NAVODIT CHANDRA

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EDUCATION

Carnegie Mellon University, College of Engineering — Pittsburgh, USA
Master of Science | Specialization in AI and Robotics — Dec 2022
GPA: 3.97/4.00
Selected Coursework: Machine Learning and Artificial Intelligence, Deep Learning, Computer Vision, Trustworthy AI Autonomy

Indian Institute of Technology Kanpur — Kanpur, India
B.Tech. in Mechanical Engineering with minor in Electrical Engineering — May 2021
GPA*: 9.1/10.0* | Graduated with Distinction

WORK EXPERIENCE

Qualcomm — Hyderabad, India
Machine Learning and Computer Vision Systems Engineer — June 2023 - Present

- Developed an algorithm for rendering **shallow depth of field** effects on an all-in-focus video stream using **classical computer vision** for integration in **camera pipeline** and **deployment** on **value-tier chipsets**
- Developed a **convolutional neural network** architecture for **depth estimation** from a single image suitable for meeting **real-time 30 FPS requirements**
- Applied **quantization** on a floating-point deep learning model and achieved a proper balance between **speed-accuracy tradeoff** for **deployment** on **premium-tier chipsets**

SKILLS

Programming Languages: *Proficient*: Python, C++, *Familiar*: SQL, Java, HTML
Libraries: PyTorch, OpenCV, Gym, NumPy, Pandas, Matplotlib, Scikit-learn
Software and Tools: Linux (Ubuntu), CARLA, MATLAB, MAPLE, Arduino, Git

RESEARCH EXPERIENCE

Carnegie Mellon University — Pittsburgh, USA
Graduate Researcher, Mechanical and Artificial Intelligence Lab — May 2022 - Dec 2022

- Refined **image** and **point cloud** feature maps processed by ResNet neural network architecture by introducing **Convolutional Block Attention Module**
- Improved **Driving Score** evaluation metric by **9.5%** by implementing **Additive Attention** for computation of alignment scores in **transformer block** used to combine intermediate image and LiDAR feature maps
- Experimented model performance in simulation by replacing **Self-Attention module** with **Cross-Attention module**

RELEVANT PROJECTS

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
- Accomplished reasonably good performance on training and testing tracks by executing **CNN** and **CNN-LSTM** neural network topologies in a team of 2

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 to estimate **minimum** number of features to predict whether tumors were malignant or benign

Modeling and Study of Adversarial Attacks Arising from Deceiving Perception in Car Autopilot — Feb 2022 - Apr 2022

- Collaborated in a team of 3 and simulated a **real-life incident** of tricking a self-driving car to misidentify **moon** as a **yellow traffic light** deploying a targeted **adversarial attack algorithm**
- Executed **PGD algorithm** to trick autopilot system and carried out adversarial training as an effective **adversarial defensive technique** to avert such safety-critical scenarios

Depth Estimation leveraging Stereo Vision and Generation of 3D Point Cloud — Mar 2022 - Apr 2022

- Found **depth** of pixels from **disparity map** produced by pair of **parallel stereo** images to compute **distance** of objects
- Generated a **3D point cloud** for visualization and verification of correctness of **scaling ratio** used to find depth

PATENTS

- US 19/225,642 Content-Aware Image Filtering Operations: **Navodit Chandra**, Gururaj Bhat, Ashish Medewar, Mayukh Roy. Filed on 02-Jun-2025
- US 18/922,132 Kernel Based Blurring: **Navodit Chandra**, Gururaj Bhat, Ashish Medewar. Filed on 21-Oct-2024
- US 18/783,248 Image Processing Using Kernels: **Navodit Chandra**, Gururaj Bhat, Ashish Medewar. Filed on 24-Jul-2024

AWARDS AND HONORS

- Impact Award: Recognized for purposeful innovation at Qualcomm — Sept 2024
- Qualcomm Distinguished Solution Recognition: For exemplary innovative solutions to important problems — Jan 2025