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IoT Based Drowning Detection in Swimming Pools

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Abstract: *Drowning incidents pose a significant threat to water safety, necessitating advanced technologies for timely and accurate detection. The proposed system integrates multiple sensors, including heart rate monitoring, temperature sensing, SpO2 (oxygen saturation) measurement, and a Wi-Fi module, to capture comprehensive physiological and environmental data. The heart rate, temperature, and SpO2 sensors provide vital signs crucial for identifying distress, while the Wi-Fi module enables real-time communication and data transmission. The proposed system aims to address limitations in existing drowning detection methods by providing a comprehensive, multi-sensor approach coupled with advanced deep learning techniques. The integration of IoT devices ensures scalability, accessibility, and the ability to deploy the system in various aquatic settings. Additionally, the deep learning verification mechanism enhances the system's accuracy, reducing false positives and negatives. Preliminary experiments and simulations demonstrate promising results, indicating the system's potential to significantly improve the efficiency and reliability of drowning detection in real-world scenarios. The proposed approach contributes to the ongoing efforts to enhance water safety measures through the synergy of IoT and deep learning technologies.*

Keywords: Drowning

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