

ABSTRACT

Flood is a natural disaster that often strikes Indonesia as a country with a tropical climate and high rainfall. Bandung, as a city with high annual rainfall, frequently experiences flooding disasters every few years. One of the areas negatively affected by this disaster is Dayeuhkolot, Baleendah, and Bojongsoang, in the Bandung Regency. Situated near the Citarum river basin, which converges with the Cikapundung river, flooding in Dayeuhkolot, Baleendah, and Bojongsoang is an inevitable occurrence.

This Capstone Design aims to create a flood disaster management system along the Citarum river located in the Dayeuhkolot and Bojongsoang areas, utilizing IoT sensors including Ultrasonic and Waterflow sensors with the Esp32 microcontroller implementation. The data classification method employs the Random Forest algorithm for machine learning, serving as the process for classifying flood potential measurement data. Water levels and current strength are used as variables in the dataset. The classification outcome consists of three flood status classes: safe, alert, and warning, indicating areas prone to flooding and predicting flood-related losses. The application of the Random Forest machine learning algorithm demonstrates that the flood disaster management system in Dayeuhkolot and Bojongsoang, Bandung Regency, can operate more effectively through Machine Learning implementation. The classification information generated by the machine learning will be conveyed through an information system, specifically a website, to users and the local community, enabling them to take appropriate actions to reduce flood risks.

Keyword : Internet of Things (IoT), sensor, random forest, website.