

ABSTRACT

Floods and earthquakes have parameters that can be observed with the Internet of Things (IoT). The results of monitoring with IoT are in the form of data that can be processed to get flood and earthquake warnings. In this study, a neural network model is used to process the data. The neural network models used are ANN and RNN. Also in this study, the LSTM model, which is a type of RNN, is used as a comparison to RNN. Initialize the weights and biases of these models using Nguyen-Widrow. ANN, RNN, and LSTM are used successively for flood and earthquake detection, prediction of water level, and as a comparison of RNN in predicting water level. These models were designed through trial and error to find the optimal model parameters. The experimental results show that the ANN model for flood detection has an average accuracy of 0,9969 for training and 0,9991 for testing. The ANN model for earthquake detection has an average accuracy of 0,9967 for training and 0,9987 for testing. The RNN model for prediction of water level has better results than the LSTM model. The trained models are then applied to flood and earthquake monitoring applications. However, there are limitations so that the model training data is not objective, so the neural network model that has been built so far cannot be used publicly. Nevertheless, this research is expected to be a reference for further research.

Keyword: Flood, Earthquake, Internet of Things (IoT), Artificial Neural Network, Recurrent Neural Network, Long Short-Term Memory, Nguyen-Widrow, API