Abstract

Stock Market Prediction (data driven market prediction)

The Financial Market Prediction System leverages machine learning and deep learning to predict stock prices, market trends, and economic indicators. The goal of this project is to provide accurate, data-driven insights into the financial markets by analyzing a wide range of inputs such as historical price data, financial news, and market sentiments. Given the inherent volatility and unpredictability of financial markets, this system is designed to continuously adapt to new information and evolving trends, making it a valuable tool for investors and financial analysts.

The core features of the system include:

1. Data Aggregation & Preprocessing:

The system collects and preprocesses large datasets, including stock price histories, trading volumes, economic indicators, and financial news articles. Sentiment analysis is applied to news data to gauge market mood.

2. Predictive Models:

A combination of supervised learning models (Random Forest, XGBoost) and deep learning models (ANN, LSTM, CNNs) is used to analyze time-series data and predict stock movements and market trends.

3. Sentiment Analysis:

Natural Language Processing (NLP) techniques are employed to analyze financial news and social media data, measuring market sentiment and its influence on stock price movements.

4. Risk and Volatility Assessment:

Advanced metrics such as Value at Risk (VaR) and volatility estimators are incorporated to assess risk levels, allowing investors to make informed decisions even in volatile markets.

5. Portfolio Management Suggestions:

The system offers investment strategies and portfolio management suggestions tailored to individual user preferences and risk tolerance, using optimization algorithms to maximize returns while minimizing risk.

6. Visualization & Reporting:

The system presents data-driven insights through dashboards, enabling users to visualize trends, market predictions, and financial health indicators in real time.

7. Integration with Real-Time Data Feeds: Real-time financial data feeds allow the system to make up-to-date predictions, giving users an edge in fast-moving markets.

Dataset:
Astock

Research Paper:
"C:\Users\ahmed\Downloads\Documents\2403.02647v1.pdf"