

# 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)

## PROFESSIONAL EXPERIENCE

### M/s Saphalya E Motors

Team Lead (Self - Employed)

- Instructed a team of 3 technicians for maintenance of 3-wheeler EVs and organised on site emergency visits
- Reduced average waiting time for customers, achieving break-even within 3 months after civil lockdown of 2020

Pune, India

Jan - Jul 2021

## INTERSHIPS

### Indian Institute of Technology Bombay

Intern

- 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

Mumbai, India

Jan - Aug 2019

## PROJECTS

Carnegie Mellon University

### Controller Design for Unmanned Vehicles Simulation

- 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

Pittsburgh, PA

Nov 2021 – Dec 2021

### Dense Point Cloud Rendering for 3D Reconstruction

- 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

Nov 2021 – Dec 2021

Individual Participation

### Data Centric AI Competition

- 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

Jun 2021 – Sep 2021

Manipal Academy of Higher Education [MAHE]

### Heat Treatment of Medium Carbon Low Alloyed Steels

- 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

Manipal, India

Jul 2017 – Nov 2018

## LEADERSHIP

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

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

Jan - May 2018

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

- 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

Jan - Jun 2013

## HONORS AND AWARDS

**Facebook Certified Digital Marketing Associate**

**Lean Six Sigma Yellow Belt**

Apr 2021

Nov 2019