

# Manikhanta Praphul, Samavedam

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## EDUCATION

<b>Northeastern University, Khoury College</b> , Boston, MA, USA	Aug 2022 – May 2024
Master of Science in Artificial Intelligence	GPA: 4.0/4.0
Coursework: Pattern Recognition & Computer Vision, Machine Learning, Algorithms, Foundations of AI, ML Operations	
<b>Birla Institute of Technology and Science Pilani</b> , 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

<b>Languages/Databases:</b>	Python, SQL, Spark, C++, Java, Oracle (11g, 12c), MongoDB
<b>Tools/Skills:</b>	AWS Sage maker, S3, EC2, Lambda, EMR, Apache Airflow, Jenkins, Gitlab, Git, Docker, MLOps
<b>Certifications:</b>	Azure AI & Data Fundamental, Deep Learning Specialization (Coursera)
<b>Python Libraries:</b>	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
<b>ML Architectures:</b>	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
<b>Specialization:</b>	Deep Learning(DL), Computer Vision(CV), Machine Learning(ML), Natural Language Processing(NLP)

## WORK EXPERIENCE

Applied AI/ML Co-op   <b>Sway AI</b> , MA, US	<b>Jul 2023 - Present</b>
<ul style="list-style-type: none"><li>Optimizing in-house feature insights generation time by <b>70%</b> using stratified sampling for multi-time series forecasting.</li><li>Developing Proof of Concept (POC) to integrate Lang chain for <b>LLM</b> to generate model summary for business users.</li><li>Enriched <b>2%</b> customer acquisition by implementing explainability based on Shapley values for Darts models in 2 months.</li></ul>	
Data Scientist   <b>UBS</b> , MH, India	<b>Jul 2018 – Mar 2022</b>
<ul style="list-style-type: none"><li>Attained <b>1<sup>st</sup></b> position in 'Artificial Intelligence' category across APAC (Asia Pacific region) at UBS Super Stars.</li><li>Runner up for auto alert system and auto mask for open sensitive document addressing potential <b>\$2.1B</b> loss in hackathon.</li><li>Amplified research article engagement time by <b>12%</b> by deploying hybrid recommendation system within 6 months.</li><li>Predicted salesperson ratings with <b>0.0013 RMSE</b> based on client relationship management (CRM) data in 4 months.</li><li>Curtailed 15% budget cost by segmenting customers into ROC, GOC, etc. with <b>92%</b> accuracy using K-Means clustering.</li><li>Achieved <b>96%</b> reduction in turnaround time by eliminating human intervention for data refresh via end-end automation.</li></ul>	

## RESEARCH EXPERIENCE

<b>EHHCW System Modelling and Outage Performance Analysis</b> , IEEE	IEEE CICT 2021, IIITDM Jabalpur
<ul style="list-style-type: none"><li>Devised and analyzed for outage probability and performance of first-ever energy harvesting hybrid co-operative wireless system (EHHCW System) consisting of digital link and analog link.</li><li>Proposed strategies for further improvement of the performance by <b>15%</b> and decrease in outage probability by <b>20%</b>.</li></ul>	

## PROJECTS

<b>Table Tennis ball tracking</b>	<b>Apr 2023 – Apr 2023</b>
<ul style="list-style-type: none"><li>Developed &amp; 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.</li><li>Designed convolutional neural network with 76% accuracy to detect events of bounce, hitting net, game points, etc.</li><li>Enhanced accuracy to <b>91.2%</b> by data augmentation, under sampling as events are rare to occur and imbalanced in occurrence.</li><li>Created shot chart through tracking of ball, events using calibrated camera by detected known table with <b>93%</b> accuracy.</li></ul>	
<b>Natural Language Inference (NLI)</b>	<b>Apr 2023 – Apr 2023</b>
<ul style="list-style-type: none"><li>Trained RNNs, LSTMs and GRUs with Bag of Words, TF-IDF, word2vec &amp; Glove embeddings as features on SNLI, MNLI data after cleansing, stemming &amp; lemmatization using NLTK, Spacy. Fine-tuned Bi-LSTMs to have <b>76%</b> accuracy.</li><li>Improved accuracy to <b>88%</b> &amp; F1-score by 11.25% by transfer learning <b>BERT</b> (LLM) model from Hugging face.</li></ul>	
<b>Image Popularity Anticipation [Kaggle]– [5<sup>th</sup> Position]</b>	<b>Mar 2023 – Mar 2023</b>
<ul style="list-style-type: none"><li>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 Kaggle Solution Discussion]</li><li>Enhanced <b>12%</b> performance by removing outliers &amp; normalizing features based on exploratory data analysis of data model.</li><li>Enriched <b>5%</b> r2 score through feature engineering &amp; principal component analysis on description, ISO, exposure time, etc.</li></ul>	
<b>Store Sales Prediction [Hackathon] - [14<sup>th</sup>/6828]</b>	<b>Sep 2021 - Sep 2021</b>
<ul style="list-style-type: none"><li>Challenge was building prediction system on sales data of Wow Mart for 18 months from 365 retail stores across 100+ cities.</li><li>Wrangled, standardized data &amp; feature engineered sale data, locations &amp; lagging orders for <b>29%</b> boost in performance.</li><li>Secured <b>14<sup>th</sup></b> position in challenge out of 6828 participants by employing XG Boost Regressor. [GitHub code]</li></ul>	