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**(An Autonomous Institution Affiliated to Anna University, Chennai)**

**Department of Computer Science and Engineering.**

## **SMART IOT DRIVEN DRAINAGE HYGINEGE AND CLEANING MONITORING SYSTEM**

### **TEAM MEMBERS**

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### **ABSTRACT**

Urban drainage systems often face critical challenges such as water overflow, accumulation of toxic gases, and potential fire hazards, posing significant risks to manual scavengers and the surrounding environment. This study proposes an IoT-Based Smart Drainage and Health Monitoring System that integrates multiple sensors and automated controls to ensure safer and more efficient drainage management. Ultrasonic sensors monitor water levels in real-time, automatically triggering a solenoid valve to release excess water when high levels are detected, preventing blockages and overflows. Gas sensors identify harmful gases such as methane and carbon monoxide, minimizing the risk of toxic exposure to workers. The system transmits collected data wirelessly to a cloud-based IoT platform, enabling continuous monitoring and real-time analysis. A dedicated mobile application provides instant alerts and updates to authorities and workers, facilitating timely responses to detected anomalies. Historical sensor data is analyzed to predict potential risks and optimize future system performance, improving the overall efficiency of drainage management. By automating key processes and minimizing manual intervention, the system significantly reduces health risks associated with exposure to hazardous environments. Manual scavengers benefit from enhanced safety, as the system effectively monitors and manages potentially dangerous conditions. Moreover, environmental hazards are mitigated by preventing sewage overflow and ensuring the timely detection of harmful gases. The proposed solution not only improves the safety of workers but also enhances the operational efficiency of urban drainage systems. Through continuous monitoring and predictive analysis, the system ensures a proactive approach to managing drainage conditions, ultimately reducing the likelihood of accidents and environmental degradation. This IoT-enabled smart system is an essential advancement in urban infrastructure, promoting safer working conditions, protecting the environment, and ensuring public health in densely populated urban areas.