UNIVERSITI TEKNOLOGI MARA

ANTI-LEAKAGE CURRENT FLOOD SYSTEM

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ABSTRACT

The increasing frequency and intensity of flooding events necessitate innovative solutions for mitigating potential risks and minimizing damage to critical infrastructure. This thesis presents the development and implementation of an Anti-Leakage Current Flood System, designed to enhance flood preparedness and response mechanisms. The system utilizes a NodeMCU v3 controller as the central processing unit, integrating an ultrasonic sensor for real-time water level monitoring.

Upon detection of rising water levels, the system employs a color-coded LED display (red, yellow, green) with corresponding indicators on an I2C LCD, offering a clear visual representation of the flood severity. In tandem, a 5V relay module ensures the swift disconnection of the electric supply to prevent electrical hazards during flood events. The integration of a mobile notification system further enhances the system's effectiveness by alerting users to imminent danger and facilitating timely evacuation and precautionary measures.

The project also emphasizes the importance of robust testing and calibration to ensure accurate water level readings, along with considerations for power supply backups to maintain system functionality during power outages. Additionally, the thesis explores possibilities for remote monitoring, allowing users to access real-time status updates and notifications through a user-friendly interface.

This research contributes to the field of flood management by providing an efficient and proactive solution that enhances community resilience and safety. The documentation accompanying this thesis includes a comprehensive guide for system implementation, calibration, and maintenance, ensuring its accessibility to users and facilitating future developments in flood management technology.

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INTRODUCTION

1.1 Introduction

In recent years, the escalating frequency and intensity of flood events have posed significant challenges to communities worldwide. These natural disasters not only result in widespread property damage but also pose severe threats to human safety and well-being. Addressing these challenges requires innovative technologies that enable proactive flood management and enhance the resilience of critical infrastructure. This thesis introduces the development and implementation of an Anti-Leakage Current Flood System, a novel approach designed to detect rising water levels, promptly disconnect electrical supplies, and alert stakeholders to mitigate the impact of floods.

The Anti-Leakage Current Flood System employs cutting-edge technology, utilizing a NodeMCU v3 controller as the central processing unit. Through the integration of an ultrasonic sensor, the system continuously monitors water levels, providing real-time data crucial for early flood detection. To enhance user awareness and facilitate quick decision-making, the system employs a color-coded LED display (red, yellow, green) and an I2C LCD that visually represent the severity of the flood situation. Furthermore, a 5V relay module ensures the rapid disconnection of electrical supplies, safeguarding against potential electrocution hazards during flood events.

The significance of this research lies in its potential to revolutionize flood management