

## ABSTRACT

*The increase in electricity usage is affected by various factors, one of them is technological advancement. This advancement motivate PLN to innovate by launching a prepaid electric system as an alternative to a postpaid system. Flexibility improvement is the main advantage of a prepaid system because the customer can pay for their electricity whenever they want. But, this results in a less-scheduled payment that increases the risk of a power outage caused by improper electricity estimation by the customer.*

*Based on the issue, a system capable of monitoring the customer's electric balance on a prepaid meter is developed in this research. The system is developed using a machine learning approach with a Random Forest algorithm. The machine learning model is used to convert the electric balance data on the meter's display into digital data that are easier to process and disseminate. Image preprocessing is performed as additional steps to improve the classification process.*

*The Random Forest model is tested using two parameter, dataset proportion and hyperparameter configuration. Dataset proportion testing is conducted to find the best ratio between training and testing dataset, while hyperparameter testing is conducted to find the learning characteristics that yield the best classification performance. The best model in this research yields an accuracy of 99,28% using 330 seven-segment digit images.*

**Keywords:** *electricity monitoring, image processing, random forest, seven-segment.*