



# Implementation of Recurrent Neural Network and Kalman Filter Method to Predict Hypertension Case in East Java Province

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**Abstract:** An individual's health condition can be judged by their activities and lifestyle. People who live in big cities like Surabaya, tend to be more prone to stress if they do not manage it well. This high level of stress triggers the onset of hypertension or high blood pressure. Hypertension is a disease related to a person's blood pressure, where the blood pressure exceeds the limits of normal conditions. The number of people affected by this disease, especially in East Java province, is quite high with most sufferers being of productive age. Therefore, it is necessary to take systematic, scientific, and technology-based steps relevant in addressing this case. By utilizing advances in information technology, the increase in number of these cases can be monitored using prediction methods based on data analysis, statistics and mathematics. This research used the Recurrent Neural Network (RNN) and Kalman Filter methods to predict the increase in cases of hypertension in East Java. The simulation results showed that the Recurrent Neural Network (RNN) method produced the best error value (RMSE) of 0.0009, while the Kalman Filter method produced the best error value (RMSE) of 234.213.

**Keywords:** *hypertension; East Java; prediction; RNN; Kalman filter.*

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