Automated System for Monitoring Swimming Pool Safety Based on the IoT

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Abstract: *This system aims to create a multi-layered safety net for swimming pools, designed to detect and respond to potential drowning situations automatically. It utilizes a combination of laser scanners, depth sensors, and motion detectors to provide comprehensive monitoring.This project aims to develop and implement an automated system for swimming pool safety, designed to significantly reduce the risk of drowning deaths. Utilizing a multi-sensor approach, the system integrates laser scanning technology, depth sensors, and motion detectors to provide comprehensive, real-time monitoring of the pool environment. A low-power laser scanner continuously check critical level of swimming pool whenever any person stay at that level for log time period then alarm will blow to inform other people foe help, enabling the detection of submerged or struggling individuals through sophisticated algorithmic analysis of shape, movement, and depth. Complementary depth sensors provide redundant verification of submersion events, while perimeter motion sensors detect unauthorized pool access. A central processing unit fuses the data from these sensors, employing advanced algorithms to differentiate between normal pool activity and potential drowning scenarios. Upon detection of a critical event, the system triggers automated responses, including audible alarms and the potential for automated pool water level reduction or deployment of rescue devices. The system also offers a user interface for monitoring and control, with remote access capabilities. This project will focus on the development of robust algorithms, sensor integration, and system testing in controlled environments, demonstrating the feasibility and effectiveness of this automated approach to enhancing swimming pool safety and preventing tragic drowning incidents.*

Keywords: Swimming Pool Safety, IOT, Anti- Drowning, Lifeguard Alert, Sensors