NAVODIT CHANDRA

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EDUCATION

Carnegie Mellon University (CMU) Pittsburgh, PA
Master of Science in Mechanical Engineering - Advanced Study GPA: 4.0/4.0 Dec 2022

- *Relevant Coursework*: Machine Learning, Deep Learning, Computer Vision, Trustworthy AI Autonomy, Modern Control- Theory and Design, Robot Dynamics and Analysis, Numerical Methods

Indian Institute of Technology Kanpur (IIT Kanpur) Kanpur, India
Bachelor of Technology in Mechanical Engineering (Graduated with Distinction) GPA: 9.1/10.0 May 2021

- *Relevant Coursework*: Robot Motion Planning, Data Structures and Algorithms, Fundamentals of Computing

SKILLS

Programming Languages	Python, C/C++, MATLAB
Libraries	PyTorch, OpenCV, Gym, NumPy, Pandas, Matplotlib, Scikit-learn
Software	Linux (Ubuntu), CARLA, MAPLE, Arduino, Git, LaTeX, AutoCAD

PROJECTS

Carnegie Mellon University Pittsburgh, PA

End to End Learning for Self-Driving Cars Feb 2022 - Apr 2022

- Predicted **steering angle** of a **self-driving car** from images captured by it by developing an **end-to-end** learning pipeline
- Achieved reasonably good performance on training and testing tracks by implementing **CNN** and **CNN-LSTM** neural network topologies

Modeling and Study of Adversarial Attacks in Car Autopilot Mar 2022 - Apr 2022

- Worked in a team of 3 and simulated a **real-life incident** of tricking a self-driving car to misidentify the **moon** as a **yellow traffic light** using a targeted **adversarial attack algorithm**
- Implemented randomized padding and adversarial training as effective **adversarial defensive techniques** to avert such **safety critical** scenarios

Seven Segment Digit Recognition using Computer Vision Mar 2022 - Apr 2022

- Collaborated with 2 colleagues and developed an **algorithm** to take readings from electronic devices depicting decimal numerals in a **seven-segment display** format
- Improved **accuracy** by **7.8%** and **speeded up** process of taking readings by **10.4 times** in comparison to average computer typists by utilizing **image processing** operations and **computer vision techniques**

Identification of Abnormal Breasts as Potential Cancers using Machine Learning Oct 2021 - Dec 2021

- Applied **feature engineering** leveraging **shallow machine learning** classification algorithms in a joint effort with 2 colleagues on Wisconsin Breast Cancer Data Set to predict whether tumors were malignant or benign
- Achieved an **implementation time** of **4.61 ms** and an **accuracy** score of **100%** using a single feature with the K-Nearest Neighbor algorithm, found to be best at making predictions

EXPERIENCE

Mechanical and AI Lab Pittsburgh, PA
Graduate Student Researcher May 2022 - Present

- Estimated **drivable space** and **lane boundaries** in 3D using output of semantic segmentation neural networks
- Determined **distance to impact** of obstacles from self-driving car by applying **stereo depth** to driving scenario

Energy Conversion and Storage Lab Kanpur, India
Summer Undergraduate Research Grant for Excellence (SURGE) May 2019 - July 2019

- Used **parametric study** to study effects of gas velocity, operating current, surface wettability and capillary number on a **PEM fuel cell** operation