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**IOT based Manhole Detection and Monitoring System**

**Abstract**

Damaged or open manholes in urban areas pose serious safety risks, leading to accidents and injuries. Traditional manual inspections are inefficient and often fail to detect hazards in time. To address this, an **IoT-Based Manhole Detection and Monitoring System** is proposed, integrating **gas, temperature and tilt sensors** to monitor manhole conditions. The system detects harmful gases, water overflow, temperature changes, and lid displacement, ensuring real-time surveillance.

Data is transmitted to a cloud-based IoT platform via a **Wi-Fi-enabled microcontroller (ESP32 or NodeMCU)**, triggering instant alerts to municipal authorities through **SMS and web notifications** in case of abnormalities. This smart system reduces reliance on manual inspections, enhances public safety, and enables proactive maintenance for efficient urban drainage management.

2200049143 – Nitheesh Kumar

2200049169 – Vinay Kumar

2200049172 – Sharath Kumar

2200049173 – Koushik Kumar