ANALYSIS OF THE LONG-SHORT-TERM MEMORY MODEL IN A CHILI PRICE PREDICTION SYSTEM USING INTERACTIVE DIGITAL MAP VISUALIZATION IN JEMBER REGENCY

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ABSTRACT

Chili price fluctuations in Jember Regency make it difficult for the public to monitor price changes across markets. This study aims to implement a Long Short-Term Memory (LSTM) model to predict chili prices and develop a web-based system featuring an interactive digital map. Historical price data for cayenne pepper, large red chili, and curly red chili were obtained through web scraping from the SISKAPERBAPO East Java website, covering November 1, 2021, to November 1, 2025. After hyperparameter tuning, model performance was evaluated using Root Mean Squared Error (RMSE) and Mean Absolute Error (MAE) on the original price scale and compared with the baseline model. The system was developed using the Waterfall method with React, Flask, MySQL, Leaflet, and OpenStreetMap. The results show that curly red chili achieved an RMSE of 1.904, an MAE of 1.216, and an accuracy of 96.456%. Large red chili achieved an accuracy of 94.091%, while cayenne pepper reached 93.109%. The curly red chili dataset covered only three markets, whereas the other two commodities covered five markets each. Black-box testing across 15 scenarios achieved a 100% success rate. The system successfully presents chili price information and predictions through an interactive digital map.

Keywords: LSTM, chili price prediction, web scraping, interactive digital map.