JANAVI KHOCHARE

Atlanta, Georgia, USA • +1 470-449-9182 • janavikhochare99@gmail.com • https://www.linkedin.com/in/janavikhochare

EDUCATION

Georgia Institute of Technology, Atlanta, Georgia *Aug 2022 - May 2024*
- M.S. in Electrical and Computer Engineering, specializing in Machine Learning. GPA: 4.0/4.0
- Courses: Systems for ML, Online Decision Making in ML, Statistics, ML, Deep Learning, , Adv. Programming (Parallel Programing), etc.

Veermata Jijabai Technoligcal Institute, Mumbai, India *Aug 2017 - May 2021*
- Bachelor of Technology in Electrical Engineering. Research Assistant at VJTI's Center of Excellence. GPA: 9.01/10

WORK EXPERIENCE

ML Intern, Norfolk Southern, Atlanta, Georgia | Statistics, ML, Data Analysis, Spark, Python *May 2023 - Aug 2023*
- Developed a robust system for detecting temperature spikes in railroad hot boxes, constructing the **Peak Signal Detection Algorithm** which gave **98% accuracy** in detecting peaks.
- Performed various **statistical** test on signal data & built a short-term bearing temperature **forecasting** framework.

Data Scientist, Purplle.com (E-commerce Beauty), Mumbai, India | Personalization, Clustering, ML *July 2021 - July 2022*
- Personalized the experience for **7 million active Purplle users** through a feature-based clusters (Collaborative filtering) of users for product recommendations, resulting in a **3% uplift in CTR** (Click-Through Rate) **& CTB** (Click-Through Buy rate) and a **2.5% lift in orders**.
- Addressed the **cold start** & **product discovery challenges** by clustering, **reinforcement learning (explore vs exploitation),** feature engineering, **A/B testing** and deployed a **real time end-to-end** recommendation system **framework** to meet the SLO attainment.
- **Improved** Best Seller algo. by **adding** feature imp. using **XGBoost**, leading in **2%** boost in widget **CTR** (55 to 57) & **CTB** (17 to 19).

SKILLS

- **Programming:** Python, C++, SQL, MySQL, R, CUDA, MATLAB, MPI, JavaScript, HTML, CSS.
- **Framework**: Pytorch, Pandas, TensorFlow, Keras, Jupyter notebooks, Scikit-learn, Matplotlib, NumPy, SciPy, Scikit-learn.
- **Tools/Cloud Infrastructure**: Git, Git CI/CD, Spark, SQLite, Tableau, Docker, BigQuery, Flask, GCP, AWS, Linux.

PROJECTS

Delta compression for continual LLMs updates on edge devices / *ML for Edge, NLP, LLM, Quantization* *Sep 2023 - Current*
- **Fine-tuned** the **Open Llamma** model on the **Trace** dataset for **continual learning** (CL) in **five tasks**: Code Completion, Mathematical Reasoning, ScienceQA, FOMC (Classification), and Meeting Bank.
- Applied **quantization** techniques (**GPTQ, ExLlamaV2**) to both base and fine-tuned models, with **GPTQ** identified as **optimal** for preserving **model quality and compression ratios**.
- Calculated **deltas** for quantized models during CL, yielding **5-7% non-zero** values. Encoded and utilized these deltas as updates in LLMs.
- Currently working on comparing the **LoRA fine-tuned quantized** models and **full fine-tuned quantized** models in terms of efficiency.

Alzheimer Detection and Progression on ADNI | *Multimodal data, Predictive Models & Risk Analytics* *March 2023 - April 2023*
- Constructed a **3D CNN** model, using RESNET18 architecture, to attain an impressive F-1 score of **88.58%** in **Alzheimer's detection**.
- Implemented an **Encoder-decoder** network with TCN & BiLSTMs for progression, yielding an F-1 score of **75%** for **risk prediction**.

Audio and Video Deepfake Detection | *Audio Processing, Computer Vision, Transfer Learning, TCN, GPU* *Aug 2020 - May 2021*
- Designed **two** robust systems leveraging **Nvidia DGX-1** to effectively discern real and fake audio and video content.
- Implemented **two methods** for distinguishing a **deepfake audio**: a feature-based approach applying ML algorithms and an image-based approach employing DL algorithms, notably TCN, attaining an impressive **92% test accuracy**.
- Leveraged **Transfer Learning** to extract video-data features & implemented LSTM & TCN models for detection of **fake videos**.
- **Paper:** A Deep Learning Framework for Audio Deepfake Detection, Springer Journal.

DeepWind: Wind speed forecasting (Time series forecasting) | *Feature Engineering, Mesh Transform, FFT, TF* *Jan 2020 - April 2020*
- Led a high-performing team to achieve precise wind speed forecasts (**RMSE of 5.74**) for Indian weather stations. Employed stacked ensemble learning with LGBM and LSTM networks, leveraging advanced techniques like Miss Forest, unique feature representation for recent data emphasis, and FFT with Digital Filters for outlier removal.
- Presented project to panel of 5 industry experts, at "CDAC - NVIDIA AI Hackathon", ranked **top 10** across India among **350+ teams**.
- **Paper:** A Short-term Wind Forecasting Framework using Ensemble Learning for Indian Weather Stations, IEEE INOCON.

Anomaly Detection and Interpretation in Gas Pipeline Systems | *TF, Autoencoders, Explainable AI* *June 2019 - Dec 2019*
- Built an exceptional **Autoencoder** (AE) NN for **Intrusion Detection (Rare event)** on **SCADA gas pipeline data (from PLCs),** surpassing traditional ML algorithms in recognizing suspicious attacks within **SCADA** data operated for gas pipeline system control.
- Deployed two **Explainable AI** techniques, LIME & LRP, to interpret the AE model trained on SCADA gas pipeline system data, effectively identifying potential threats, and enhancing system security.
- **Paper: 1)** A Semi-Supervised Approach for Detection of SCADA Attacks in Gas Pipeline Control Systems," IEEE-HYDCON.
       2) Interpreting a Black-Box Model used for SCADA Attack detection in Gas Pipelines Control System, IEEE INDICON.