Gopal Chitalia

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Education

Purdue University August 2023 – December 2024
Graduate Student in CE *GPA: 3.94/4.0*

IIIT-Hyderabad August 2015 – July 2019
Bachelors of Technology And Masters By Research in IT *GPA: 8.03/10.0*

Coursework & Technical Skills

Relevant Coursework: Data Structures & Algorithms, Operating Systems, Linear Algebra, Computer Vision, Reinforcement Learning, Database Systems, Information Retrieval and Extraction, Optimization Methods, SSAD
Languages: Python, C/C++, Java, Matlab, R, SQL, Bash, JavaScript/TypeScript, HTML/CSS, NoSQL
Libraries: Tensorflow, Keras, Pytorch, OpenAI Gym, Pandas, CVXpy
Framework & Tools: Git, Latex, Django, Postman, FastAPI, AWS, Docker, PyTest

Publications

1. **Gopal C.,** Manisa P., Vishal G., Saifur R., Robust short-term electrical load forecasting framework for commercial buildings using deep recurrent neural networks, ***Applied Energy***, Volume 278, 2020 – Link
2. Pipattanasomporn, M., **Chitalia, G.**, Songsiri, J. et al., CU-BEMS, Smart building electricity consumption and indoor environmental sensor datasets. ***Nature Scientific Data***, 241, 2020 – Link

Experience

Machine Learning Engineer — Growthworks.ai Boston | Remote - April 2022 – July 2023
- Managed a proof-of-concept project utilizing different data analytics, ML methods to do real-time electricity market prediction at California-ISO region achieving an accuracy improvement of **15%**
- Engineered a scalable data pipeline with Apache Spark and Python, cutting data processing latency by **20%**.

Data Scientist — ClevAir Stavenger, Norway - March 2020 – March 2022
- Led the implementation of advanced deep learning models, utilizing **LSTM, transformers with attention** to forecast HVAC and building-level energy consumption, achieving **30%** savings
- Designed an in house algorithm to automate sensor clustering, resulting in a **50%** reduction in time and manual work for the delivery team

Software Developer Intern — Progress Software Hyderabad, India - Aug. 2016 – Dec. 2016
- Designed and implemented the back-end architecture for the mobile app, ensuring seamless data synchronization with the web counterpart; achieved system uptime of 99.9% through rigorous testing and optimization processes.
- Technologies Used: **NativeScript, TypeScript, HTML/CSS/JS, Postman**

Research Internships

MDLab | Purdue University August 2023 – Present
Research Assistant | *Advisors: Jan-Anders Manson, Junjie Qin* *West Lafayette, IN, USA*
- Developed a transfer learning framework for predictive maintenance in induction motors at Wistron, reducing downtime by 20%
- Finetuned LLMs (TimeGPT, Lag-LLaMA, Moirai) for day-ahead electricity price prediction, improving energy allocation efficiency by 10%.

Smart Grid Research Unit | Chulalongkorn University July 2019 – March 2020
Research Intern | *Guide: Manisa Pipattanasomporn* *Bangkok, Thailand*
- Architected a scalable forecasting webserver on AWS using FastAPI and Docker; streamlined data processing, resulting in the ability to handle 1M+ data points while maintaining 99.9% uptime.
- Developed a robust **deep learning based framework** for building-level load forecasting, improving the results by **20-45%**. Resulting work got published in Applied Energy
- Assembled a high-quality dataset for electricity consumption and indoor environmental monitoring in buildings; this comprehensive dataset published in Nature Scientific Data is widely referenced in industry publications.

Major Projects

Variational Autoencoder (VAE): Built and optmized a VAE neural network for image generation, conducting comparative analysis with varied parameter adjustments on MNIST, CIFAR10, and CALTECH101 datasets Link

Wikipedia Search Engine: Engineered a scalable and efficient search engine processing 70GB of Wikipedia data, implemented in Python with diverse indexing and ranking techniques to deliver top-relevant documents for given query

AI Agent for Ultimate Tic-Tac-Toe: Created an AI agent for Tic-Tac-Toe utilizing Monte Carlo Search Link