ABSTRACT

Flooding is one of the most common natural disasters in Indonesia and can cause damage to infrastructure, property, and threaten human lives. Factors that trigger flooding include high rainfall, clogged drains, and sudden increases in river water. To overcome this problem, an effective and responsive flood detection system is needed. This research develops a flood detection system using Wireless sensor network (WSN) equipped with Artificial intelligence (AI) technology. WSN consists of a number of wireless sensors spread over a wide area to collect and transmit data in real-time. AI technology is used to analyze the data collected by the WSN, so that it is able to detect potential flooding early and provide warnings to authorities and the public.

The solution offered in this research is a combination of WSN and AI that can identify weather patterns, water levels, and other environmental changes as key indicators of potential flooding. The data collected by WSN sensors is used to coordinate rescue and evacuation operations, as well as flood relief efforts. The implementation of this system showed significant improvements in early detection and response capabilities to flood emergency situations.

System test results show that the integration of WSN and AI can effectively reduce response time and improve flood detection accuracy. By utilizing this technology, it is expected to reduce the negative impact of floods on society and infrastructure. This research concludes that the use of AI-based WSN is a potential solution for flood disaster detection and mitigation in Indonesia.

Keywords: *Wireless sensor network, Artificial intelligence, Flood Detection, Early Detection System, Natural Disaster*