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Efficient Management of Solid Waste in Urban Drainage System

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Abstract: *In metropolitan environments, effective drainage management is crucial to preventing flooding and ensuring public safety. This study proposes a thorough monitoring system that uses real-time environmental observation to enhance drainage condition management. Using a variety of sensors, the system detects environmental changes that can result in floods and sends out notifications so that prompt action can be taken. A flow measurement element helps identify potential obstructions in real time and provides information about drainage efficiency. Additionally, the system monitors toxic gas concentrations to guarantee safety by enabling quick response in risky circumstances. The system's dependability is ensured by monitoring temperature and water levels, which improves administration and control. A user-friendly interface and remote monitoring capabilities enhance decision-making, which in turn enhances drainage management techniques as a whole. This approach lessens the risks associated with insufficient urban drainage conditions by assisting in the development of an intelligent and efficient drainage monitoring system.*

Keywords: IoT-Based Monitoring, Smart Drainage System, Real-Time Data Collection, Gas Sensor (Methane, Carbon Monoxide Detection), Arduino (ATMEGA328P) Microcontroller, Node MCU (ESP8266), Communication Module, Embedded C Programming, Ultrasonic Water Level Detection, Proteus Simulation

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