

Vedant Mundheda

878-834-9370 | mundheda.vedant@gmail.com | [Linkedin](#) | [Github](#) | [Google Scholar](#)

EDUCATION

Carnegie Mellon University (CMU)

MS in Robotics (Research)

GPA 4.11/4.00

Aug. 2023 – May 2025

IIIT Hyderabad

Integrated B. Tech + MS in ECE

GPA 8.22/10

Aug. 2018 – May 2023

- Received **Dean's List Award** for excellence in academics.

SKILLS

Selected Coursework: LLM Systems · Generative AI · Visual Learning and Recognition · Reinforcement Learning · AI & ML · Learning for 3D Vision · Computer Vision

Languages & Platforms: Python, C++, MATLAB, CUDA, Pandas, NumPy, PyTorch, TensorFlow, Keras, Matplotlib, sklearn, OpenCV, React, Node.js, llama.cpp, AWS, JAX

Teaching Assistant: Robot Dynamics and Control, UAV Design, Robotics Workshop, VLSI Design

EXPERIENCE

Auton Lab, Carnegie Mellon University

Research Assistant

Aug. 2023 – Present

Reinforcement Learning, LLMs, Sim2Real

- **Autonomous Driving:** Developed a novel modified **PPO**-based controller for end-to-end perception, trajectory planning, and control of off-road autonomous vehicles improving navigation performance from SOTA by **200%**.
- **Few-shot Sim2Real:** Leveraged natural language descriptions from **LLMs** to transfer policies onto real vehicles, using task-relevant semantics as a unifying signal across domains.
- **Dynamics modelling:** Leveraged **GPT** architecture for Self-supervised learning to robustly model complex vehicle dynamics from real-world data, employing Attention mechanism and **Sequence modeling**.

JP Morgan Chase & Co.

Data Science Research Intern

May 2022 – Aug. 2022

Machine Learning, Explainability, Data Analysis

- Developed a model-agnostic pipeline for **Interpretability** of ML models (Neural Networks, Random Forest, XGBoost, SVM, RNN) and data (financial datasets, emails) using SHAP values and data analysis methods.
- Deployed this tool as an internal **Python library** for machine learning teams, enhancing data and model interpretability and reducing model deployment time by **80%**.

PUBLICATIONS

Teacher-guided Reinforcement Learning for Off-road Autonomous Driving

ICML'2025

Vedant Mundheda, Zhouchonghao Wu, Jeff Schneider (Under Review)

Planner-guided Off-road Autonomous Driving

AAAI-W'2025

Vedant Mundheda, Zhouchonghao Wu, Jeff Schneider

Predictive Barrier Function based Control for Safe Trajectory Tracking of an Aerial Manipulator

ECC'2023

Vedant Mundheda, Karan Mirakhor, KS Rahul, Harikumar Kandath, Nagamanikandan Govindan

PROJECTS

Multi-room Rearrangement using Common-sense Knowledge 📄 | *Large Language Models, Reinforcement Learning*

Developed a POMDP-based planner for embodied agents, utilizing visual input, large language models, and deep RL to optimize object search and rearrangement in cluttered environments.

Trajectory generation for autonomous driving | *Diffusion Models, Generative AI, Machine Learning*

Designed a method for trajectory denoising to optimize cost functions to generate waypoints for autonomous driving.

CUDA Accelerated Physics simulation for autonomous robots | *CUDA, Reinforcement Learning*

Developed a NN-based physics simulator using CUDA-aware MPI and cuDNN to process multiple parallel environments, achieving 8k transitions/sec on A6000 GPUs and **41%** faster policy updates via parallelized Bellman backups.

ACHIEVEMENTS

- **Runner-up Qualcomm Hackathon** 🏆: Developed NLP method with **99%** accuracy for article similarity.
- **Runner-up National Artpark Challenge** 🏆 📄: End-to-end stack for mobile robot for perception and planning.
- **JEE Mains and Advanced:** Top 0.2% Nationally for Engineering entrance exam.