MALAV PATEL

Chicago, IL | malavpatel2022@u.northwestern.edu | (630) 359-1224

EDUCATION

Georgia Institute of Technology (Aug 2022 – Present); Atlanta, GA
PhD student Aerospace Engineering
Northwestern University (Sept 2018 – June 2022); Evanston, IL **Graduation Date: 06/15/2022**
Bachelor of Science Mechanical Engineering with Aerospace Concentration
Bachelor of Arts Physics
Bachelor of Arts Integrated Science
Coursework: Deep Learning, Reinforcement Learning, Linear Algebra, Statistics, Classical Mechanics and Electrodynamics, Quantum Mechanics
Github: https://github.com/Malav-P
Undergraduate GPA: 3.99/4.0

SKILLS

Computer Skills/Programming Languages

- Proficient in Python, C, C++, MATLAB, Julia
- CUDA, BLAS
- Image Analysis – OpenCV
- Build Tools – CMake, Make

SELECTED PROJECTS, AWARDS AND ACHIEVEMENTS

Convolutional Neural Network | (December 2021- Present)

- From scratch, designed a library in C++ for the implementation of a convolutional neural network. Implemented. Trained model on MNIST dataset to 97.58% accuracy. Accelerated computations with BLAS routines
- Accelerated training 3x via GPU programming using CUDA.
- Interfaced built library with OpenCV to predict digits shown on a live video feed.

Presidential Fellowship | (August 2022 – Present)

- Awarded $5000 every academic year for being top 10% of incoming class.

Summer Undergraduate Research Grant | (June 2020 – Sept 2020) & (June 2021 – Sept 2021)

- 2-time recipient of Northwestern SURG worth $3500 for research in soft matter systems.

EXPERIENCE

Space Systems Optimization Group - *Graduate Research Assistant*

- Utilizing/developing novel optimization schemes for satellite constellation design in cislunar space.
- Working on Reinforcement Learning Approaches for sensor tasking in cislunar space.

3i Space Dynamics Laboratory (September 2021 - March 2022) - *Undergraduate Researcher*

- Working remotely to develop a trajectory design project inspired by biannual GTOC competition.

Driscoll Physics Lab | (December 2019 – June 2021) - *Undergraduate Researcher*

- Modeled in SolidWorks and manufactured a device for stretching polystyrene particle embedded thin films
- Analyzed particle trajectories in a fluid using image processing package, trackpy, in python.

Chamberlain Group Internship | (June 2021 – September 2021)

- Used Tensorflow package to analyze data taken on production line gearboxes to determine production faults. Measurement of torque and power input into gearboxes over time used as input layer to deep learning network. Created model 88 percent accurate.

PUBLICATIONS

- Cislunar Satellite Constellation Design Via Integer Linear Programming