

Analisis Korelasi Harga Saham Dengan Analisis Sentimen Twitter Menggunakan Metode CNN-LSTM

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Abstract

The intricate interplay between stock prices, reflecting a company's intrinsic value, and multifaceted factors like economic conditions, corporate performance, and market sentiment, constitutes a vital research domain. Grounded in sentiment analysis, our study deciphers public opinions from vast textual data to gauge sentiment, leveraging Convolutional Neural Networks (CNN) and Long Short-Term Memory (LSTM) models. We focus on Bank Central Asia (BBCA), a prominent Indonesian banking institution, aiming to forecast stock price fluctuations by analyzing sentiment trends extracted from social media, especially Twitter. Meticulous experimentation, encompassing data segmentation, feature extraction, augmentation, and model refinement, yields significant enhancements in prediction accuracy. The CNN-LSTM model's performance improves from 73.41% to a robust 77.75% accuracy, with F1-scores rising from 73.00% to 75.42%. Importantly, strong correlations emerge between sentiment predictions and actual stock price movements, validated by Spearman correlation coefficients. Positive sentiment exhibits a substantial correlation of 0.745 with stock price changes, while negative sentiment exerts notable influence with a correlation coefficient of 0.691. In summary, our study advances the field of sentiment-driven stock price prediction, showcasing deep learning's effectiveness in extracting sentiment from social media narratives. The implications extend to understanding market dynamics and potentially integrating sentiment-aware strategies into financial decision-making. Future research directions could explore model transferability across financial contexts, real-time sentiment data integration, and interpretability techniques for enhanced practicality in sentiment-driven predictions.

Keywords: BBCA, CNN-LSTM, sentiment analysis, stocks, twitter
