STOCK MARKET PREDICTION

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INTRODUCTION

- Shares are units of equity ownership in a corporation.
- Stock market prediction is predicting the value of a share of a company in future.
- This prediction is advantageous for a trader who is not experienced in trading, so that he can invest on stocks that could give him some profit in return.
- Price of a share does depend on lot of factors. This prediction is not accurate, but could help predict the trend for next few days, by looking at it’s behaviour in the past.

OBJECTIVE

The objective of this project is to train LSTM network on historical data of stocks of a public company to predict short term stock price. Three other methods of machine learning model is also trained on the same data. The performance level of each model is measured and compared.

APPROACH

- Collect historical data of stock value from yahoo finance.
- Extract the required features from the database.
- Preprocess the dataset and divide it into training, validation and test sets.
- Create a stacked LSTM model.
- Predict the test data and plot the output.
- Compare prediction with other ML approaches.

DATASETS

Data taken from yahoo finance

Different datasets used are:

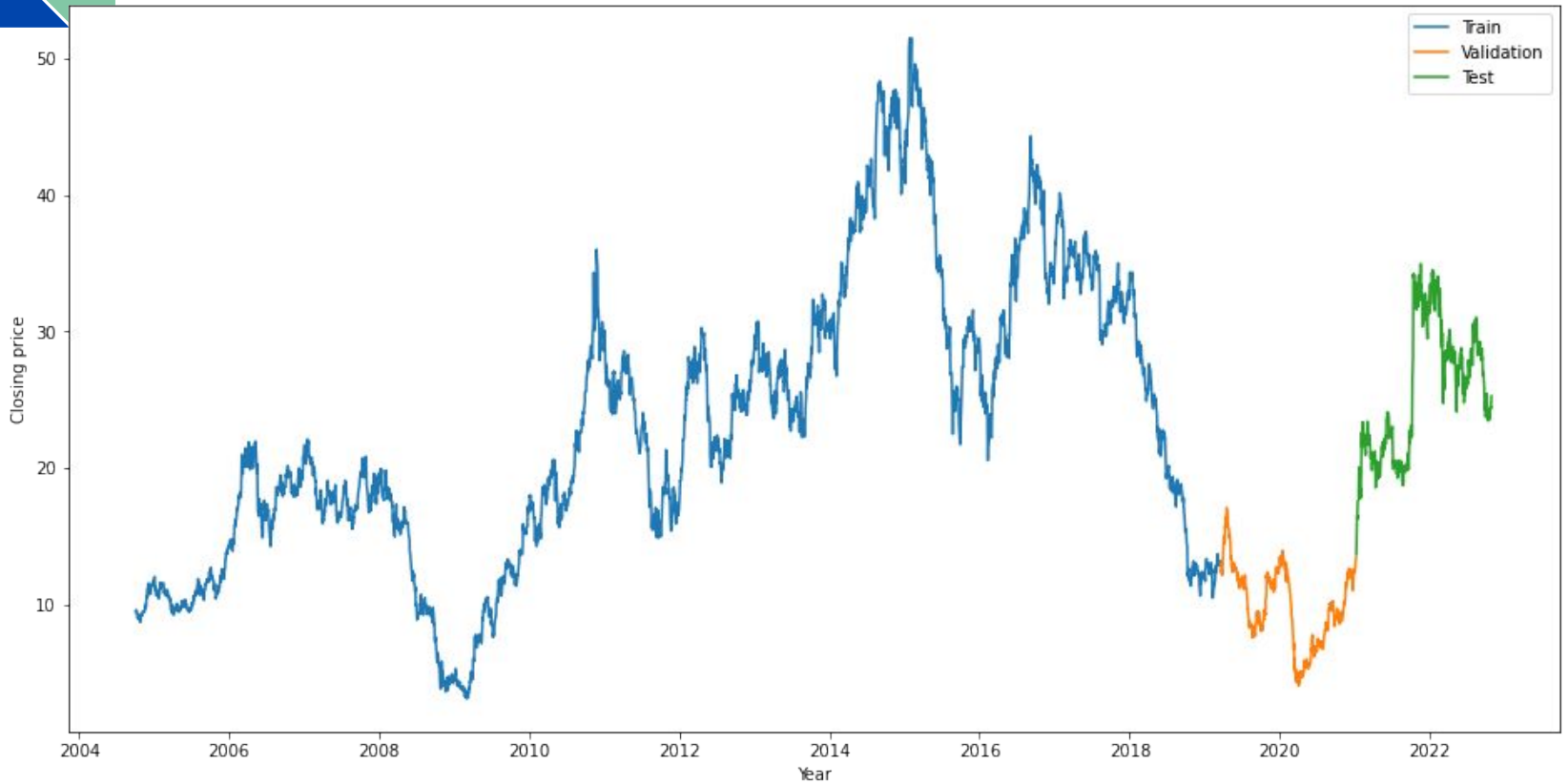
1. TTM(Tata Motors)
2. IRCTC(Indian Railway Catering & Tourism Corporation Limited)

Columns from dataset fetched:

Date, Open, Hight, Low, Close and Adjusted close

Only Date and Close values are retained,further modified into a time series dataset

Graph plotting closing value from 2004 to 2022 for TTM



MODEL DESCRIPTION

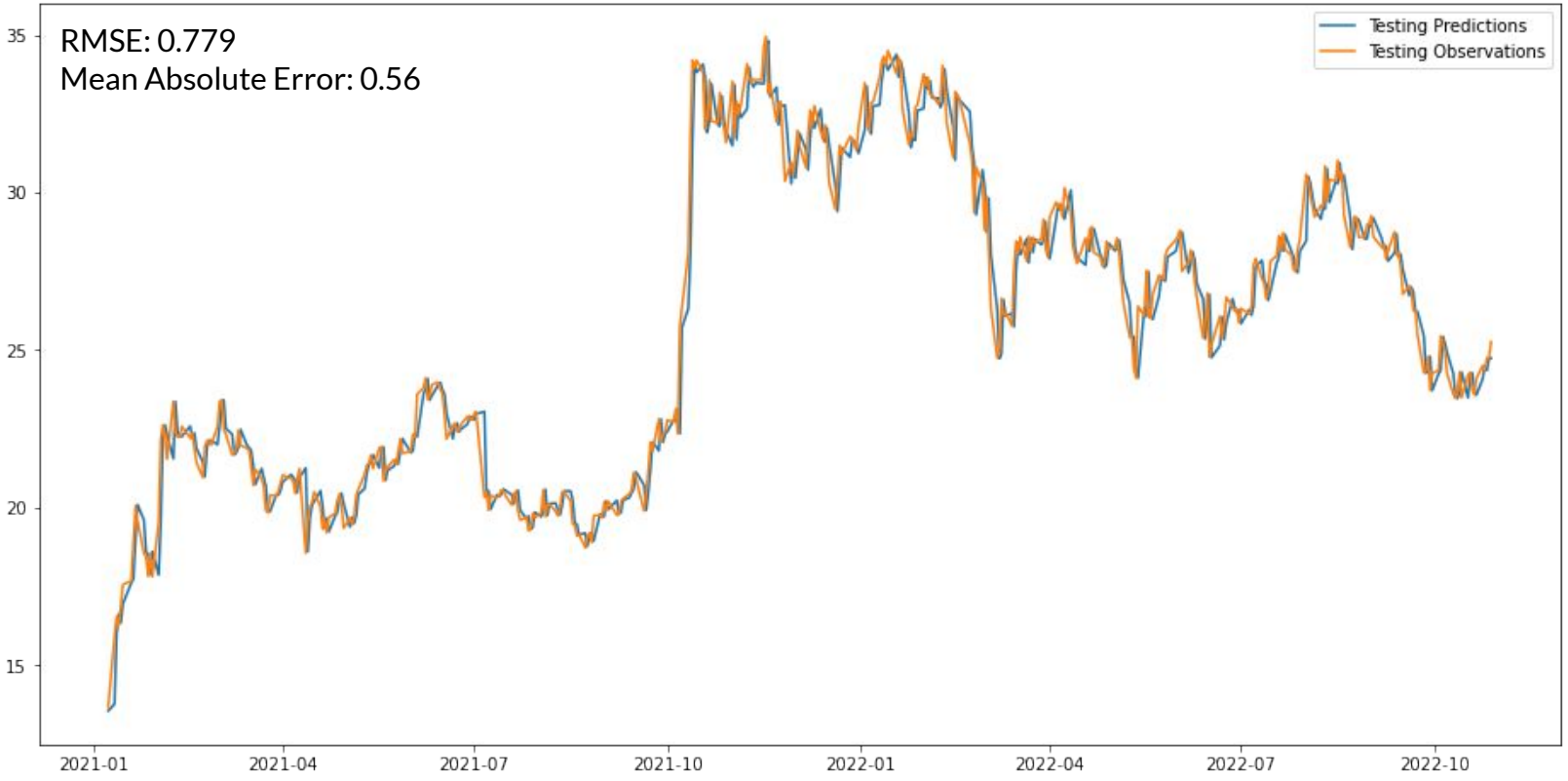
Model: LSTM

Optimizer: Adam

Loss: Mean squared error

LSTM

Graph depicting Test predicted closing price with observed closing price



Continuously predicted values

Graph depicting Predicted values with Observed values

LINEAR REGRESSION

Graph depicting Test predicted closing price with observed closing price

Graph depicting Predicted values with Observed values

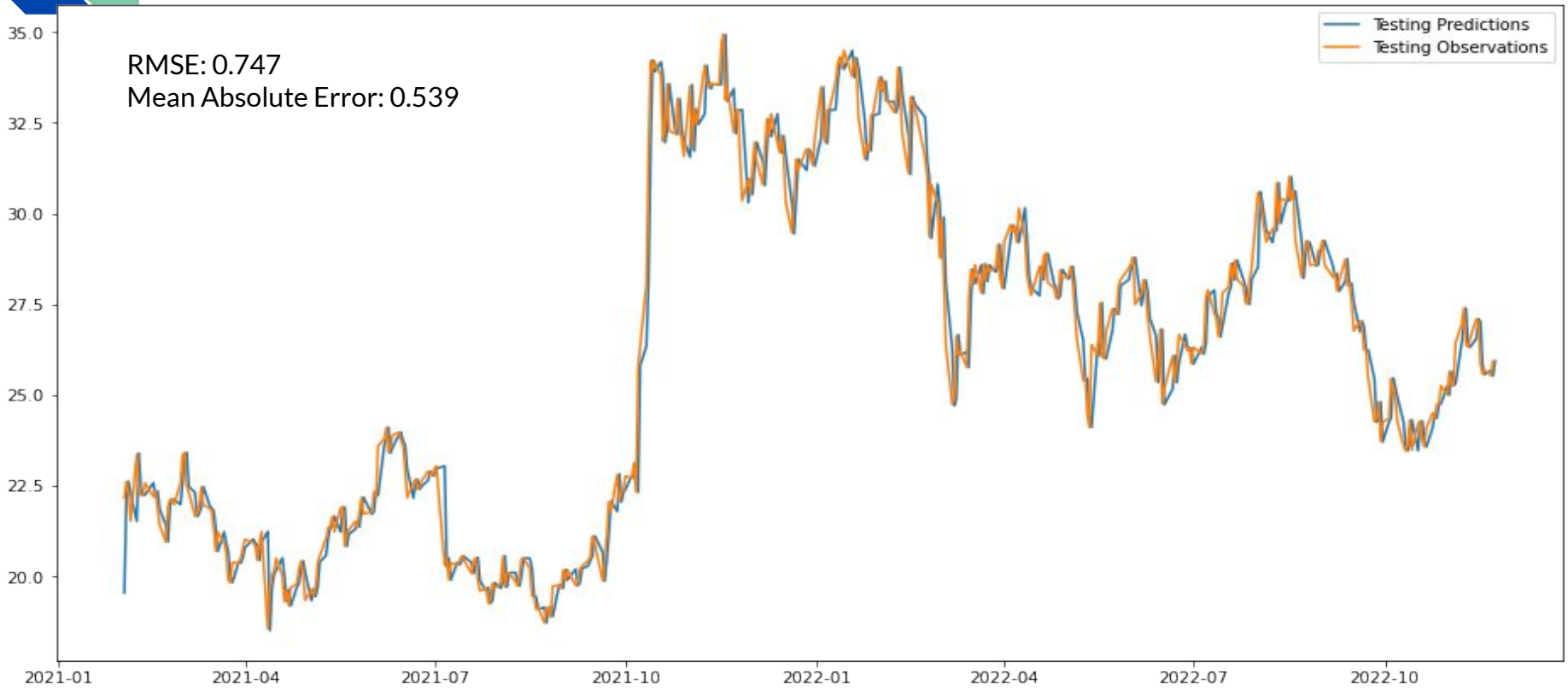
LINEAR REGRESSION WITH LASSO REGULARIZATION

Graph depicting Test predicted closing price with observed closing price

Graph depicting Predicted values with Observed values

LINEAR REGRESSION WITH RIDGE REGULARIZATION

Graph depicting Test predicted closing price with observed closing price



Graph depicting Predicted values with Observed values

MODEL COMPARISON

Stock used for comparison: TTM

	Mean absolute error	RMSE
LSTM Model	0.56	0.779
Linear Regression Model	0.54	0.747
Lasso Regression Model	0.536	0.745
Ridge Regression Model	0.539	0.747

WORK SPLIT-UP

Sridevi	LSTM model
Akshay G	Long term prediction + Visualisation
Arjun S	Data preprocessing
Kiran Abhinav	Linear,Lasso,Ridge regression

THANK YOU