

CV –AI |Data Science | Machine Learning | Big Data | Analytics



MAHESH JADHAV (IIT-ISB Alumni)
 Associate Vice President(AVP) – Data Scientist@Citigroup
 IIT Roorkee- Masters in Physics
 Indian School of Business (ISB) Hyderabad- Business Analytics(AMPBA)

Contact Details:

☎: 8805376914
 ✉: Mahesh.Gunaji.Jadhav@Gmail.com
<https://www.linkedin.com/in/mahesh-g-jadhav/>

Career Overview:

- An IIT-ISB Alumni , Data Science /Analytics leader with Rich Experience of around 12.5 Years in Banking and Financial services, of which 7+ years in Data Sciences/ Analytics across Investment Banking , Custodian Banking (Trade life cycle, Asset Servicing,, Enterprise Reconciliation) , Compliance (Trade Surveillance, Anti-Money Laundering(AML), KYC, Sanctions/Screening), Retail Banking (Customer Analytics in areas like Mortgages, Cards etc.,) having worked with MNC's like Citigroup, BNY Mellon, Barclays and AMEX(client while working with Infosys) across technologies like Data Science/Machine Learning/Analytics,Big data.
- Comprehensive problem solving and analytical hands-on skills coupled with Excellent Communication, Leadership and Management skills.
- Adept at identifying, ideating , curating and developing Data Science based solutions for business use cases across Strategy, Operations and Marketing verticals by leveraging cutting edge open source technologies.
- Adept at building data science teams from scratch by recruiting niche talent and coaching and mentoring the juniors on various Data Science use cases, tools and technologies

Technical Skillset:

Data Science Stack	<p>Supervised Learning: Good knowledge of Various Machine learning Algorithms like Regression techniques, Decision trees, Random Forest , Naive Bayes, KNN, SVM models , Boosting- XG-Boost, Ada-Boost.</p> <p>Unsupervised Learning: Clustering techniques like Hierarchical, K means, DBSCAN. PCA, SVD Collaborative filtering, Market Basket Analysis(MBA),Association Rules, Apriori, FP-Growth, Market mix modeling, Cross-Sell, Upsell Bundling(Marketing Analytics), Customer Analytics</p> <p>Anomaly Detection problems using Isolation forest, DBSCAN, LOF, OneClassSVM, Statistical Modelling</p> <p>Deep Learning: Neural networks like ANN, CNN, DNN, RNN, LSTM, Auto-Encoders, Deep Learning Frameworks like Tensorflow, Keras</p> <p>Time series Forecasting: Holtz-Winter method, Smoothing techniques , ARIIMA models.</p> <p>Text Mining, NLP, Sentiment Analysis, Text Summarization, Topic Modekling, NER (NLTK, Spacy, BERT)</p> <p>Social Media & web analytics, Overview of Supply Chain & Retail Analytics</p>
Hadoop & Big data Stack	<p>Good Overview of Big Data technologies like HDFS, Hive, Spark, PySpark, Neo4J, SparkSQL, Kafka, Storm, Splunk. NOSQL Databases like MONGO DB, NEO4j,GRAPH, Spark Mllib, Deployment Tools : Jenkins, Autosys, Version Control: Bit-Bucket, Git</p>
Predictive analytics using	Python, R, R-Studio, XL-Miner, @Risk, Solver
Data Visualization using	Tableau, ggplot in R and Matplotlib, Seabourne , Plotly in Python, MS-Excel
Other technologies	Basic Knowledge of Core Java,C, C++, .NET
Statistics	Descriptive and Inferential Statistics, Hypothesis testing, Anova Regression techniques like linear, logistic, multinomial logistic, Lasso, Ridge, Panel regression Count Data models, Survival Analysis(Lifetimevalue), Imputation techniques

Education:

Course	Institute/University	Year	CGPA/Marks %
AMPBA(Equivalent to MS in Analytics)	Indian School of Business(ISB)	2016-17	3.7 on a scale of 4(Honored with Dean's list membership)
Masters in Physics	IIT Roorkee	2006-08	7.42 on a scale of 10
Bachelors in Mathematics Physics & Comp-Science	Kakatiya University	2002-05	88%
12th	Andhra Pradesh State Board	2002	94%
10th	Andhra Pradesh State Board	2000	82%

Certifications:

- Certified in Machine Learning and Deep Learning (Andrew NG) from Stanford University via Coursera
- Certified in Financial Markets from BNY Mellon
- Certified in Essentials of Corporate finance from University of Melbourne via Coursera
- Certified Competent Communicator and Competent Leader by Toastmasters International

Professional Experience:

From-To	Duration	Company	Designation
Aug-18 –Till Date	Till date	Citigroup Global Services India	Lead Data Scientist/Assistant Vice President
Aug 14- Jul 18	4 years	BNY Mellon Technology, India	Data Scientist / Project lead
Apr 11 -Jul 14	3.4 years	Barclays Technology Center India	Analyst programmer
Sep 08 - Apr 11	2.8 years	Infosys Technologies limited	Systems engineer

WORK EXPERIENCE:**Citigroup: Aug 2018-Till date (2.5 years+)****My Roles and Responsibilities at Citi included:**

- **Built the Data Science team and Leading a team of 4 data scientists, delivering solutions to different use cases across Compliance**
- Liaise with Business/Stakeholders to understand their pain points and offer/ideate/Deliver Data Science based Solutions where feasible
- Mentored Junior team members and provided necessary training as and when required
- Presented the work to BU Heads and Higher Management

Key Projects at Citi:**Trade Surveillance Wash Trade(Market Abusive Behavior) Detection:**

Wash trading is done by(Fraudster) traders by inducing activity in a security to generate interest of fellow traders in the market by buying and selling in a short span of time with a small price difference, this is one of the prime spurious behaviors along with Spoofing, Front Running, layering etc.,
Built a POC for detecting this Market Abusive Behavior(Fraud) using various Anomaly detection techniques and Statistical Heuristic modeling .

Trade Surveillance Spoofing(Market Abusive Behavior) Detection:

Spoofing is the act of entering visible non-bona fide orders with the intent to mislead other traders as to the true level of supply or demand in the market. Built a POC for detecting this Market Abusive Behavior(Fraud).

AML Credit cards High Risk Overpayment Detection:

Built a behavior based surveillance model for AML Credit card Overpayments. In this risk the cardholder makes a large payment (or multiple smaller payments in quick succession) to his/her card account (often via cash and cash-like) instruments and then request card issuing institution to issue a refund of the credit.

AML Retail Structuring Detection:

Structuring is the practice of executing financial transactions such as making bank deposits in a specific pattern, calculated to avoid triggering financial institutions to file reports required by law, such as the United States' Bank Secrecy Act (BSA) etc., The requirement of this project was to remove the existing rule based system(MANTAS) which was giving lot of False Positives. We have developed a model by developing Sophisticated features and unsupervised learning techniques which help us in identifying the pattern in data and then coming up with a Feature Based scoring methodology in identifying structuring related customers and raised the alerts .

Citi Screening Sanctions Matching:

Name matching against sanctions list is one of the key factors of screening process. The screening team receives inputs from KYC and AML teams to screen potential customers to check their records against sanctions list. Any matched records are reported back to upstream systems which further prevent the account creation as these are prime suspects and could involve in illegal activities.

The input names are matched against a checklist spanning millions of sanctioned names, our goal is to not only identify the exact matches but also similar matches, because most of the times culprits apply for accounts with slight changes in their information

Tools used: Python, NLP, Pyspark, Levenshtein distance, Cosine-Similarity, Soundex

Earning call reports Insights:

Earning call reports are valuable data source of insights. The following tasks were performed on the calling reports to gain insights and competitive advantage:

- Extractive and Abstractive summarization of earning call reports
- Sentiment Analysis of the earning call reports
- Scoring linguistic complexity of the transcripts
- Entity recognition and extraction from the Earning call transcripts
- Identifying / clustering companies of similar trade ideas

Tools used: Python, NLP, Spacy, NLTK

Projects at BNY Mellon:

Business Entity Assignment (ML Classification Problem) :

Description: In Enterprise reconciliation, the statements and ledger are reconciled every day. After reconciliation is complete, exceptions are raised for items that could not be matched. This Project is to eliminate or significantly reduce manual business entity assignment workload using machine learning techniques. Thus saving operational cost(reduced effort of 10 FTE). This project is being implemented in Phases for different business entities based on requirement raised by Business.

Business Entity Sourcing(Inbox-Routing) :

The Enterprise Reconciliation Service provides cash and security reconciliation services at massive scales to lines of business across BNYM currently loading close to 190 million transactions and positions monthly. Breaking items (exceptions) are assigned to internal teams for investigation and resolution. For those exceptions which cannot be automatically assigned to investigation teams, operators with business knowledge are needed to manually assign them. This is a manually intensive and potentially error prone process.

A machine learning random forest model has been created to automatically assign the correct teams to investigate the exceptions at 80% accuracy.

Business value: Minimize manual reconciliation assignments of business entities

Forecasting Exception volume using ARIMA Model:

Description: Forecasting exception volume so that operations team can be prepare itself for allocation of required number of FTE's to avoid any surprises .

Assisted business groups in understanding and analyzing their exception volumes using Data Visualization
Developed a Auto-Regressive Integrated Moving-Average (ARIMA) model which can forecast exception volumes by considering patterns detected from previously observed data (i.e. historical exception volumes).

Revenue Forecasting:

The revenue from Treasury Services are in the range of around USD 500 million and the most of the services offered are repeated services to the traditional Investment services clients. Therefore revenue forecasting for all clients (based on the past data) is important for client relationship management.

In this project we developed a machine learning method to forecast revenues for clients using various services.

Client Attrition:

This project relates to predicting the probability of client-attrition in next 1 year, given the client -attributes.

The benefit of this project is that it allows us to take proactive actions to avoid client churn (for clients with high possibility of churn in next 1 year).

Incident Prediction:

Description : Developed a model which can predict the onset of an incident before the incident is raised, thus alerting the application teams to fix a potential issue much before it leads to application outage or potential loss using text analytics and Machine learning, deep learning techniques.

Applied text analytics techniques like **DF, TFIDF, Bag of words** on the log data, Established cause-effect relationship from the Machine logs extracted from Splunk by creating word clouds, Co-occurrence graphs using R

Applying various Machine-learning models like obtained from the machine log data and trained the model to predict the onset of incident

Academic projects done at ISB:

- Text Mining and sentiment Analysis on customer feedback, to predict customer churn using **R and R studio**
- Twitter data analysis, Sensitivity analysis on trending topics like General Elections, GST, and Demonetization using **Text mining** and, **Tweet classification** using various Machine learning techniques **using R**
- **Lead Scoring/Lead Conversion Probability models for an Edtech Company using Python and ML Algorithms**
- **Build Credit worthiness of a customer by generating Application Scorecard using R, ML algorithms**
- **Credit Card Fraud Detection Kaggle project using Python**
- **Product recommendation using Collaborative filtering and Product Bundling using Association Rules(Apriori) Market Basket Analysis**
- **Identifying Customer Churn In Telecom**
- **Identifying Employee Churn in an Organisation**
- **Patent data Analysis** using Unsupervised Data mining Algorithms like **K-means clustering in R** etc
- **Customer Segmentation** done using Clustering techniques like K-means and Hierarchical
- **Retail Store Sales forecast** were done using Regression based models and also using data driven models like **Holtz-winter, ARIMA** using **R**
- Developed **visualization projects** on Indian education system based on DISE data using **Tableau**
- **Image classification** and captioning using Deep learning techniques **like CNN using Tensorflow.**
- **Classifying Image datasets** using ML models like **SVM** etc., in **R**
- Worked on projects like Portfolio Optimization, Flight Scheduling , Crew Scheduling **using Linear programming Integer Programming, Mixed integer programming techniques ,using algorithms like solver and GRG non-linear algorithm in excel**

Achievements and Accolades:

- Awarded with **Best of Class Award** for the Year 2015-2016 at BNY Mellon
- **Honored with Dean's list membership**(Top 10 Percentile in class of 100 students) **by Indian School of Business(ISB), Hyderabad** in Advanced Management Program in Business Analytics course(**AMPBA**) equivalent to Masters in Data Science/Analytics.
- **AIR-189 in IIT-JAM** Entrance exam
- **Certified Competent Communicator and Competent Leader** at Toastmasters International.
- **AVP Education** at BNY Mellon Technology Toastmaster club.