

Stock Price Prediction Using ARIMA and Deep Learning

This project focuses on predicting stock prices using a hybrid model that combines ARIMA with modern deep learning techniques. Stock markets are complex and unpredictable, making accurate forecasting difficult. Traditional models like ARIMA work well for stable trends but fail to capture nonlinear patterns. To solve this, deep learning models such as CNN, LSTM, and Attention mechanisms are used. The objective of this project is to build an intelligent system that predicts stock prices of major US companies such as Microsoft, Johnson & Johnson, JPMorgan, Disney, and Exxon Mobil. The system first uses ARIMA to remove trends and noise from stock data. Then CNN extracts important features, LSTM learns time-based patterns, Attention focuses on the most important price points, and finally XGBoost makes the final prediction. This hybrid approach improves accuracy, especially for stocks with high price fluctuations. The results show that the model performs well on volatile stocks and provides useful predictions for investors. This system can help reduce financial risk and support better decision-making in stock trading.