

**SARVATRA TECHNOLOGIES**  
**FINTECH VIRTUAL ELAB**  
**INTERNSHIP REPORT**

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❖ **PROBLEM STATEMENT**

Predict the Debit Card Transaction Volume using TimeSeries for Anomaly Detection. We will be using a dataset of approximately 4 million real-world transactions, which include details such as the date and time of the transactions as well as the locations and type of the transaction.

❖ **CHALLENGES**

- Univariate models on their own were not able to perform well and hence an ensemble had to be made using three univariate models.
- Choosing the appropriate features and right amount of features was difficult and tricky for using in multivariate models.
- Univariate LSTM was giving us a few negative values which is not possible.
- Deciding the architecture for each model.

❖ **METHODOLOGY USED**

- We took the approach of building a predictive model using historical data to estimate and get a sense of overall common trend, seasonal or cyclic pattern of the TimeSeries data.
- We began by making a dataframe which would contain the date and hour of the transactions and the volume of transactions taking place in that hour. After some EDA we found some missing values which we filled first and then we plotted the entire dataframe to visualize our data and make observations.
- After noting the observations we built univariate and multivariate neural network models and also used machine learning models like Facebook Prophet and Gradient boost regression which use the linear regression algorithm.
- In Univariate we only used the volume of transactions as the feature on which the model would learn whereas in Multivariate we performed some feature engineering and added features like day of week, day of month, time of the day, month, holidays etc. along with volume of transactions.

❖ **RESULTS**

After comparing all the models by forecasting for different days of July we found that the Multivariate LSTM was giving us a consistent performance irrespective of whether it was a weekday, weekend or holiday and the outliers could be easily detected which served our purpose. The complete final notebook that we created can be viewed [here](#).