**CHAPTER 1**

**INTRODUCTION**

* 1. **EXISTING SYSTEM**
  2. **PROPOSED SYSTEM**

We propose to build a standalone application to predict a stock price using more than one method of prediction from various data sources.

In our proposed system we have two main components for supporting buyer decision.

1. Price Prediction using Regression and Classification.
2. Sentiment Analysis to determine market sentiment of a particular stock.

In Price Prediction we use various algorithms to determine the price, out of these various algorithms we perform model evaluation to select the best model that’s fitting our data.

The various algorithms are:

1. Multivariate Linear Regression
2. Artificial Neural Networks using Backpropagation
3. Random Forest
4. XGBoost
5. Sentiment Analysis
   1. **MOTIVATION**

Businesses in most cases run over purchaser’s pleasure, purchaser opinions approximately their products. Shifts in sentiment on social media were proven to correlate with shifts in inventory markets. Identifying purchaser grievances thereby resolving them results in purchaser pleasure in addition to trustworthiness of an organization. Hence there's a need of an unbiased computerized machine to categorize purchaser opinions regarding any problem. In today’s surroundings in which we’re justifiably laid low with statistics overload (even though this doesn't imply higher or deeper insights), businesses may have mountains of purchaser remarks collected; however, for mere humans, it’s nevertheless not possible to examine it manually with none type of mistakes or bias. Oftentimes, businesses with the quality intentions locate themselves in an insights vacuum. You recognize you want insights to tell your decision making and you understand that you’re missing them, however, don’t recognize how quality to get them. Sentiment evaluation offers a few solutions into what the maximum vital problems are, from the attitude of customers, at least. Because sentiment evaluation may be computerized, selections may be made primarily based totally on a tremendous quantity of statistics as opposed to simple intuition.

* 1. **OBJECTIVES OF THE WORK**

Our main objective is to help support buyer decisions in Intraday trading of stocks in the Indian Stock Market. We aim to achieve our main objective by trying to predict stock prices and determining user sentiment.

We use two methods to predict stock prices, they are:

1. Using Regression and Neural Networks to predict the closing price of a stock for the next day
2. Using Classification to determine whether the stock price will rise, fall or stay approximately the same for the next day

We also use Sentiment Analysis as a supporting factor as user sentiment plays a huge role in determining stock prices.

**CHAPTER 2**

**LITERATURE SURVEY**

Literature survey is an assignment of previous task done by some authors and collection of information or data from research papers published in journals to progress our task. It is a way through which we can find new ideas, concept. There is lot of literatures published before on the same task; some papers are taken into considerations from which gives the ideas of the project is taken.

2.1: TITLE: Survey of Stock Market Prediction Using Machine Learning Approach

Author: ASHISH SHARMA, DINESH BHURIYA, UPENDRA SINGH

Published in 2017 International conference of Electronics, Communication and Aerospace Technology (ICECA)

Publisher: IEEE

In this project they have used efficient regression approach to predict the stock market price from stock market data based. Prediction plays a very important role in stock market business which is very complicated and challenging process. To achieve this, they used regression analysis to model and analyse multiple variables.

Merits and Demerits

This study provided a theoretical approach for predicting stock prices using a basic regression model and was developed by Ashish Sharma and his colleagues. This study described regression models and how their applications can help with price forecasting. This study gave us an idea of how to provide some forecasts by choosing the appropriate factors that affect stock prices as variables.

2.2: Title: Analysis and Forecast of Nepalese Stock Prices Using Various Machine Learning Algorithms

Authors: Pushkar Khanal, Shree Raj Shakya

Published: Minutes of the 2016 IOE Graduate Meeting

Publisher: IEEE

In this project, we used machine learning algorithms to predict patterns and analyse stock price trends. Increased accuracy, reliability, and changeability have also increased our reliance on smart trading systems to help us predict and analyse stock prices in a variety of situations. Forecasting methods based on the type of data and the type of tools each method uses to forecast the market are divided into technical analysis methods, fundamental analysis methods, traditional time-series forecasting methods, and machine learning methods.

An algorithm called a support vector machine in combination with boosting provided the most accurate results compared to most other machine learning algorithms and traditional engineering techniques. On the other hand, the mean square error is lower even in linear regression.

2.3: Title: Multi-kernel learning to predict the direction of stock prices

Authors: Amit Kumar Shirohi, Pradeep Kumar Mahat, Ph.D. Vahida Atter

Published in: International Conference on Advances in Engineering & Technology Research

Publisher: IEEE

This project used multiple kernel learnings for stock price forecasting. It aims to build a kernel model that linearly combines fixed-based kernels to create a kernel. The success of an SVM depends on the selection of the appropriate pre-crafted and prepared kernel. They used MKL to integrate different types of kernels.

The pre-processing component first collects and processes raw data from the market, then extracts some technical features or indicators based on historical stock prices and trading volumes, and finally normalizes the entire function set. did. The forecasting component first builds different base kernels (RBF and polykernel) on the normalized dataset, then combines these base kernels in MKL, and then rises on the next trading day after the previous trading day. Or the day you set the criteria for predicting the movement of daily stock price trends such as downtrends. The Performance component calculates the prediction accuracy to evaluate the performance of the proposed and baseline methods.

This task required the appropriate set of functions to predict the most accurate values. This study by Amit Kumar Sirohi described the two-stage model in detail. The first stage provided information on selecting features such as open and close prices, and the second stage built a different kernel for the extracted features. This gave me a good idea of how to apply the appropriate function to the model.

2.4: Title: Neural network by predicting stock market data

Authors: Rohit Verma, P Kumar Chore, Upendra Singh

Published in: International Conferences on Electronics, Communications and Aerospace Technologies

Publisher: IEEE

This article described an artificial neural network application for the task of stock index forecasting. They explained the theory behind ANN and the neural network model and its salient features.

The results obtained in both cases were accurate. The predictions are accurate unless there is a large sudden difference in the actual data, such as the right edge where it becomes impossible to predict the changes accurately. On the other hand, this also proves the hypothesis that the stock market is unpredictable. The minimum error in test and training data was as low as 3.5% for a single hidden layer.

Therefore, we can see that neural networks are an effective tool for forecasting stock markets and can be used with real-world datasets such as the Nifty dataset. From this project, it was recognized that deep learning models can significantly improve accuracy. Rohit Verma and his colleagues have proposed a theoretical approach for predicting stock prices using artificial neural networks. Here, the results were taken from the Nifty Stock Index dataset based on the values from the last few days. This study gave 96% accuracy.

**CHAPTER 3**

**SYSTEM REQUIREMENTS AND SPECIFICATION**

**3.1 SYSTEM ANALYSIS**

**3.2 FUNCTIONAL REQUIREMENTS**

**3.3 NON-FUNCTIONAL REQUIREMENTS**

**3.4 TOOLS AND TECHNOLOGIES REQUIRED**

**CHAPTER 4**

**SYSTEM DESIGN**

# **4.1 SYSTEM ARCHITECTURE**

Diagram

Description automatically generatedOverall System Architecture for Price Prediction and Sentiment Analysis

# **4.2 INPUT/OUTPUT DESIGN**

We’ve developed a GUI for our application, we used the Python Tkinter to build the GUI. Tkinter is available on Windows and Linux/Unix.

There are 2 main components in our GUI.

1. Data Input
   1. Stock Name
   2. Dataset Input (CSV File)
2. Output

The output section is divided into two categories

* 1. Prediction Output
     1. Price Prediction
     2. Price Classification
  2. Sentiment Analysis Output

The Image below shows a rough version of the GUI and its structure

Graphical user interface, website

Description automatically generated

# **4.3 OBJECT ORIENTED DESIGN**

**4.3.1 CLASS DIAGRAM**

**4.3.2 USE – CASE DIAGRAM**

**4.3.3 SEQUENCE DIAGRAM**

**4.3.4 TRANSITION DIAGRAM**

**4.3.5 ACTIVITY DIAGRAM**

**4.3.6 DATAFLOW DIAGRAM**

# **4.4 ALGORITHM**