PALM YIELD PREDICTION SYSTEM USING LONG SHORT-TERM MEMORY (LSTM) METHOD

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ABSTRACT

Oil palm is a significant plantation crop that plays a crucial role in the agricultural sector. This study aims to assist farmers in planning and managing their plantations more effectively. Previously, farmers often encountered challenges in accurately estimating crop yields, which led to inefficient resource utilization and economic losses. The data utilized in this study were gathered from interviews and records of oil palm farmers between January 2023 and January 2024. The proposed system comprises several stages, including data collection and preprocessing, the development and training of a Long Short-Term Memory (LSTM) model, and the evaluation of model performance. The results indicated that the LSTM model provided more accurate predictions than alternative methods, achieving a low Mean Absolute Error (MAE) value. Concurrently, the model's development involved a training dataset comprising 80% of the total data, with a testing set constituting the remaining 20%. The sequence data value was set at 640. The parameters employed included 128 hidden units, with 150 epochs resulting in an MSE value of 5.3968. This system is expected to assist farmers in enhancing their efficiency and effectiveness in plantation management and in leveraging market opportunities optimally.

Keywords: Palm Oil, LSTM, Deep Learning, Prediction, Streamlit