Intelligent Transportation for Future Cities - Machine Learning in Taxi industry

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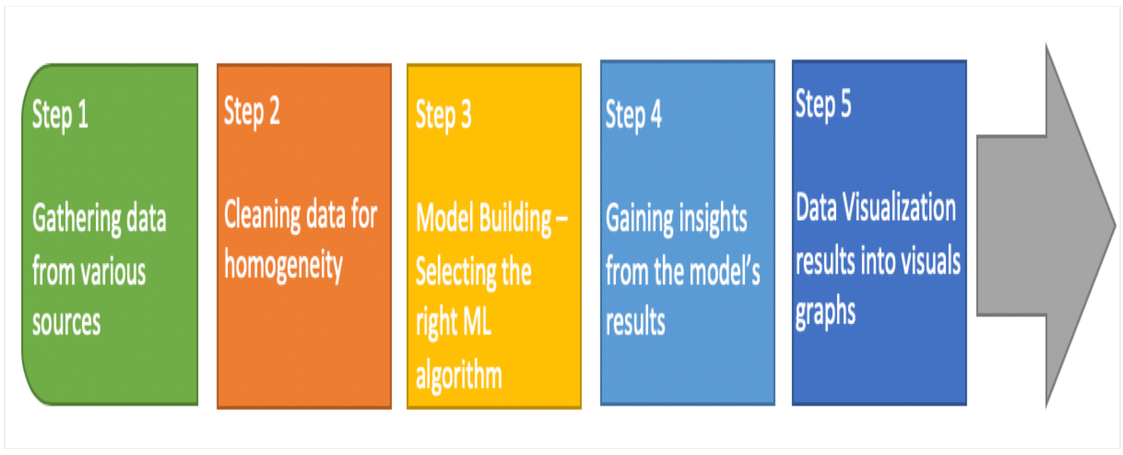
ABSTRACT

Predicting taxi demand around a city tremendously can help minimize the lack of balance in some areas where many taxis roam without passengers



Contribution: The models are applied to the case study of NYC taxi fleet management. The methodology implemented : Artificial Neural Network (ANN) and MLP

MODEL FORMULATION

- The models are applied to the case study of NYC taxi fleet management

Artificial Neural Network (ANN)

- Different models were used for training and best results were achieved using Multi layer perceptron algorithm
- MLP was implemented using Keras library, maximum accuracy we achieved was 45%

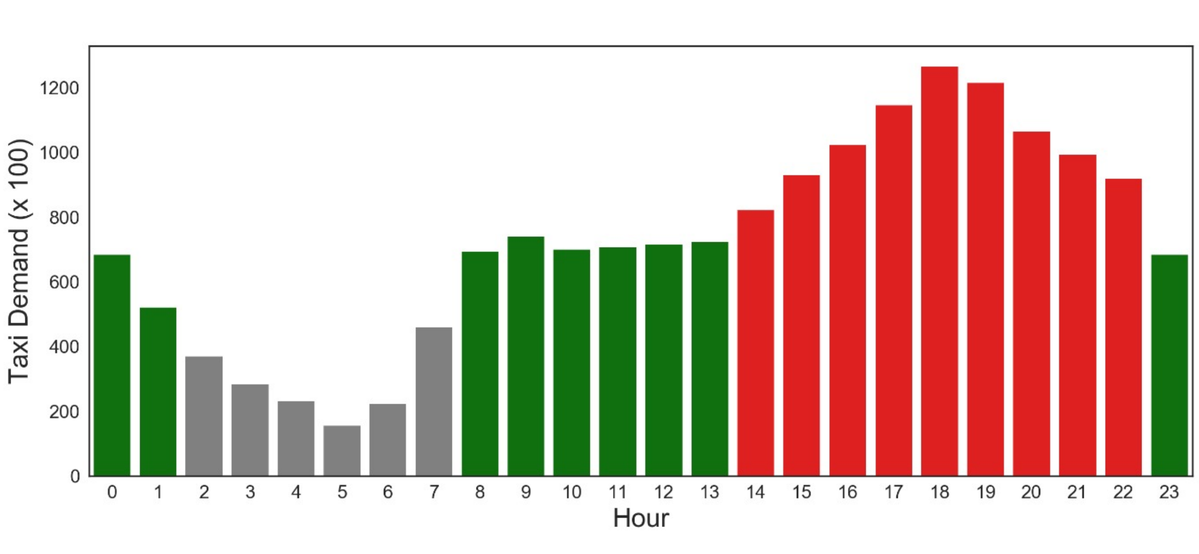
MULTI LAYER PERCEPTRON (MLP)

The following steps were involved in training model using MLP:

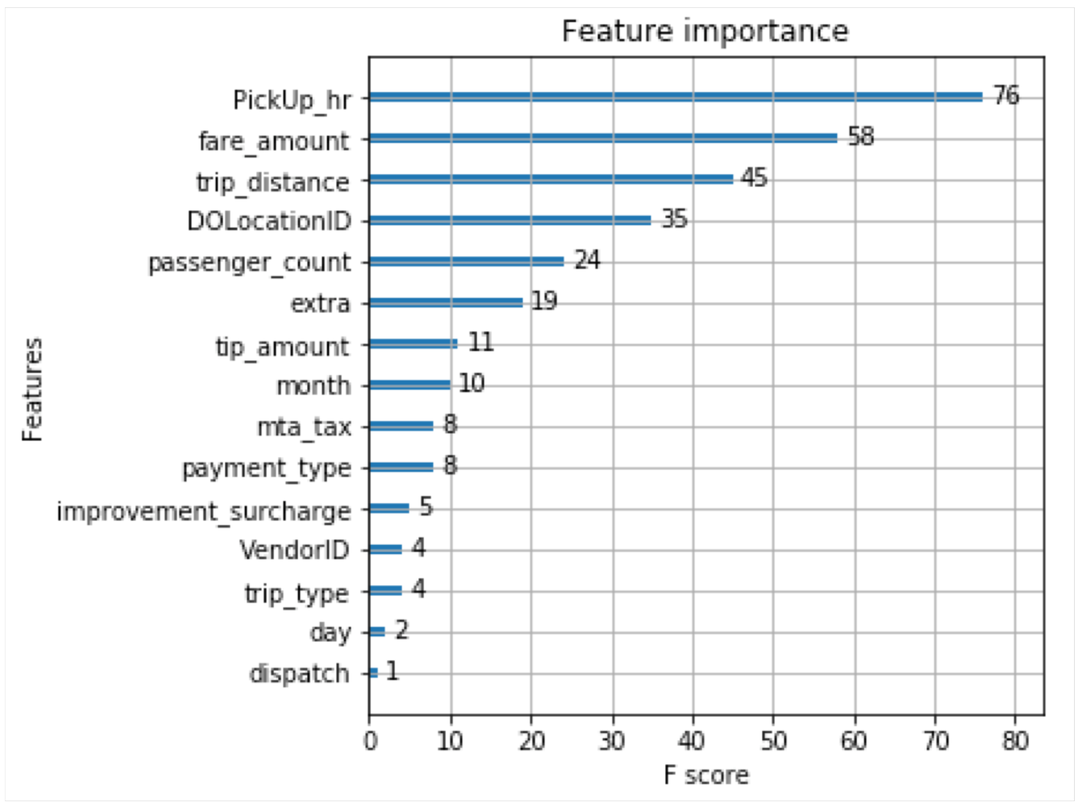
- 3 hidden layers were kept in the network with 564 neurons in first layer, 128 in the second and 80 in second layer
- Activation functions applied on the hidden layers are **reLu**
- Activation function applied on the output layer is **softmax**

DATA WRANGLING & FEATURE ENGINEERING

Finding correlation between features
Investigating peak hours for taxi demand



Plot is aggregated for rides over year 2017
Highest demand was observed during evening hours represented in RED



Investigating Feature Importance

EXPERIMENTS & OUTCOMES

RESULT/PREDICTIONS

- Performance could have been improved given more features and data engineering in the dataset
- Hyperparameter training like gridsearch can provide the optimal parameters to train the model
- Within given time and resources we managed to get reasonable performance from our model