**Store Item Demand Forecasting**

A picture containing diagram

Description automatically generated

Problem Statement:

Given 5 years of store-item sales data and asked to predict 3 months of sales for 50 different items at 10 different stores.

In this project we explore different time series techniques on a relatively simple and clean dataset.

Goals:

* Building a time series model to predict 3 months of item level sales data at different store locations
* Comparing the performances of 2 different ML algorithms which were LightGBM, Deep Learning(MLP, CNN, LSTM, LASTM+CNN) and Prophet
* Performing hyper-parameter tuning on each algorithm and visualizing the model performance

Importance of the project:

Nowadays, item sales forecasting is an inseparable part of every industry especially businesses that work with seasonal items. It is essential to know which model can produce better results because accurate estimation of the future can help businesses to boost their work. A forecast is based on historical data of a given metric plus other relevant factors. Accurate forecasts are an important aspect of corporate planning. They allow the organization to budget its funds and allocate its resources efficiently, and they enable decisions such as what strategies to adopt for growth.

Conclusion:

* LightGBM worked best for this dataset
* Deep Learning also worked well, and it might have worked even better with bigger and complex models
* Approach using Facebook Prophet was easy and fast to implement