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RFID Based Real Time Flood Alert Mechanism

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Abstract: Floods are among the most destructive natural disasters worldwide, frequently disrupting lives and causing significant economic loss. Traditional flood monitoring systems often depend on centralized infrastructure such as GSM networks and satellite communication, making them ineffective in remote or disaster-struck areas. This paper presents a cost-effective, decentralized real-time flood alert mechanism utilizing Arduino microcontrollers, ultrasonic sensors, and RF communication modules. The system continuously monitors water levels, processes sensor data, and issues timely alerts using buzzers, LEDs, and optional GSM-based notifications. Designed for both urban and rural deployment, it eliminates dependence on internet connectivity and ensures alerts even in low-infrastructure regions. Testing confirmed high reliability and responsiveness under various environmental conditions. This model not only enhances local disaster preparedness but also serves as a scalable and upgradeable solution with future potential for IoT and cloud integration.

Keywords: Real-time flood monitoring, RF communication, Arduino-based alert system, Ultrasonic water level sensing, GSM alert mechanism, Disaster preparedness, Decentralized flood warning, IoT-enabled flood detection

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