

# Manikhanta Praphul, Samavedam

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## 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: Probability & Statistics, Optimization, Computer Architecture, Digital Image Processing

## 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.
- Enriched **2%** customer acquisition by implementing explainability based on Shapley values for Darts models in 2 months.

Data Scientist | **UBS**, MH, India

**Jul 2018 – Mar 2022**

- Curtailed manual efforts by **65%** for every release through design and implementation of data-ingestion engine.
- 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.
- Developed salesperson dashboard for global markets division using Alteryx, Tableau, Python processing XML files.
- Amplified campaign reach **27%** in 2 months by devising application to send dynamic custom email using Python, Alteryx.
- Attained **1<sup>st</sup>** position in 'Artificial Intelligence' category across APAC (Asia Pacific region) at UBS Super Stars.
- Reduced build time by nearly **50%** through completion of build chain automation with internal build chain toolset.

## PROJECTS

**Image Popularity Anticipation [Kaggle]– [5<sup>th</sup> Position]**

**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.
- 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] - [14<sup>th</sup>/6828]**

**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 **14<sup>th</sup>** position in challenge out of 6828 participants by employing XG Boost Regressor. [GitHub code]

**Advertisement Campaign analysis**

**Nov 2021 - Dec 2021**

- Curbed nearly **40%** marketing cost by recommending decommissioning 3 Facebook ad campaigns through deep analysis of 9 factors like Unique click through rate (U-CTR), cost per result (CPR), reach, frequency, demographic, etc.
- Suggested techniques for targeted advertisement based on demographic analysis to increase reach by 30%.

**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.

**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.