NURISYA SEPTIANI

SISTEM DETEKSI DINI BENCANA BANJIR BERBASIS *INTERNET OF THINGS* PADA SUNGAI SAMBONG KABUPATEN BATANG

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112 + halaman / 35 gambar / 10 tabel / 9 lampiran / 52 pustaka (2020 – 2023)

ABSTRAK

Penelitian ini bertujuan untuk mengembangkan Sistem Deteksi Dini Bencana Banjir Berbasis Internet of Things (IoT) pada Sungai Sambong, Kabupaten Batang, guna mengatasi keterbatasan sistem manual yang memerlukan pengamatan langsung di lokasi bendungan Kedungdowo Kramat. Sistem ini dirancang untuk memantau ketinggian air dan status bencana secara real-time melalui perangkat IoT, sehingga informasi dapat diakses tanpa harus mengunjungi lokasi fisik. Pengembangan sistem dilakukan melalui metode waterfall yang melibatkan tahapan komunikasi, perencanaan, pemodelan, konstruksi, dan implementasi. Data penelitian dikumpulkan melalui observasi, wawancara, dan kuesioner untuk mengidentifikasi kebutuhan fungsional dan non-fungsional. Implementasi dilakukan dengan perangkat keras seperti NodeMCU ESP8266 dan perangkat lunak berbasis web. Sistem diuji menggunakan metode UAT (User Acceptance Test), Black Box, dan White Box untuk memastikan kesesuaian dengan kebutuhan pengguna dan keandalan kode program. Hasil pengujian menunjukkan bahwa sistem dapat memantau ketinggian air dan status bencana secara efektif, mempermudah warga dalam mengakses informasi, serta menyediakan riwayat data ketinggian air.

Kata Kunci : Sistem Deteksi Dini Bencana Banjir Berbasis Internet of Things, IoT, Waterfall, NodeMCU ESP8266.

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EARLY DETECTION SYSTEM OF FLOOD DISASTER BASED ON INTERNET OF THINGS ON SAMBONG RIVER, BATANG DISTRICT

Under the guidance of Sattriedi Wahyu Binabar, S. Si., S.Kom, M.Kom., and Widiyono, ST., S.Kom., M.Kom.

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ABSTRACT

This research aims to develop an Internet of Things (IoT)-based Flood Early Detection System on the Sambong River, Batang Regency, to overcome the limitations of manual systems that require direct observation at the Kedungdowo Kramat dam site. The system is designed to monitor water levels and disaster status in real-time through IoT devices, so that information can be accessed without having to visit the physical location. System development was conducted through the waterfall method involving the stages of communication, planning, modelling, construction, and implementation. Research data was collected through observations, interviews, and questionnaires to identify functional and non-functional requirements. Implementation is done with hardware such as NodeMCU ESP8266 and web-based software. The system was tested using UAT (User Acceptance Test), Black Box, and White Box methods to ensure compliance with user requirements and the reliability of the programme code. The test results show that the system can effectively monitor water levels and disaster status, make it easier for residents to access information, and provide a history of water level data.

Key Words : Flood Early Detection System Based on Internet of Things, IoT, Waterfall, NodeMCU ESP8266.