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Online Stock Forecasting

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Group-13 :

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Individual Group Member's Contribution Breakdown

For this project, all group members have contributing equally.

Phase	Members
$ Project Meetings	All Members
$ Data Collection	All Members
$ UI development	Milin, Vidur
$ Designing Web Services and Database	Rakesh, Thiru
$ Designing Prediction Strategies	Thiru, Bhavya
$ Integration and Testing	All Members
$ Report and Presentation	All Members

Project Overview

$ Our Project Aim

- $ Developing a web application which provides access to users, a reliable prediction of stock values of companies they are interested in.

$ Using Technical analysis

- $ The technical analysis would based on the analysis if historical market data, we would get using Yahoo Finance APIs. We are collecting both the historical and real time stock data.

$ Development Environment

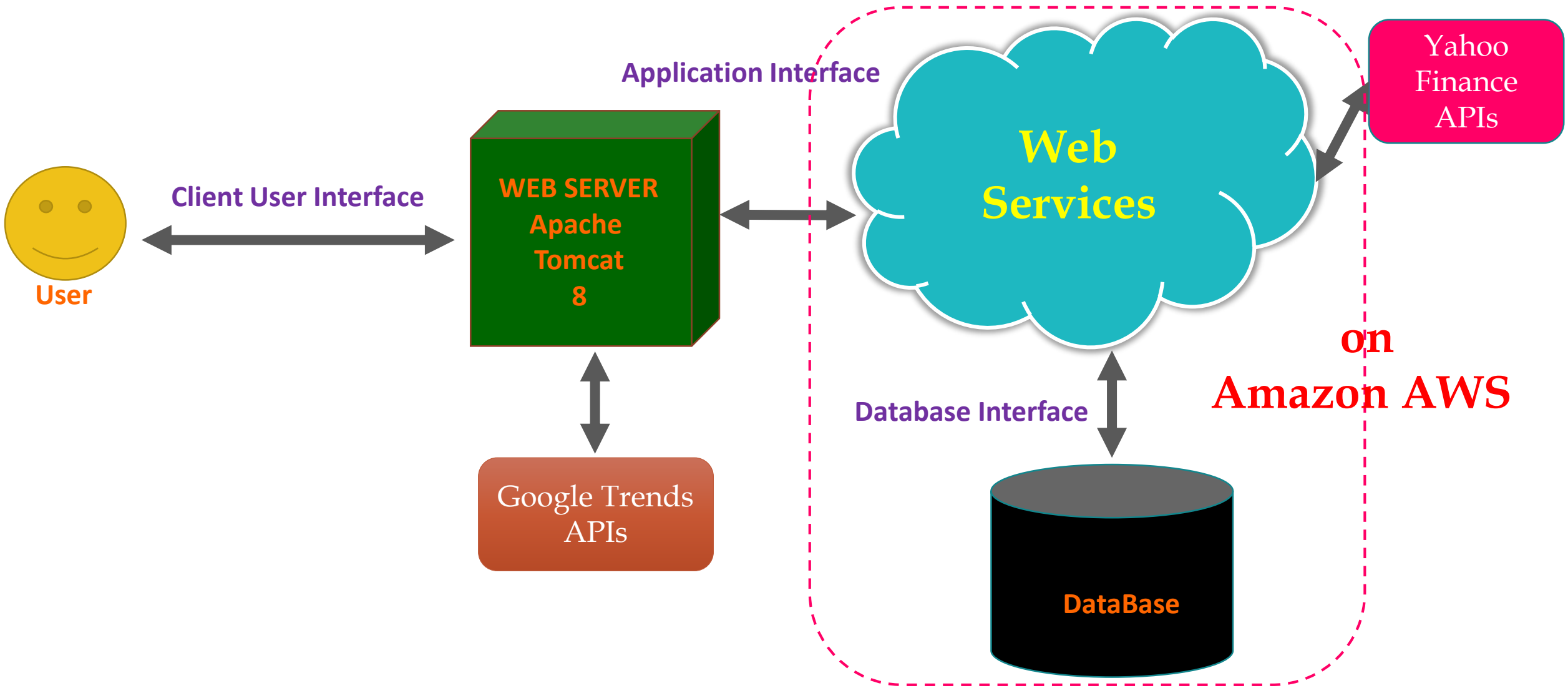
- $ Java for developing the web services.
- $ Amazon AWS for hosting web services.
- $ PostgreSQL for database.
- $ JSP , HTML, AJAX, JS, CSS , Twitter-Bootstrap theme for UI development

Project Overview

Our project mainly focuses on three aspects:

- **Real time data feed**
  - We have used real time data that is collected from Yahoo Finance API. So the prediction is based on real time data feeding and long term prediction is based on historical data, thus making it a realistic prediction advisory.
- **Prediction Strategies and Web Services**
  - We are providing prediction for both long term (next 10 days) and short term (next 5 values with interval for 30 sec).
  - These algorithms run as a back-end task and compute the prediction values for the various stocks completely abstracted from the User.
- **Easy Access to Web Interface**
  - The web application would be offering various functionalities to the end users like
  - Getting valuable information about the stocks.
  - Some tips on how to deal with their current stocks etc.

High-level Block Diagram



Why Stock Prediction ?

It's all about $$$ ..

Why do anyone invest in stock markets ?

$. To become a part owner of the business

$. *To receive profits which are named as* ***Dividends***.

- Stocks are at a relatively high potential in terms of returns when compared to mutual funds and bonds.

The potential comes at a price of high risk of losing some or the total investments at times.

Hence, investors are interested in stock predictions.

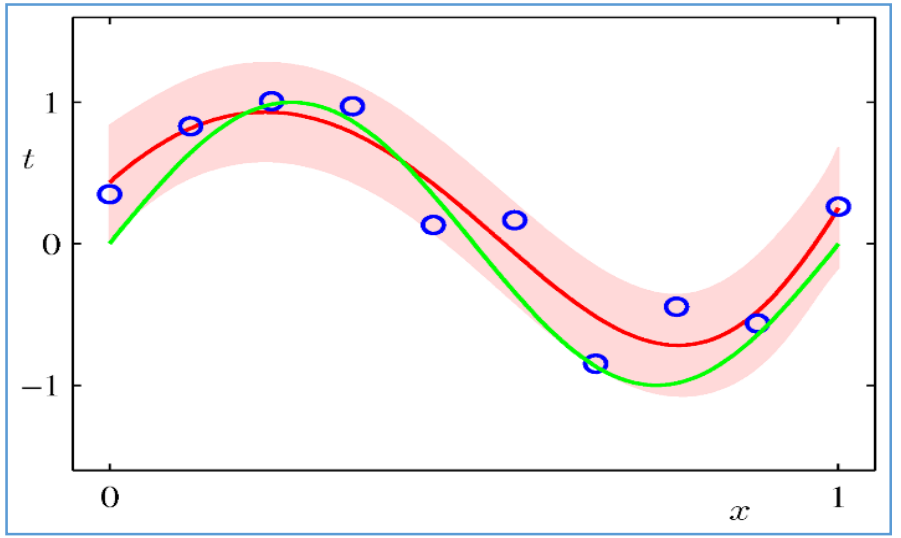
Short term Prediction Strategy - Bayesian

- To predict intra-day stock prices

- Our Duration
  - Prediction window: ***Next 5 Values***

About Bayesian….

- Curve fitting is the process of constructing a curve, or mathematical function, that has the best fit to a series of data points, possibly subject to constraints
- Previous data is used to fit the curve and can be used to predict future value.
- Bayesian linear regression is a prediction with the probability of random variable



Long term Prediction Strategy – AI & Machine Learning

- Artificial Intelligence is used as a key tool to predict the stocks based on long-term periods.

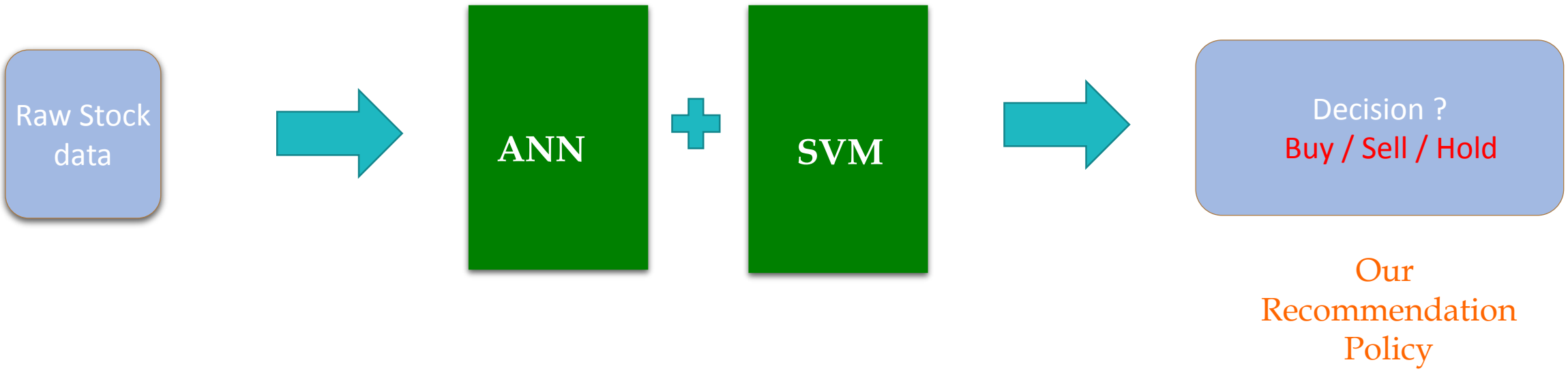
- Machine Learning Technique: Support Vector Machine

- Machine Learning Technique: Artificial Neural Networks

Decision Making ! – Our Recommendation Policy

- Ultimately, the stock analysis is to make a decision whether to buy, sell or hold a stock.

For Long Term Prediction and Recommendation Strategy



Our Recommendation Policy

Consulting from Patterns

- We are using patterns to reduce the uncertainty of forecast.

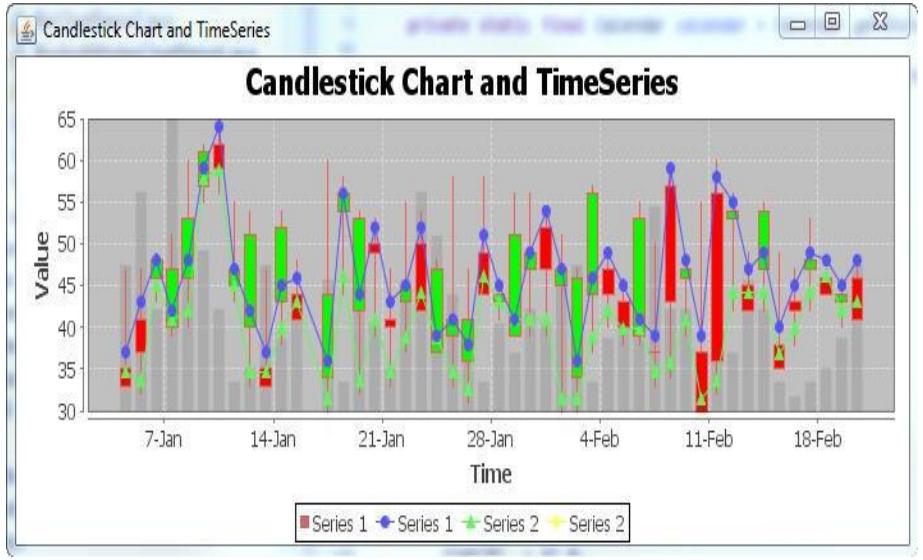
- **Cup and Handle Pattern**
- **Ascending Triangle**

BUY

- **Head and Shoulders**
- **Descending Triangle**

SELL

HOLD



Web Services

1. The real time data API (GET)
http://machine_name/com.stockprediction/rest/services/realtimedata?symbol =symbol
This API gives the real time data (time, price and volume)of the stock mentioned in the symbol argument of the query string for the present day from 9AM to the current time.

2. The stock details API (GET)
http://machine_name/com.stockprediction/rest/services/stockdetails?symbol =symbol
This API gives the details of the stock mentioned in the symbol argument of the query string. Details include year low, year average, latest price, latest volume and ten day high price.

3. List of stocks' details (GET)
http://machine_name/com.stockprediction/rest/services/ list
This API gives the year low, year average, latest price, latest valume and ten day high price for all the stocks in our database.

4. List of stocks whose average is lesser than lowest of stock (GET)
http://machine_name/com.stockprediction/rest/services/ listavglowthan?symbol=symbol
This API gives the list of stocks whose average price is less than the lowest of the stock metioned in the query string by the symbol.

Web Services

6. Short term prediction (GET)
http://machine_name/com.stockprediction/rest/services/ shortterm?symbol=symbol
This API gives the short term prediction for the next 5 minutes for the stock mentioned by symbol in the query string.

7. Long term prediction (GET)
http://machine_name/com.stockprediction/rest/services/ longterm?symbol=symbol
This API gives the long term prediction for the next 10 days for the stock mentioned by symbol in the query string.

8. User Registration (POST)
http://machine_name/com.stockprediction/rest/services/ userregistration
This API accepts details of the user - first name, last name, company, position, phone, email, password. It creates a record in the database.

9. User login (POST)
http://machine_name/com.stockprediction/rest/services/ userlogin
This API accepts the email and the password of the user. If the password matches with the record in the database, it returns a JSON object with authenticated attribute as true along with the details of the user.