AAYUSH MANDHYAN

New Brunswick, New Jersey | 848-218-8606 | LinkedIn | GitHub | Portfolio | mandhyanaayu@gmail.com

Education

Rutgers University, New Brunswick **September 2018 – May 2020**

- **Master of Science** in **Data Science**, CGPA – 3.75/4
- **Relevant Coursework:** Machine Learning, Reinforcement Learning, Introduction to Artificial Intelligence, Data Interaction and Visual Analytics, Massive Data Storage and Retrieval, Probability and Statistical Inference.

SRM University, NCR Campus, Ghaziabad, India **August 2012 – May 2016**

- **Bachelor of technology** in **Computer Science and Engineering,** CGPA – 8/10

Skills

- **Algorithms**: Q-Learning, Neural Networks, LSTM, RNN, CNN, Auto-Encoders, XGBoost, SVM, Random Forest, Decision Trees, Logistic Regression, Lasso Regression, Ridge Regression, KNN, etc.
- **Languages**: Python, R, Java, HTML, JavaScript
- **Libraries**: TensorFlow, PyTorch, Keras, Scikit-learn, XGBoost, NumPy, Pandas, Matplotlib, CuPy, Numba, OpenCV, PySpark, NLTK, Gensim, Flask, R Shiny.
- **Tools**: MySQL, NoSQL, MongoDB, REST API, Linux, Git, Jupyter, AWS, GCP, Openstack, Docker.
- **Technologies**: Deep Learning, Reinforcement Learning, Machine Learning, Computer Vision, Natural Language Processing, Time Series Analytics, Data Mining, Data Analysis, Predictive Modelling, Data Exploration, Data Visualization.

Work Experience

Exafluence Inc., Data Scientist Intern **February 2020 – May 2020**

- **Anomaly Detection System** (*Anomaly Detection, Python, KMeans, One-C SVM, GMM, TensorFlow, R Shiny*)**:**
  - Designed and built Anomaly Detection ML Model using KMeans to achieve 0.9 F1 Score.
  - Implemented Deep Auto-Encoder Gaussian Mixture Model using TensorFlow from scratch (paper).
  - Designed and Developed a demo application in RShiny - Demo.

Rutgers University, Research Assistant **May 2019 – December 2019**

- **Adaptive Real Time Machine Learning Platform** - ARTML (*Python, CUDA, TensorFlow, CuPy, Numba, PyTorch*)**:**
  - Designed and Built GPU modules for ARTML using CuPy library, with 50% performance boost over CPU modules.
  - Optimized CPU modules by leveraging Vectorization technique to achieve performance improvement by 90%.
  - Benchmarked computation performance of GPU modules created using TensorFlow, CuPy, Numba and PyTorch.
- **Bank Transaction Categorizer** (*Python, XGBoost Classifier, NLP, Flask Web Framework, AWS*)**:**
  - Built an ensemble classification model based on XGBoost to achieve 90% accuracy on categorizing bank transactions.
  - Leveraged various **NLP**-techniques to incorporate ~95000 description tokens as 17 feature input to ML models.
  - Designed and developed a Python base full-stack web application and deployed it on Amazon Web Service EC2 servers.

Cognizant, Programmer Analyst **August 2016 – May 2018**

- **Openstack Cloud Platform** (*Cloud Computing, IAAS, Time Series Analytics, Python, ARIMA, Linux Servers*):
  - Deployed, Troubleshooted, Maintained & Administered OpenStack cloud platform on Linux servers at Cognizant DC's.
  - Created a **Time Series Model** using ARIMA to predict future resource requirement of Openstack Cloud, based on 1.5-year usage pattern. Resulting in addition of another 20% compute resource to existing Cloud platform.
- **Video Analytics** (*Python, OpenCV, SIFT, Object Detection, Object Tracking*):
  - Built a Python module to reduce frame count of a video by 99% using Brute-Force Matching with SIFT Descriptors in OpenCV
  - Built **Object detection** & **Object tracking** system which took an image (object/person) and track their time in each video.

Academic Projects

Stock Trading Agent - Repo (*Reinforcement Learning, Python, TensorFlow, Q-Learning, Time Series Analytics*)**:**

- Trained Stock Trading Agent using Reinforcement Learning (Q-Learning) on simulated stock data using GBM to perform profitable trades, which earned average of $5k profit on $10k investment on 100 evaluation runs.
- Implemented various combination of Deep Q-Learning Network (DQN), Double DQN, Actor-Critic DQN, Replay Memory DQN with Deep Neural Network and CNN's (as DQN architecture) to build trading agents.

Airbnb Visual Analytics System - Demo (*R, R Shiny, Plotly, Leaflet, Text Mining*)**:**

- Designed and Developed Geospatial Interactive & Visual Analytical Platform using RShiny, to visualize Airbnb listings in a hierarchical clustered fashion.
- Identified customer pain points by performing textual data mining on review data.

Colgate Product Price Prediction - Repo (*Python, XGBoost Regressor, NLP*)**:**

- Built XGBoost regressor model to predict unit price based on location, brand and ingredients. Reduce feature set from ~10000 to 50 and achieved 1.38 MAE. Also, used NLP techniques to incorporate 9000 ingredients as 30 feature input to the model.

Certifications & Awards

- Won **Colgate Data Set challenge** at HackRU Fall 2019 (Rutgers Hackathon – Devpost) **October 2019**
- **Deep Learning** Specialization on Coursera. **July 2018**
- Rising Star of the year (Top 10 performer in batch of 6000 Cognizant recruits in 2016). **February 2017**