Saagar Parikh

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EDUCATION

Carnegie Mellon University — Pittsburgh, PA
Master of Science in Electrical and Computer Engineering — Dec 2024
Relevant Courses (ongoing): Machine Learning for Signal Processing, Speech Recognition and Understanding

Indian Institute of Technology Gandhinagar (IITGN) — Gandhinagar, India
Bachelor of Technology in Electrical Engineering with Minor in Computer Science and Engineering — Jul 2023
Relevant Courses: Machine Learning, Probabilistic Machine Learning, Digital Signal Processing, Probability and Random Processes, Microprocessors and Embedded Systems — GPA: 9.08/10 (Rank 2)

TECHNICAL SKILLS

Programming Languages: Python, C, Verilog, Assembly, Dart

Utilities: PyTorch, Keras, Tensorflow, JAX, Flax, GPyTorch, OpenCV, Matplotlib, Numpy, Pandas, MATLAB, Git, GitHub, STM32, Arduino, MeshLab, Flutter, Xilinx Vivado, LTSpice, LabVIEW

EXPERIENCES

California Institute of Technology — Pasadena, CA
Summer Research Intern ○ Automated Active Learning for ZTF Data — May 2022 - Jul 2022

- Formulated a robust active learning framework with automation in selecting the data points to be labeled to reduce human efforts by 90% and improve the performance of existing classification models such as DNN and XGBoost.
- Analyzed billions of astronomical sources and their time-series representation of varying intensities (light curves) from the Zwicky Transient Facility (ZTF) survey and used API queries and data visualization for preprocessing tasks.

Indian Institute of Technology Guwahati — Guwahati, India
Summer Research Intern ○ Comprehensive study of Face R-CNN — May 2021 - Jul 2021

- Created the Face R-CNN network from scratch in PyTorch after reviewing, analyzing, and modifying popular object detection models such as Faster R-CNN by introducing a revised loss function and a multi-scale training strategy.
- Examined prominent pre-existing deep learning neural networks such as VGG, LeNet, AlexNet, and FaceNet and learned how they materialized into a new face detection network called Face R-CNN.

PROJECTS

BIJAX: Bayesian Inference in JAX — Aug 2022 - Apr 2023
Sustainability Lab ○ Research Project — Gandhinagar, India

- Contributed to an open-source Python library with a unified and transparent approach for various distribution approximation techniques such as Laplace Approximation and Markov Chain Monte Carlo (MCMC) sampling.
- Reinforced the approximation methods by adding extensive functionalities such as Full rank, Low rank, Mean Field, Subnetwork, Last Layer, and Kronecker-Factored Approximate Curvature (KFAC).

Deep Gaussian Processes for Air Quality Inference — Jan 2021 - Apr 2022
Machine Learning ○ Course Project — Gandhinagar, India

- Investigated the current state-of-the-art Gaussian Processes model and assessed the need for the inference of sparse air quality monitoring stations at the unmonitored locations in the Beijing spatio-temporal air quality dataset.
- Achieved comparable results using Deep Gaussian Processes with a simple kernel and Deep Kernel Learning methods to capture domain knowledge by extracting hierarchical features. **Extended abstract published at YRS, CODS-COMAD 2023**

PointResNet: Residual Network for 3D Point Cloud Segmentation and Classification — Aug 2021 - Nov 2021
Computer Vision, Imaging, and Graphics Lab ○ Research Project — Gandhinagar, India

- Designed a residual-block based novel architecture that outperformed the baselines by 4% for the segmentation task on ShapeNetPart dataset and produced comparable results for the classification task on the ModelNet-40 dataset.

3D position estimation of a robotic manipulator arm using Microsoft Kinect sensor — Jan 2021 - Apr 2021
SMART Lab ○ Research Project — Gandhinagar, India

- Synthesized colored point clouds using the image and depth data from the Kinect sensor's RGB and IR cameras.
- Obtained the precise location of the arm using image processing and camera calibration techniques on the colored images.

ACHIEVEMENTS AND EXTRACURRICULARS

- Selected for **Research Week with Google 2023** consisting of lectures and discussions in AI Research.
- Honoured with **Dean's List** for outstanding academic performance in all the eligible semesters. — IITGN, 2019 - 2022
- Led a team of 130+ students to coordinate more than 10 events at IITGN's cultural festival. — 2022 - 2023