

NEEL JOSHI

ndjoshi@alumni.cmu.edu ♦ +91 94225 23557 ♦ www.linkedin.com/in/neeldjoshi ♦ https://neeldjoshi97.github.io/website/

EDUCATION

Carnegie Mellon University

Master of Science in Mechanical Engineering - Advanced Study
Concentration: Robotic and Control Systems

Pittsburgh, PA

Dec 2022

Manipal Academy of Higher Education

Bachelor of Technology in Mechanical Engineering

Manipal, India

Nov 2019

SKILLS

Languages: Python, C++, R, Javascript, HTML5, CSS3, MySQL
Frameworks: PyTorch, TensorFlow, Scipy, scikit-learn, ROS, OpenCV, Git, AWS, GCP
Interests: Light Comedy, Mystery Novels, Quantum Computing
Linguistics: English (Fluent), German (Basic), Hindi (Native) and Marathi (Native)

EXPERIENCE

Self-Employed at Small-Scale Industry

Dec 2023 – Present

Consultant for A.I. and Automation

Pune, India

- Crafted vision to scale company from micro to mini in size, capacity, and technical expertise suited for Industry 4.0
- Established business analytics department for reducing throughput and inventory, led development of demand forecasting system based on artificial intelligence for more than 6000 unique products
- Improved sales by 15% per month, market share by 5% by number of customers, profit margin by 8% overage over each item

Jefferson Lab

Mar 2023 – Dec 2023

Mechanical Engineer I

Newport News, VA

- Contributing as a team member for flagship Electron-Ion Collider project to be built at Brookhaven National Lab
- Optimised heat transfer in beamline-vacuum-side absorber for 591 MHz accelerator cavity; reported results to senior engineers, staff scientists along with data analysis, created documentation for the same
- Supported continuous improvement design processes with my software skills in building digital models, time-stepping simulations in Python that were not possible using proprietary FEA software

Musculoskeletal Biomechanics Lab

Jun 2022 – Aug 2022

Graduate Research Assistant

Pittsburgh, PA

- Researched on state-of-the-art time series models for human activity recognition achieving 98.2% accuracy on IMU data
- Fine-tuned more than 50 architectures in PyTorch for generalizability on unseen sparse data from patients with ACL injury
- Edited train and test datasets to account for sensor frame placement and frame rates at the time of recording
- Presented analysis with confusion matrices, correlation heatmaps, patient gait characteristics using Seaborn, Matplotlib

PROJECTS

Carnegie Mellon University

Pittsburgh, PA

Quantum Computing | Qiskit, AWS, Graph Algorithms, Portfolio Optimisation

Sep 2022 – Dec 2022

- Learnt to solve graph problems on Qiskit, AWS Braket with multi-fold savings in time
- Used algorithms such as QAOA, quantum annealing, quantum Fourier transform and compared performance with open source libraries such as Pyomo.
- Implemented super-dense coding protocol for secure communication devices, prototyped on multiple qubits

Innovation for New Technology | IP Strategy, Law, Machine Learning

Sep 2022 – Dec 2022

- Practiced innovation techniques for company executives to maximize patent protection and licensing value of new products
- Gained exposure to all aspects of intellectual property, licensing, and corporate IP strategy
- Performed patent claim analysis, competitive analysis of intellectual property; drafted patents, licenses
- Designed around actual patents, studied legal and business aspects for strategic use of intangible assets using decision trees

Trustworthy AI | Python, OpenAI Gym, GCP

Jan 2022 – Mar 2022

- Generated adversarial attacks for deep networks; estimated robustness by visualizing layers while under attack
- Used Model Based Reinforcement Learning techniques for training autonomous vehicle (AV) agent to park in safe manner
- Evaluated proposed solutions against safety benchmarks for trustworthy AI along with AV safety guidelines

Controller Design | Python, Dynamic Programming, Linear Algebra

Nov 2021 – Dec 2021

- Calibrated PID and infinite horizon Linear Quadratic Regulator (LQR) based on discretized and linearized vehicle dynamics
- Executed A* path planning with extended Kalman Filter SLAM to guide vehicle around obstacles in Webots simulator
- Analysed performance of Model Reference Adaptive Controller (MRAC) against LQR after sudden loss of thrust in quadrotor

CERTIFICATIONS

Data Science Specialisation with R
Lean Six Sigma Yellow Belt

Johns Hopkins University
TU Munich