Manikhanta Praphul, Samavedam

praphulsamavedam@gmail.com | +1 (857) 313-2915| linkedin.com/in/SMPraphul | github.com/praphulsamavedam
Available: May 2024 Personal website: praphulsamavedam.github.io

EDUCATION

Northeastern University, Khoury College, Boston, MA, USA
Master of Science in Artificial Intelligence GPA: 4.0/4.0
Coursework: Pattern Recognition & Computer Vision, Machine Learning, Algorithms, Foundations of AI
Birla Institute of Technology and Science Pilani, Pilani, RJ, India Aug 2014 – May 2018
Bachelor of Engineering Honors in Electrical & Electronics Engineering GPA: 8.42/10.0
Related courses: Computer Architecture, Digital Image Processing, Probability & Statistics, Optimization

TECHNICAL SKILLS

Languages/Databases:	Python, SQL, Spark, C++, Java, Oracle (11g, 12c), MongoDB
Tools/Skills:	AWS Sage maker, S3, EC2, Lambda, EMR, Apache Airflow, Jenkins, Gitlab, Git, Docker, MLOps
Certifications:	Azure AI & Data Fundamental, Deep Learning Specialization (Coursera)
Python Libraries:	PyTorch, TensorFlow, Scikit-learn, Keras, Torch Vision, Seaborn, Matplotlib, Plotly, Pandas, NumPy, Boto3, h2o, Darts, OpenCV, Hugging Face, Media Pipe, Scikit-Image, Imutils, Pillow, PyTesseract
ML Architectures:	Yolo, LeNet-5, Alex Net, VGG-16, ResNet-50, U-Net, Faster R-CNN, Mask R-CNN, Inception Net, Pose Net, SVM, XG Boost, Gradient Boost, Decision Tree, Random Forest, Efficient Net, Fast R-CNN
Specialization:	Deep Learning(DL), Computer Vision(CV), Machine Learning(ML), Natural Language Processing(NLP)

WORK EXPERIENCE

Applied AI/ML Co-op | **Sway AI**, MA, US **Jul 2023 - Present**

- Optimizing in-house feature insights generation time by **70%** using stratified sampling for multi-time series forecasting.
- Developing Proof of Concept (POC) to integrate Lang chain for **LLM** to generate model summary for business users.
- Enriched **2%** customer acquisition by implementing explainability based on Shapley values for Darts models in 2 months.

Graduate Engineer Trainee | **UBS,** MH, India **Jul 2018 – Mar 2022**

- Attained **1st** position in 'Artificial Intelligence' category across APAC (Asia Pacific region) at UBS Super Stars.
- Runner up for auto alert system and auto mask for open sensitive document addressing potential **$2.1B** loss in hackathon.
- Amplified research article engagement time by **12%** by deploying hybrid recommendation system within 6 months.
- Predicted salesperson ratings with **0.0013 RMSE** based on client relationship management (CRM) data in 4 months.
- Curtailed 15% budget cost by segmenting customers into ROC, GOC, etc. with **92%** accuracy using K-Means clustering.
- Achieved **96%** reduction in turnaround time by eliminating human intervention for data refresh via end-end automation.

PROJECTS

Table Tennis ball tracking **Apr 2023 – Apr 2023**

- Developed & trained U-net like model to detect the surface of table in PyTorch on 2 A100 GPUs at remote High Performance Research Centre. Transfer trained Yolo to detect table tennis ball and tracked ball direction based on last 9 frames.
- Designed convolutional neural network with 76% accuracy to detect events of bounce, hitting net, game points, etc.
- Enhanced accuracy to **91.2%** by data augmentation, under sampling as events are rare to occur and imbalanced in occurrence.
- Created shot chart through tracking of ball, events using calibrated camera by detected known table with **93%** accuracy.

Natural Language Inference (NLI) **Apr 2023 – Apr 2023**

- Trained RNNs, LSTMs and GRUs with Bag of Words, TF-IDF, word2vec & Glove embeddings as features on SNLI, MNLI data after cleansing, stemming & lemmatization using NLTK, Spacy. Fine-tuned Bi-LSTMs to have **76**% accuracy.
- Improved accuracy to **88**% & F1-score by 11.25% by transfer learning **BERT** (LLM) model from Hugging face.

Image Popularity Anticipation [Kaggle]– [**Top 5 Finisher**] **Mar 2023 – Mar 2023**

- Successfully trained a linear regression model to forecast image download counts using capture details, color distribution and associated keywords, without need for CNN-based image processing. [My Solution Discussion]
- Enhanced **12%** performance by removing outliers & normalizing features based on exploratory data analysis of data model.
- Enriched **5%** r2 score through feature engineering & principal component analysis on description, ISO, exposure time, etc.

Store Sales Prediction [**Hackathon] - [Finalist - 14th]** **Sep 2021 - Sep 2021**

- Challenge was building prediction system on sales data of Wow Mart for 18 months from 365 retail stores across 100+ cities.
- Wrangled, standardized data & feature engineered sale data, locations & lagging orders for **29%** boost in performance.
- Secured **14th** position in challenge out of *6828* participants by employing XG Boost Regressor. [GitHub code]

Real-time Emotions detection (RT-Emotion) **Oct 2022 – Nov 2022**

- Designed & trained two 4-layer CNN models on FER-2013 dataset to detect 7 emotions with accuracy of 56% with ReLU.
- Achieved 61.4% & 85% accuracies by re-training last 4 layers of pre-trained **VGG** & **Res Net** in TensorFlow, Keras.
- Improved to 91% accuracy using max voting of emotions by 4 DL models on video frame captured by **OpenCV** in real time.