Stock Price Prediction Using Data Science

Introduction:

The stock market is the collection of markets where stocks and other securities are bought and sold by investors. Publicly traded companies offer shares of ownership to the public, and those shares can be bought and sold on the stock market. Investors can make money by buying shares of a company at a low price and selling them at a higher price. The stock market is a key component of the global economy, providing businesses with funding for growth and expansion. It is also a popular way for individuals to invest and grow their wealth over time.

Objectives:

1. Understand Customer Behavior : Utilize data science to analyze Stock Previous History patterns and preferences.

2. Segmentation: Employ data-driven techniques to segment Stocks into distinct groups based on common characteristics.

Methodology:

1. Data Collection and Integration

- First, the corresponding data require pre-processing, which initially includes the cleaning and removal of incomplete or obviously irrelevant data (such as identifiers).

- Next, technical indicators can be calculated based on the underlying time-series data, such as close price information.

2. Data Pre-Processing

- Once the cleaned data including technical indicators are obtained, the data are pre-processed further through scaling and dimensionality reductions to obtain relevant variables and to filter out irrelevant ones.

- Identify patterns, outliers, and correlations.

3. Data Splitting

- input data are usually divided into training data (to train the model with certain parameters and structure of the model), validation data (to evaluate the performance of all trained models and select the best model structure and parameters), and test data (to evaluate the generalization performance of the final model on observations that it has not encountered before during training and validation).

- Engineer new features that can enhance accuracy.

4. Model Training

- Feature selection in its simplest form can be used independently of the learning algorithm, it is listed as a data pre-processing step. However, it may be connected to model training by using the learning algorithm’s performance to perform feature selection or may be integrated in the model construction itself.

5. Model Selection

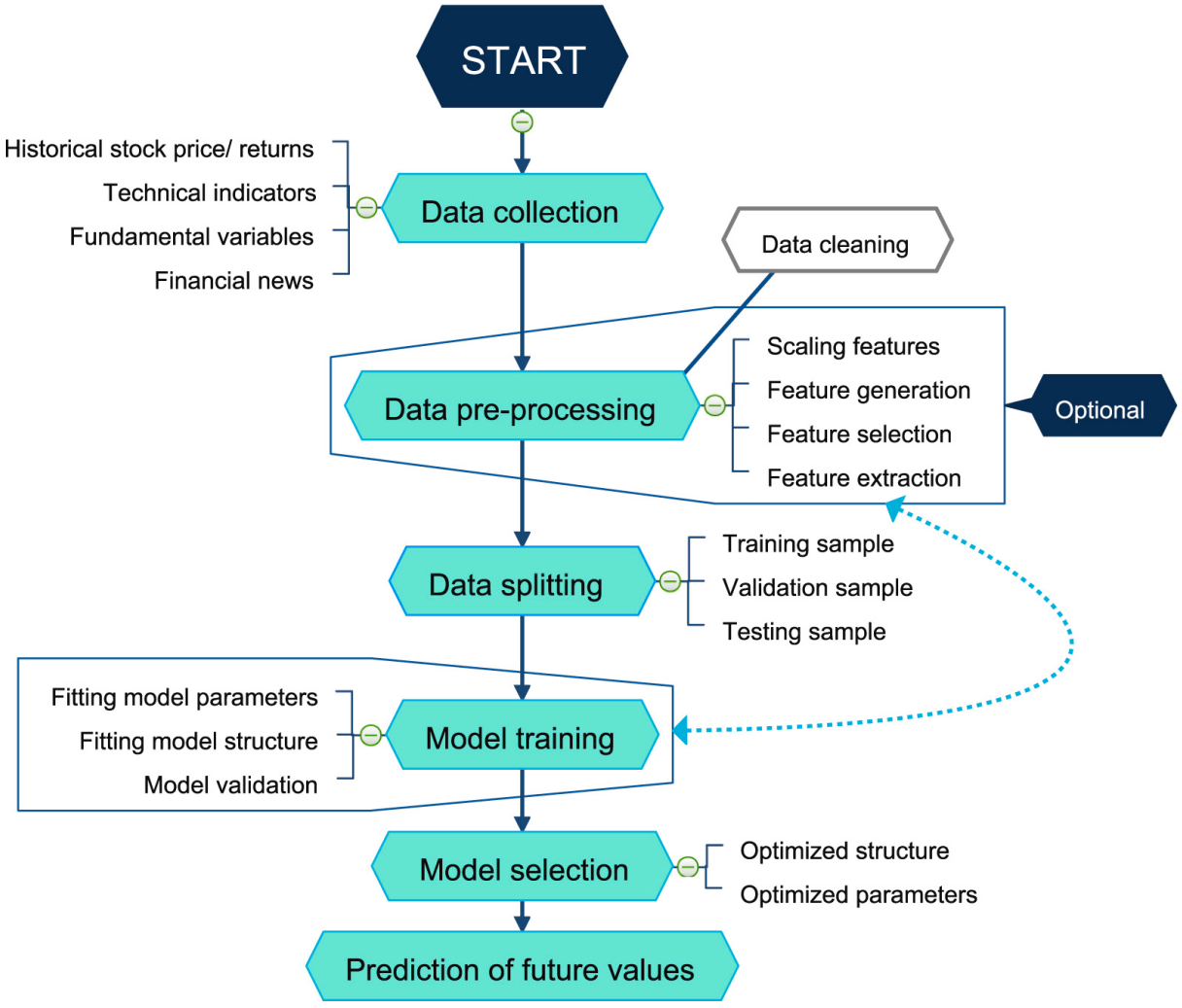
- Analyze each segment's characteristics, behaviors, and preferences to understand their unique traits.

- To account for this potential link between feature selection and model training, the training step is connected with the pre-processing step via a dashed line in the flow chart.

Conclusion:

Leveraging data science for customer segmentation empowers businesses to gain a deeper understanding of their customer base. By identifying patterns and behaviors of Stock Price prediction is the act of trying to determine the future value of a company stock or other financial instrument traded on an exchange. The successful prediction of a stock's future price could yield significant profit.

FLOW CHART


START
Historical stock price/ returns
Technical indicators
Fundamental variables
Financial news
Data collection
Data cleaning
Data pre-processing
Scaling features
Feature generation
Feature selection
Feature extraction
Optional
Data splitting
Training sample
Validation sample
Testing sample
Fitting model parameters
Fitting model structure
Model validation
Model training
Model selection
Optimized structure
Optimized parameters
Prediction of future values