Stock Market Prediction

USING

MACHINE LEARNING

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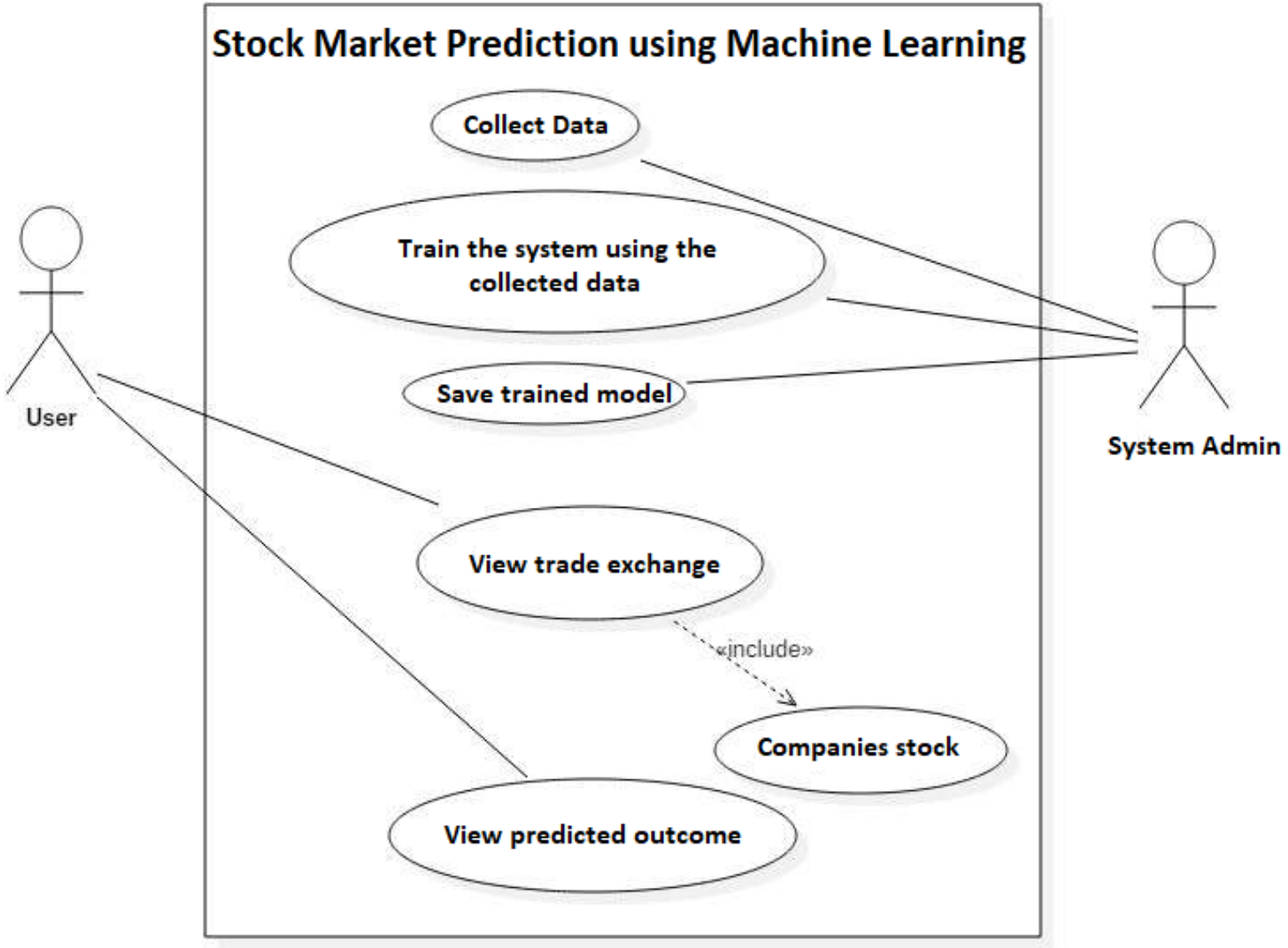
Agenda

- System Design
- Data Flow Diagram
- Sequence Diagram
- Architecture
- Implementation
- Screenshot
- Conclusion

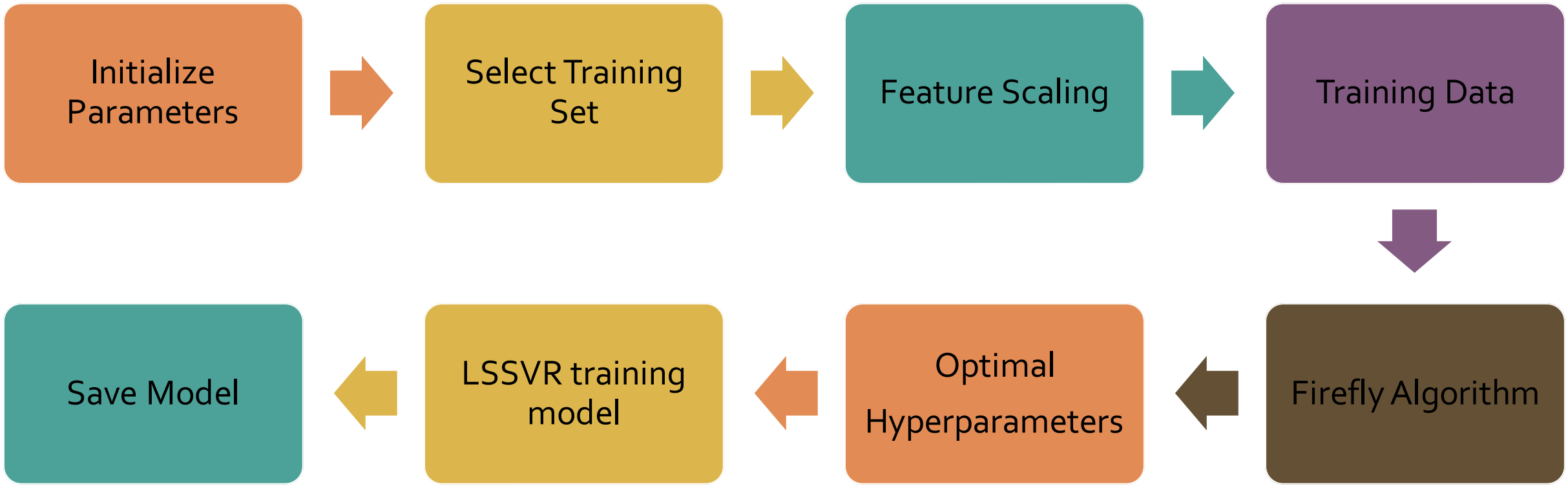
System Design

USE CASE DIAGRAM

1. Data is initially collected from online sources or the stock exchange
2. The data is then used to train the system
3. Trained model is saved
4. User views the trade exchange and stock of a company
5. Using the model, closing prices are predicted



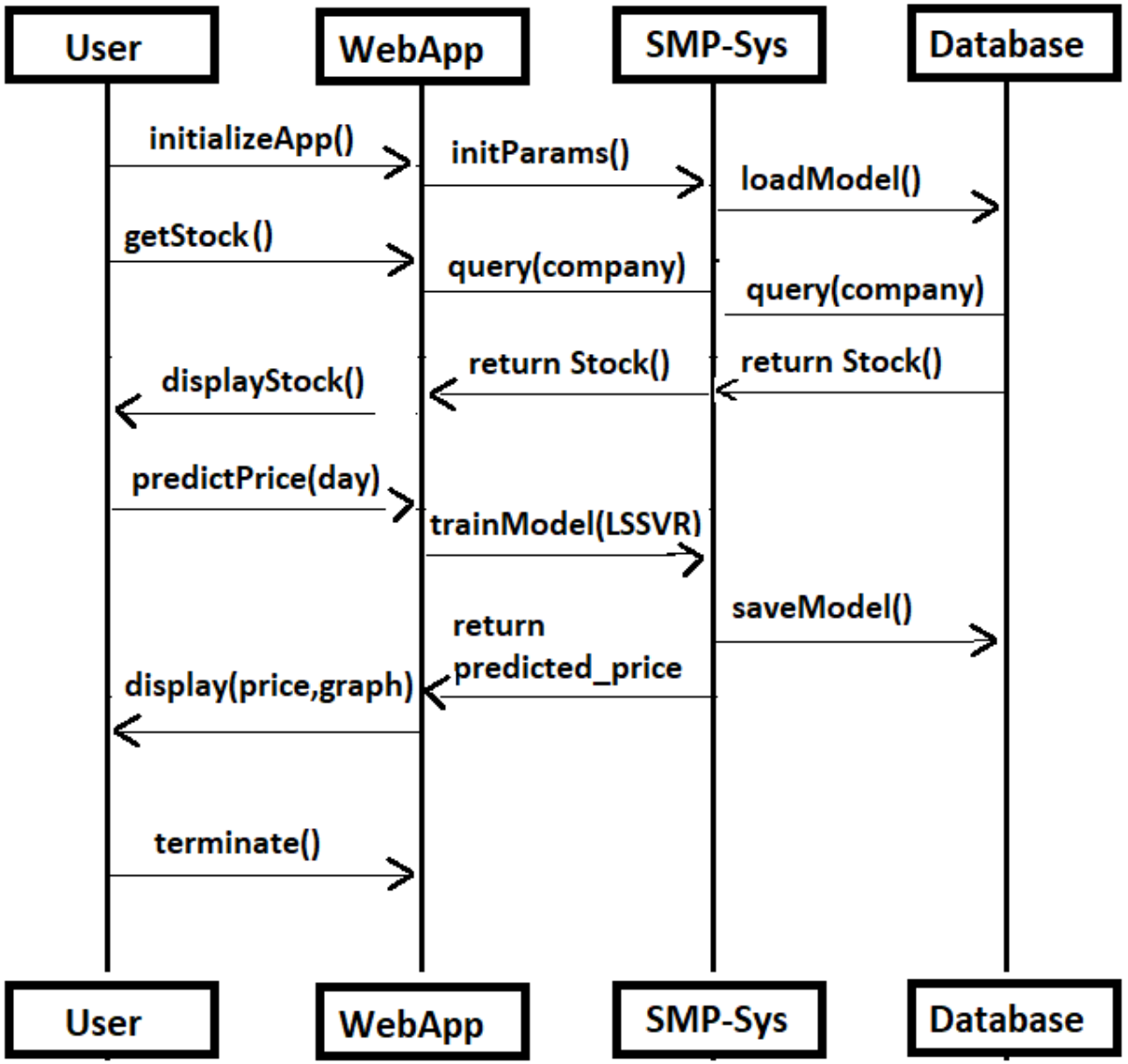
Data-Flow Diagram



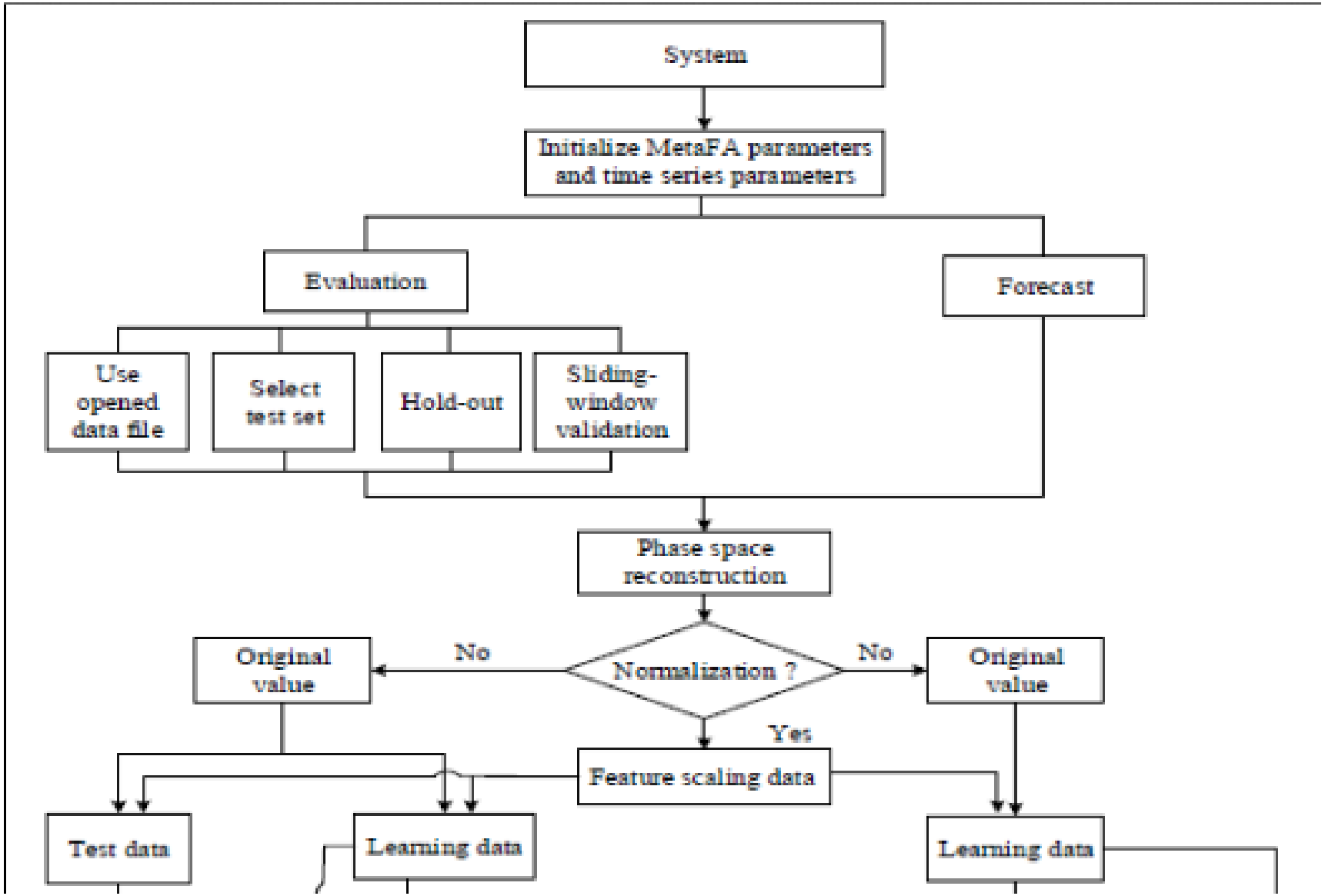
Sequence Diagram

SEQUENCE DIAGRAM

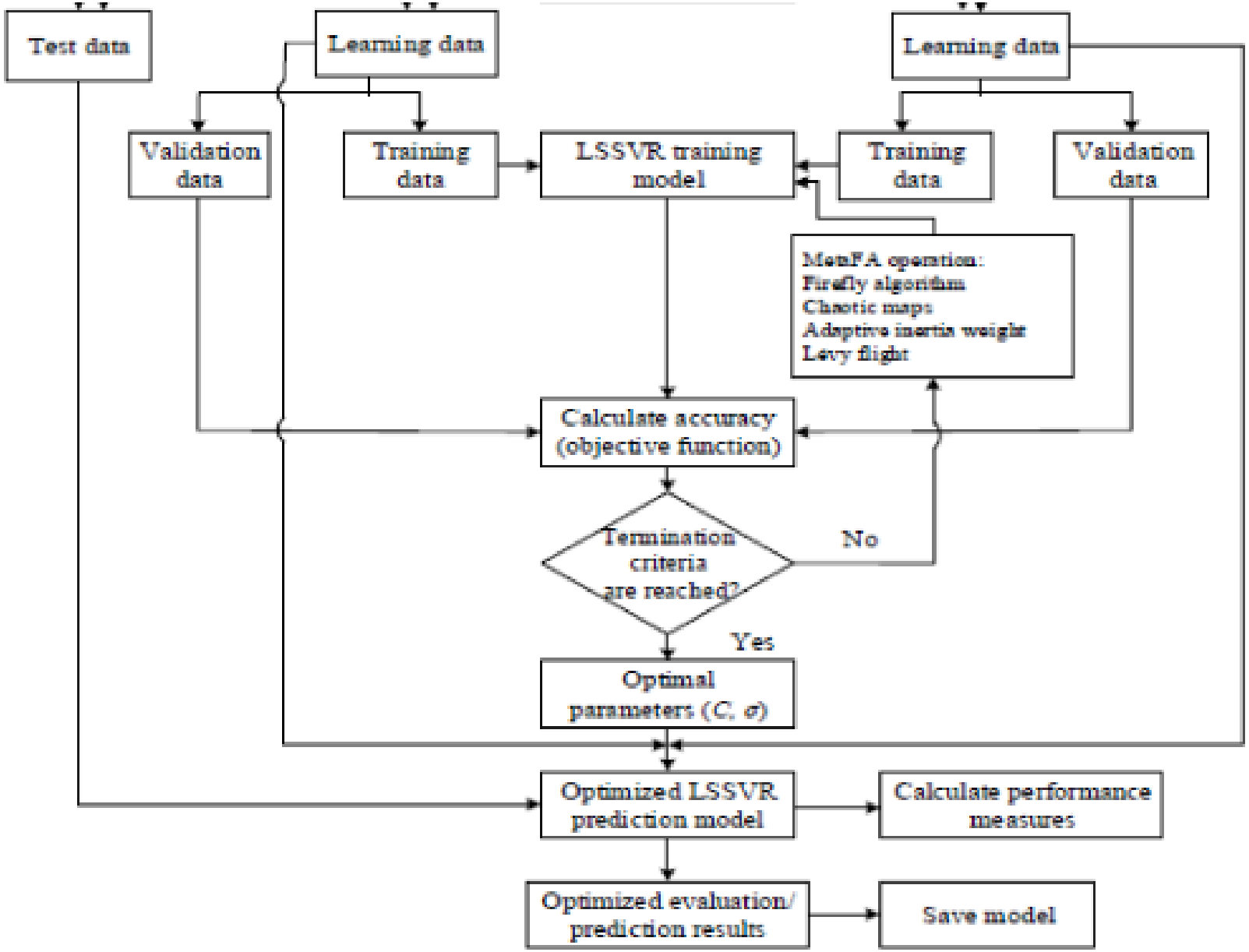
1. User visits the website/webapp
2. Previously saved model is loaded
3. User requests for a company's stock data
4. He requests for prediction to be made
5. The Stock Market Prediction System trains a model using the data from the database
6. The model is saved for further use and closing price is predicted
7. Result is displayed along with graph



Architecture- 1



Architecture - 2



Implementation

Least Squares Support Vector Regression

The least squares version of the SVM classifier is obtained by reformulating the minimization problem as

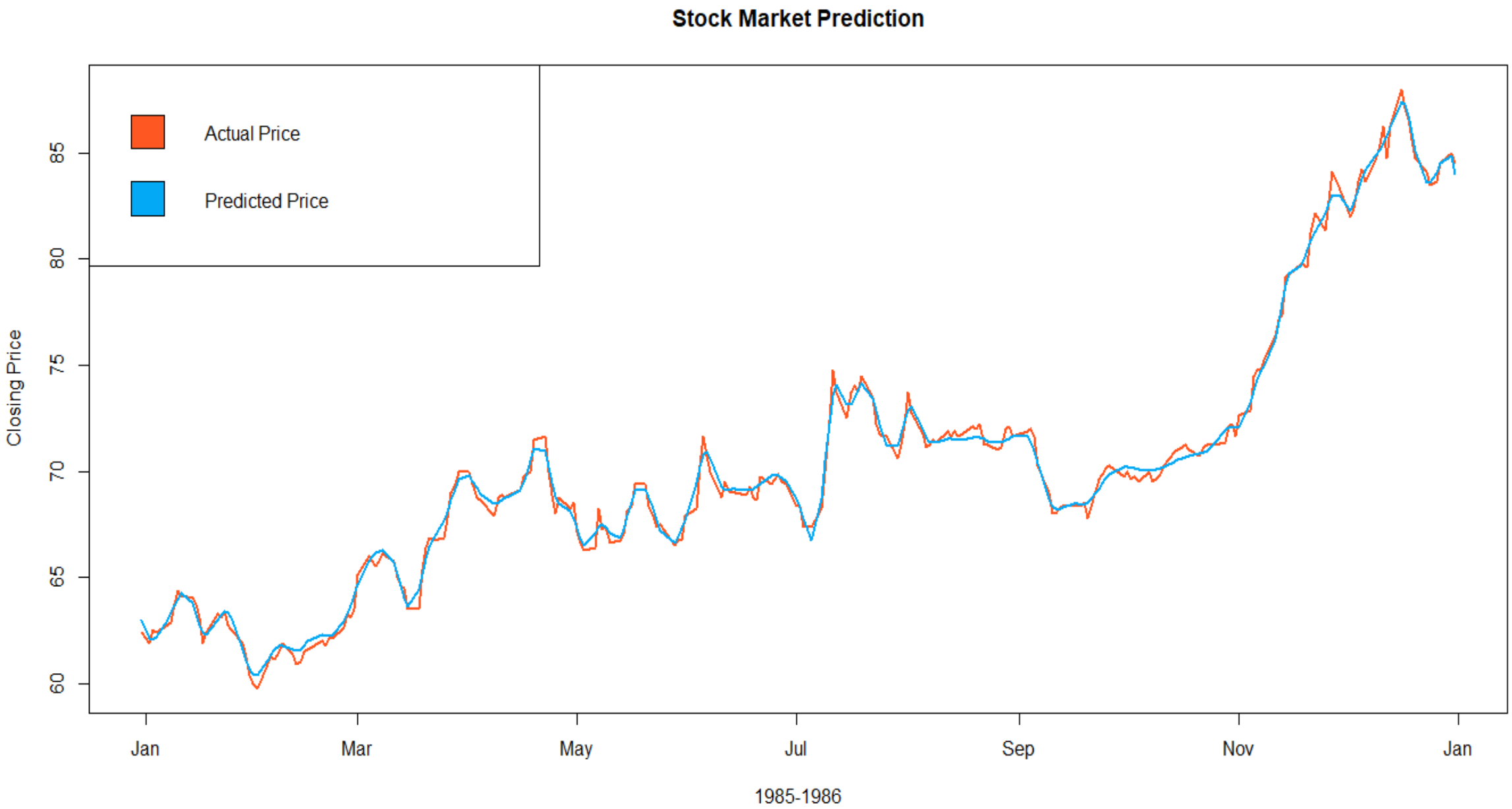
$$\min J_2(w, b, e) = \frac{\mu}{2} w^T w + \frac{\zeta}{2} \sum_{i=1}^{N} e_{c,i}^2,$$

For the kernel function $K(\bullet, \bullet)$ one typically has the Radial Basis Function

$$K(x, x_i) = \exp\left(-\|x - x_i\|^2 / \sigma^2\right),$$

The LSSVR algorithm is a further development of SVR by Suykens (2001) and involves equality instead of inequality constraints, and works with a least squares objective function. The LSSVR approach considerably reduces computational complexity and increases efficiency compared to standard SVM. LSSVR solves linear equations instead of a quadratic programming problem

Screenshot


Stock Market Prediction
Actual Price
Predicted Price
Closing Price
85
80
75
70
65
60
Jan
Mar
May
Jul
Sep
Nov
Jan
1985-1986

Conclusion

Thus, as we can see above in our proposed method, we train the data using the training data set at the beginning of the stock data. We use this data to predict and forecast the test and cross validation stock prices.

We should be able to show that the difference between the predicted value and the actual value of the closing price in the test dataset must be as minimum as possible

Thank You

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