

# NEEL PAWAR

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## EDUCATION

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- Carnegie Mellon University (CMU)** Dec 2022  
Master of Science, Mechanical Engineering - Research (course, thesis focus: Machine Learning). GPA-3.94/4
- *Courses – deep learning, advanced computer vision, advanced natural language processing, advanced computation in C++, machine learning, distributed systems, numerical methods in engineering.*
- University of Mumbai** Jun 2018  
Bachelor of Engineering, Mechanical Engineering. GPA-8/10

## SKILLS

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**Development:** Python, PyTorch, TensorFlow, Sklearn, XGBoost, OpenCV, Pandas, SQL, C++, OpenGL, JS, CUDA.  
**Deployment:** Git, Google Cloud Platform, AWS EC2, BigQuery, Kubeflow, Docker, TFX, Vertex AI.

## EXPERIENCE

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- Research Assistant (Machine Learning thesis) | Computer Science Department, CMU** Sep 2021 - Present
- Led 3 machine learning software projects in explainable NLP for K12 (*using PyTorch, Tensorflow JS, HTML*).
  - Led creation, design, development of 2 ML projects ground up. Mentored 2 projects in ML development.
  - Co-published a conference paper, AAAI 22 on interactive word embeddings. Created a MobileBERT custom question answering NLP model with interactive visualization of attention, logits and embeddings.
  - Awarded a full-tuition scholarship, statistically received by 1/100 MS students annually.
- Machine Learning Engineer Intern | Spotify** Jun 2022 - Aug 2022
- Led data handling, deep learning design, productionization of a sequential time-series model on 170million Spotify users (*using BigQuery, Python, TensorFlow, PyTorch, Google Cloud Platform, Kubeflow, Vertex AI*).
  - Developed end-to-end ML lifecycle: data querying, analysis, neural net design, GPU training, optimizing, deploying to production pipelines. Achieved a 50% AUC improvement over existing XGBoost.
- Machine Learning Engineer Intern | Panoskin** Apr 2022 - Jun 2022
- Created probabilistic classifiers on 3D computer vision data (using Python, XGBoost, RandomForest, SKLearn, 360 images, Google Map APIs, IMU), engineered features, optimized machine learning models.
  - Achieved 91% test accuracy on 360 image data, leading to reliable Google Map 3D tours.
- Research Fellow (Deep Learning) | College of Engineering, CMU** Jun 2021 - Aug 2021
- Led design of 3 physics informed deep neural networks (*using Python, TensorFlow*) with 99.95% test accuracy on 2-D differentials at 1/30th of data compared to MATLAB, with error reduction of 19%.
  - Applied research techniques of gradient-based and weighted boundary loss to improve performance.
- Research Student (Computer Vision) | CERLAB, CMU** Jan 2021 - Jun 2021
- Deployed a CNN neural network for 3D bounding box detection at 95% test accuracy on KITTI dataset, (*using PyTorch, OpenCV, YOLOv3, MS-CNN*) for autonomous navigation using vehicle pose detection.
- Machine Learning Instructor | Camp K12, Inspirit AI** Sep 2020 - Jan 2021
- Mentored a team of 10 undergraduates for a content filtering recommendation system on Spotify data APIs, applying biLSTM models to audio and music data. Led 50 school students for ML/AI foundations.
- Design / Controls Software Engineer | PMV Electric Pvt. Ltd.** Jun 2018 - Sep 2020
- Designed an electric vehicle cruise control system (*using Python, C++, PID controls, Carla server APIs*).
  - Created a vehicle simulation environment and built a cruise control model using PID control techniques, tuned and deployed it using server APIs. Implemented model on controller, successfully tested on vehicle.

## RELEVANT ACADEMIC PROJECTS

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- Torch library design, DL paper implementation on big data, research project** Sep 2021 - Dec 2021
- Built a Torch library supporting CNN, RNN, GRU. Implemented vision, speech, attention papers for image verification, speech-to-text (*in Python, PyTorch, AWS*). Capstone: StarGAN emotion voice conversion.