

Neel Joshi

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EDUCATION

Carnegie Mellon University

Master of Science in Mechanical Engineering - Advanced Study

QPA: 3.58/4.00

Relevant Coursework:

- Introduction to Machine Learning
- Robot Dynamics and Analysis
- Trustworthy AI Autonomy
- Computer Vision for Engineers

Pittsburgh, PA

Dec 2022

Manipal Academy of Higher Education [MAHE]

Bachelor of Technology in Mechanical Engineering

CGPA: 8.90/10.00

Manipal, India

Nov 2019

SKILLS

Programming Languages: *Basic* - C++; *Intermediate* - Python, R

Application Software: *Advanced* - Minitab, AutoCAD, SolidWorks, ANSYS; *Intermediate* - CATIA, MATLAB

Languages: English (Fluent), German (Basic), Hindi (Native) and Marathi (Native)

EXPERIENCE

- Developed C++ programs on AWS cloud9 platform accessed by Bash prompt
- Currently building a user-friendly deep learning library in Python (inspired from PyTorch)
- Collaborating with 1 BS and 3 MS students in an ongoing project focused on controlling of soft robotic actuator prototype derived from Chameleon's tongue with safe reinforcement learning
- Studied effect of fine tuning on face detection algorithm with a combination of Tesseract and OpenCV library

INTERNSHIPS

Indian Institute of Technology Bombay

Intern

Mumbai, India

Jan - Aug 2019

- Designed a novel Thermal Barrier Coating (TBC) withstanding temperatures of around 2000°C for larger intervals of exposure to toxic environment
- Conducted mechanical and thermal tests on different compositions to optimise for high temperature strength in TBCs

PROJECTS

Carnegie Mellon University

Pittsburgh, PA

Controller Design for Unmanned Vehicles Simulation

Nov 2021 – Dec 2021

- Programmed a PID and infinite horizon Linear Quadratic Regulator (LQR) using discretized and linearized vehicle dynamics
- Executed A-star path planning algorithm with extended Kalman Filter SLAM to guide autonomous vehicle around obstacles
- Analysed performance of Model Reference Adaptive Controller (MRAC) against LQR after sudden loss of thrust in quadrotor

Dense Point Cloud Rendering for 3D Reconstruction

Nov 2021 – Dec 2021

- Collaborated with 3 classmates for developing Structure from Motion model with modular Python scripts
- Implemented Quasi Dense Matching from scratch by best-first propagation algorithm as part of the multi-step process

Individual Participation

Data Centric AI Competition

Jun 2021 – Sep 2021

- Improved accuracy of ResNet50 on Roman MNIST dataset from 0.64421 to 0.80702 (top contestant at 0.86570) using image augmentation and logical reasoning while maintaining reproducibility with Python scripts and Git for version control

Manipal Academy of Higher Education [MAHE]

Manipal, India

Heat Treatment of Medium Carbon Low Alloyed Steels

Jul 2017 – Nov 2018

- Devised custom heat treatment cycles improving strength by 40% with Spheroidization in as-brought structural steels
- Published a paper on outcomes of above research project: "Mechanical Properties - Morphology Corroboration of Spheroidized AISI1040 Steel.", Materials Research Express 6.8 (2019): 0865g8. Web

LEADERSHIP

Class Representative (MAT 5286), MAHE – Manipal, India

Jan - May 2018

- Co-ordinated between fellow classmates and professor for scheduling assignments and activities while managing timely delivery of study material to fellow students

Volunteer, Medical Camp for Malnourished Children, Rotary Club of Pimpri Town – Pune, India

Jan - Jun 2013

- Co-ordinated between doctors and the Rotary team, maintained order by keeping patients and families in linear queues, handled records books and had an occasional click on camera

HONORS AND AWARDS

Facebook Certified Digital Marketing Associate

Apr 2021

Lean Six Sigma Yellow Belt

Nov 2019