

ABSTRAK

Penelitian ini bertujuan untuk mengidentifikasi arah tren harga saham Apple melalui pendekatan multivariate time series menggunakan Long Short - Term Memory (LSTM). Model yang dikembangkan dirancang untuk meklasifikasi arah tren menjadi tiga kategori yaitu naik, turun, dan stabil berdasarkan data historis harga saham dan hasil Ekstraksi fitur dari indicator teknikal.

Data saham yang digunakan diproses melalui perhitungan indicator teknikal sebagai fitur multivariat, normalisasi data, serta pembentukan urutan data menggunakan metode sliding window. Proses pelabelan dilakukan dengan menghitung perubahan harga antra waktu (gradien) untuk menentukan arah tren. Model LSTM (Long Short - Term Memory) dilatih untuk mengenali pola historis yang relevan terhadap klasifikasi tren jangka pendek.

Evaluasi performa dilakukan menggunakan metrik Akurasi, Precision, Recall, dan F1-score untuk mengukur kemampuan model dalam mengklasifikasi tren secara tepat.

Kata Kunci : LSTM (Long Short - Term Memory), Time Series, Saham Apple, Klasifikasi Tren, Sliding Window, Ekstraksi fitur

ABSTRACT

This study aims to identify the trend direction of Apple stock prices using a multivariate time series approach with the Long Short-Term Memory (LSTM) method. The developed model is designed to classify the trend direction into three categories—upward, downward, and stable—based on historical stock price data and feature extraction from technical indicators.

The stock data is processed through the calculation of technical indicators as multivariate features, data normalization, and the formation of sequential input using the sliding window method. Trend labeling is carried out by calculating the price change gradient over time to determine the direction of movement. The LSTM model is then trained to recognize historical patterns that are relevant to short-term trend classification.

The model's performance is evaluated using Accuracy, Precision, Recall, and F1-score metrics to measure its ability to classify trends accurately.

Keywords: LSTM (Long Short - Term Memory), Time Series, Apple Stock, Trend Classification, Sliding window, Feature Extraction