Ashwin Nehete

Masters (Research) Student at Carnegie Mellon University
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EDUCATION

Carnegie Mellon University, Pittsburgh, PA — May 2022
Master of Science in Mechanical Engineering - Research — GPA: 4.0/4.0

Indian Institute of Technology, Kharagpur, WB — June 2020
Bachelor of Technology (Honors) in Manufacturing Sciences and Engineering — GPA: 8.61/10.00

SELECTED COURSEWORK

Computer Vision | AIML For Engineers | Robot Localization & Mapping | Planning & Decision Making in Robotics

RESEARCH

Computational Engg. and Robotics Lab, Pittsburgh, PA — *Graduate Student Researcher*
Advisor - Dr. Kenji Shimada — Sept. 2020 - May 2022

- Conducting research for **"Depowdering & Metrology for Additive Mfg. Post Processing"** project sponsored by NASA ULI
- Attained scanned region visualization of an object rotating on a turntable as scanned by robotic arm in gazebo
- Integrated linear stage actuator with ROS and arduino deploying MoveIt! and ROS Control

AGV Research Group, Kharagpur, WB — *Undergraduate Student Researcher*
Advisor - Dr. Debashish Chakravarthy — March 2017 - June 2020

- Studied design elements to oversee structural analysis and simulation of sensor mounts for Mahindra Rise Prize Challenge
- Designed CAD model on Solidworks and conducted structural analysis on ANSYS of Eklavya 6.0 chassis manufacturing pipeline
- Significantly reduced mechanical vibrations induced in the chassis during its driverless run, a major cause of failure of Eklavya 5.0

Laser Material Processing Lab, Kharagpur, WB — *Undergraduate Student Researcher*
Advisor - Dr. Ashish Kumar Nath — Aug. 2019 - May 2020

- Aimed at modelling the effects of various powder deposition strategies on warping that occur during laser metal deposition process
- Proposed a 2D model to predict the heat affected zone and residual stresses at the clad-substrate interface for the first clad layer
- The thesis titled, **"Thermo-Mechanical Modelling of Multi-track Laser Cladding"** was nominated for **Best BTP Award**

Williams Control (Curtiss Wright), Pune, MH — *Summer Intern*
Mentor - Mr. Rajesh Dhekane — May 2019 - July 2019

- Reduced part rejection % by optimization of the automated inspection system for job assembly using image processing techniques
- Studied the root cause analysis and the comprehensive documentation of a complaint regarding abnormal accelerator pedal behaviour
- Executed lever break test, spring force test & worked on Coordinate Measuring Machine to inspect the dimensional accuracy of the job

PROJECTS

Comparative Analysis of SLAM Algorithms in ROS — *Robot Localization & Mapping*

- Leveraged ROS to study visual and lidar SLAM methods through testing on benchmark datasets and evaluation using pose error metrics
- Analyzed the performance of algorithms on outdoor data imported via ROS-Bridge from CARLA autonomous driving simulator

Projecting Future Carbon Emissions with ML Classifiers — *AIML For Engineers*

- Implemented several ML Classifiers to model how future changes in the U.S. light-duty vehicle fleet will affect carbon emission levels
- Accomplished significant reduction in the execution time while maintaining 90% accuracy by using feature engineering

Freeform deformation of a template skull to match a patient's face scan — *Computer-Aided Design*

- Structured FFD algorithm to realize template skull deformation by defining a set of control points to align with a patient's face scan
- The face-skull geometry is used for FEA to simulate custom-fit mask-face interaction to adjust mask design before fabrication

TEACHING EXPERIENCE

Teaching Assistant — *Carnegie Mellon University*

- 24787 - Artificial Intelligence & Machine Learning For Engineers — Feb. 2021 - May 2021
- 24678 - Computer Vision for Engineers — Sept. 2021 - Dec 2021

POSITIONS OF RESPONSIBILITY

Mechanical Team Lead — *IIT Kharagpur*
Society - Autonomous Ground Vehicle (AGV) Research Group — June 2018 - June 2020

- Represented IIT Kharagpur at the **IGVC-2018 (AutoNav Challenge)** held at Oakland University, achieved podium position

PUBLICATION

A. Nehete, G. R. K. Kiran et al., "**Design and Implementation of Autonomous Ground Vehicle for Constrained Environments,**" 2019 Third IEEE International Conference on Robotic Computing (IRC), 2019, pp. 236-239, doi: 10.1109/IRC.2019.00043.

ACHIEVEMENTS

- Awarded by the **MechE Summer 2021 Research Fellowship**, Carnegie Mellon University
- Won the Best Freshers Award in the semi-autonomous robotics event at the **Kshitij - 2017**, IIT Kharagpur
- Ranked in top 0.5 percentile out of 1.5 million students from all over India in **JEE Advanced Examination-2016**

SKILLS

Languages — Python | MATLAB | LaTeX | C

CAD — ANSYS | COMSOL | SOLIDWORKS | Autodesk Fusion

Libraries — NumPy | Pandas | Tensorflow | Pytorch | OpenCV

Operating System — Robot Operating System (ROS)