra & Mahindra

Mahindra Research Valley, Chennai

SENIOR RESEARCH ENGINEER

Aug 2017 - Jul 2021

- Devised a neural network based DOC (Diesel Oxidation Catalyst) plant model using PyTorch & researched on DOC thermal mapping to control and optimize fuel required to regenerate the DPF to increase the fuel efficiency for the engine.
- Optimized the combustion parameters for Diesel Engines by working on Design of Experiments (DOE) to maximize the temperature of exhaust gas entering DOC (Diesel Oxidation Catalyst) to generate a suitable environment for DPF (Diesel Particulate Filter) regeneration.
- Improved regeneration interval (+100Kms) and fuel efficiency by carrying out winter validation of BS6 SUV at Manali, India. Effectively analysed the collected data using Python and other tools and gave further inputs to solidify the calibration.

Academic Projects

3D-AI-CAMERA-AIDED VTOL-MULTIROTOR VEHICLE CONTROL AND LANDING WITH INSITU- A BOEING COMPANY

Jan 2022 - Jun 2022

- Built an AI-camera(OAK-D) enabled controller with depth perception and object detection to land a multi-rotor VTOL (Vertical Take-off and Landing) vehicle into a moving confined space.
- Worked on an object detection algorithm based on YOLO, to enable the multi-rotor VTOL vehicle to land into the moving platform of 1 square meter area, within 60 sec of being detected.

ASL DETECTION AND LETTER PREDICTION

Feb 2022

- Developed a program to recognize hand gestures in 3D space using a single low-resolution camera to display American Sign Language (ASL) as English Letters in real-time.
- Trained the model on YOLO and used the trained model with OpenCV, to recognize the hand gesture and predicting ASL letter.

Publications

Drop to Idle Test (DTIT)

SAE MOBILUS

- Shankar R., **Chauhan A.**, Krishnan N., and Chandrasekaran V., "Investigation of Temperature Distribution inside the Diesel Particulate Filter (DPF) during the Drop to Idle Test (DTIT) Performed at Steady-State and Worst-Case Driving Cycles," SAE Technical Paper 2021-01-0201, 2021

Extracurricular Activity

Team Accelerons (FSAE Team from NIT Kurukshetra)

Kurukshetra, India

CORE MEMBER & VICE CAPTAIN AT 2017

Jan 2015 - Jun 2017

- Led the Powertrain Department for the vehicle and helped to develop a chain and sprocket drive with a pneumatic gear shifter.
- Achieved an, All India Rank of 31 out of 146 teams in SAE India Supra 2016, with an improved and developed design of the FSAE car.
- Mentored students from various technical colleges in Autokriti 6.0 (A National Level Petrol and Diesel Car Overhaul Workshop) about Petrol and Diesel Engines and Powertrain in vehicles.