REVA UNIVERSITY
Bengaluru, India
Established as per the section 2(f) of the UGC Act, 1956,
Approved by AICTE, New Delhi

REVA Academy for Corporate Excellence (RACE)

Topic: Trading Analytics for Day Trading in Stock Market

Date:25/6/2022

Name of the Presenter(s)

Anand Mohan

Batch:MBA06

Trimester: THIRD TRIMESTER

SRN: R19MBA53

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SMA EMA T Test METRICS

SERIAL NUMBERS	DESCRIPTIONS	TOTAL	TRUE COUNT	FALSE COUNT	EFFICIENCY
SMA7	Simple moving average-7 samples	5297	4114	1183	77.67
SMA13	Simple moving average-13 samples	5291	3474	1817	65.66
SMA20	Simple moving average-20 samples	5284	3217	2067	60.88
EMA7	Exponential moving average-7 samples	5297	4077	1220	76.97
EMA13	Exponential moving average-13 samples	5291	3486	1805	65.89
EMA20	Exponential moving average-20 samples	5284	3236	2048	61.24

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SMA EMA Z Test METRICS

SERIAL NUMBERS	DESCRIPTIONS	TOTAL	TRUE COUNT	FALSE COUNT	EFFICIENCY
SMA100	Simple moving average-100 samples	5204	2798	2406	53.77
SMA200	Simple moving average-200 samples	5104	2754	2350	53.96
EMA100	Exponential moving average-100 samples	5204	2829	2375	54.36
EMA200	Exponential moving average-200 samples	5104	2779	2325	54.45

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CLASSIFICATION MODELS METRICS

SERIAL NUMBERS	DESCRIPTIONS	TOTAL	TRUE COUNT	FALSE COUNT	EFFICIENCY
Structured Data Classifier	AutoKeras Classification Model	1061	901	160	84.92
K-neighbors Classifier	KNN Classification Model	1061	786	267	74.08
Logistic Regression	LogisticRegression Classification Model	1061	956	97	90.10

CLASSIFICATION METRICS COMPARISON

SERIAL NUMBERS	DESCRIPTIONS	EFFICIENCY>67%
SMA7	Simple moving average-7 samples	YES-77.67
SMA13	Simple moving average-13 samples	NO-65.66
SMA20	Simple moving average-20 samples	NO-60.88
EMA7	Exponential moving average-7 samples	YES-76.97
EMA13	Exponential moving average-13 samples	NO-65.89
EMA20	Exponential moving average-20 samples	NO-61.24

CLASSIFICATION METRICS COMPARISON

SERIAL NUMBERS	DESCRIPTIONS	EFFICIENCY>67%
SMA100	Simple moving average-100 samples	NO-53.77
SMA200	Simple moving average-200 samples	NO-53.96
EMA100	Exponential moving average-100 samples	NO-54.36
EMA200	Exponential moving average-200 samples	NO-54.45

CLASSIFICATION METRICS COMPARISON

SERIAL NUMBERS	DESCRIPTIONS	EFFICIENCY>67%
Structured Data Classifier	AutoKeras Classification Model	YES-84.92
K Neighbors Classifier	KNN Classification Model	YES-74.08
LogisticRegression	Logistic Regression Classification Model	YES-90.10

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ARIMA MODELS METRICS

SERIAL NUMBERS	DESCRIPTIONS	MEAN ABSOLUTE ERROR (MAE) FOR TEST DATA	MEAN SQUARE ERROR (MSE) FOR TEST DATA	ROOT MEAN SQUARE ERROR (MSE) FOR TEST DATA	Mean Absolute Percentage Error FOR TEST DATA	MAPE FOR TEST DATA
EMA_200ARIMA	Auto Arima model using Exponential moving average-200 samples	84.21	9662.99	98.30	96.06	NaN
SMA_100ARIMA	Auto Arima model using Simple moving average-100 samples	112.25	19404.28	139.30	95.51	9.42
SMA_20ARIMA	Auto Arima model using Simple moving average-20 samples	183.76	45227.79	212.67	181.82	16.29
SMA_13ARIMA	Auto Arima model using Simple moving average-13 samples	184.73	44482.52	210.91	172.64	16.171
SMA_7ARIMA	Auto Arima model using Simple moving average-7 samples	185.64	47486.11	217.91	173.93	15.09

The p-value is obtained in ADF Test is greater than significance level of 0.05 and the ADF statistic is higher than any of the critical values. Clearly, there is no reason to reject the null hypothesis. So, the time series is non-stationary and Dataset under consideration is not applicable for Building ARIMA Models.

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REGRESSION MODELS METRICS

SERIAL NUMBERS	DESCRIPTIONS	MEAN ABSOLUTE ERROR (MAE) FOR TEST DATA	MEAN SQUARE ERROR (MSE) FOR TEST DATA	ROOT MEAN SQUARE ERROR (MSE) FOR TEST DATA	Mean Absolute Percentage Error FOR TEST DATA	MAPE FOR TEST DATA
OLS Model	**Ordinary Least Squares (OLS)-Linear Regression Model**	**2.03**	**11.83**	**3.44**	**1.14**	**0.227**
LASSO Model	**Lasso Regression Model**	**7.56**	**132.63**	**11.52**	**4.67**	**0.85**
CVLASSO Model	**Lasso regression Model Using Cross Validation**	**7.55**	**132.59**	**11.51**	**4.66**	**0.85**
KNN Model	**The k-Nearest Neighbors (KNN) Algorithm**	**5.42**	**132.08**	**11.49**	**3.16**	**0.59**

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REGRESSION MODELS METRICS

SERIAL NUMBERS	DESCRIPTIONS	MEAN ABSOLUTE ERROR (MAE) FOR TEST DATA	MEAN SQUARE ERROR (MSE) FOR TEST DATA	ROOT MEAN SQUARE ERROR (MSE) FOR TEST DATA	Mean Absolute Percentage Error FOR TEST DATA	MAPE FOR TEST DATA
DT Model	Decision Tree Algorithm	3.26	23.95	4.89	2.10	0.383
GRIDSEARCHCV Model	GridSearchCV Algorithm with Hyper-parameter Tuning	3.22	23.16	4.81	2.10	0.38
RF Model	Random Forest Regression Model	2.45	15.25	3.90	1.49	0.29
XGBOOST Model	XGBoost ML Model	3.25	22.78	4.77	2.12	0.37

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REGRESSION MODELS METRICS

SERIAL NUMBERS	DESCRIPTIONS	MEAN ABSOLUTE ERROR (MAE) FOR TEST DATA	MEAN SQUARE ERROR (MSE) FOR TEST DATA	ROOT MEAN SQUARE ERROR (MSE) FOR TEST DATA	Mean Absolute Percentage Error FOR TEST DATA	MAPE FOR TEST DATA
PCA LSTM Model	Using Principal Component Analysis (PCA) with LSTM	4.37	34.70	5.89	3.60	33.44
PCA LSTM Moving Averages Model	Using Principal Component Analysis (PCA) with LSTM with Moving Average variables(Feature Engineering)	7.75	135.03	11.62	5.99	33.47
LSTM_ Model	Long Short-Term Memory-LSTM Neural Network Model	9.71	159.01	12.61	8.20	33.40
AutoKeras Model	Regression Model using AutoKeras	2.59	242.51	15.57	1.10	0.27

REGRESSION METRICS COMPARISON

SERIAL NUMBERS	DESCRIPTIONS	MAE<=5	MAPE<=0.33
OLS Model	Ordinary Least Squares (OLS)-Linear Regression Model	YES-2.034	YES-0.23
LASSO Model	Lasso Regression Model	NO-7.555	NO-0.85
CVLASSO Model	Lasso regression Model Using Cross Validation	NO-7.55	NO-0.85
KNN Model	The k-Nearest Neighbors (KNN) Algorithm	NO-5.423	NO-0.59
DT Model	Decision Tree Algorithm	YES-3.26	NO-0.38
GRIDSEARCHCV Model	GridSearchCV Algorithm with Hyper-parameter Tuning	YES-3.218	NO-0.38

REGRESSION METRICS COMPARISON

SERIAL NUMBERS	DESCRIPTIONS	MAE<=5	MAPE<=0.33
RF Model	Random Forest Regression Model	YES-2.45	YES-0.29
XGBOOST Model	XGBoost ML Model	YES-3.25	NO-0.37
PCA LSTM Model	Using Principal Component Analysis (PCA) with LSTM	YES-4.366	YES-33.44
PCA LSTM Moving Averages Model	Using Principal Component Analysis (PCA) with LSTM with Moving Average variables(Feature Engineering)	NO-7.75	YES-33.47
LSTM Model	Long Short-Term Memory-LSTM Neural Network Model	NO-9.71	YES-33.40
AutoKeras Model	Regression Model using AutoKeras	YES-2.59	YES-0.27

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Thank You!