KETULKUMAR POLARA

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EDUCATION

Master's of Science in Information Technology, Florida International University — April 2023
Focus: Machine Learning, Software Engineering, Advance Special Topics — GPA: **3.82**/4.0

Bachelor's of Science in Information Technology, Florida International University — Dec 2020
Focus: Data Structures and Algorithms, Databases, Operating Systems — GPA: **3.32**/4.0
Minor: Entrepreneurship

EXPERIENCE

Machine Learning Research Assistant — Aug 2021 - Current
Energy Systems Research Lab (FIU) — *Miami, FL*

- **Anomaly Detection:** Convolution Neural Network followed by LSTM algorithm for time-series fault detection, location, and classification on Transmission lines.
  - Carried out in-depth research on the use of deep learning in fault location and classification.
  - Created data collection (AWS IoT Core, S3) and data preprocessing (AWS EMR, S3) pipeline, trained CNN-LSTM (AWS SageMaker) model with accuracy of 93%, deployed trained model and Implemented inference pipeline (AWS SageMaker Endpoint)
- Collaborated with peers to design and develop Time-series database (InfluxDB, MongoDB) to capture data from 200 data points using RTI Data distributions service (Similar to Apache Kafka) for smart grid testbed allowing simpler data collection with significantly smaller code base.
- Researched, designed and implemented a transformer-based hourly energy consumption and solar forecasting model on smart grid testbed, enabling optimal energy management.

Data Engineer, Intern — Mar 2020 - Dec 2020
Apexx Strategies — *Reston, Virginia*

- Maintained data quality by developing deep understanding of data sources, and implementing data standards, resulting in 30% reduction in data quality issues.
- Developed a pipeline to perform full loading of data from OLTP source to Azure Data Lake in CSV format using Azure Data Factory, resulting in a 40% reduction in processing time.
- Collaborated with data scientists to implement machine learning models resulting in a 15% increase in revenue.

RESEARCH PROJECTS

Title: Virtual Machine Allocation based on CPU and Memory utilization (PyTorch)

- Researched and reviewed literature on the application of machine learning for virtual machine (VM) allocation.
- Defined two-stage machine learning model, a SVM based classifier to select right physical machine for VM allocation and multivariate LSTM with time2Vec layer to forecast VM's CPU and memory usage.
- Trained defined models on GWA-T-13-Workload-traces Dataset and evaluated results using confusion matrix and MSE respectively to measure model performance.

Title: Automated Image Captioning (PyTorch)

- Defined a Encoder-Decoder Machine Learning model, a Resnet152 based feature extractor, and an LSTM based text generator to provide a unified solution for object classification and text generation.
- Trained the Machine Learning model on the VizWiz Dataset using multiple GPUs to predict and generate a phrase describing the image and analyzed results with METEOR and BLEU scoring to measure the model performance

TECHNICAL SKILLS

Programming Languages: Python, R, Java, SQL
Databases: SQL Server, MySQL, InfluxDB, MongoDB
Statistics/Machine Learning/Deep Learning: Tensorflow, Keras, Scikit-Learn, PyTorch, Azure Machine Learning, AWS Machine Learning
Others: AWS, Azure, Git, Docker, Flask, Jupyter Notebook, PyCharm, Visual Studio Code

CERTIFICATIONS

Azure AI Fundamentals, Microsoft
IBM Data Science Professional, IBM
Deep Learning Specialization, deeplearning.ai
Advanced Data Science Specialization, IBM

LEADERSHIP AND ACTIVITIES

President, Artificial Intelligence Coding Club, FIU — Jan 2022 - Current

- Hosted Events, Workshops, and competitions for democratizing AI into all domains.

Webmaster, IEEE Miami Section — Aug 2021 - Current