

# **VirtualEye-Life Guard for Swimming Pools to Detect Active Drowning**

## **1.Automated Vision Based Swimming Pool Surveillance System.**

**Authors:** Darshan V, Sai Anish R, Shiddaramanaguda T, Achintha Holla, Swetha T (Department of Computer Science and Engineering).

Automated vision based surveillance for a real time human behaviour analysis provides an efficient way of detecting the occurrence of any abnormal events amid our surroundings. The technical challenges faced encompass the need to reliably detect and track moving targets within possibly dynamic background and inference module that interprets targets behaviour patterns as events with semantic meaning. The drowning person is detected machine learning, using pi camera underwater which is trained to detect these kind of situations, the pi camera is connected to the Raspberry pi, this system is used to monitor the swimming pool, track swimmers in that, if any person is in drowning condition raspberry pi will detect it and it will send command to Arduino Nano board to lift the mesh up. With the help of stepper motors, the mesh will lift up along with the drowning person.

## **2.Drowning Detection System using LRCN Approach.**

**Authors:** Shardul Sanjay Chavan, Sanket Tukaram Dhake, Shubham Virendra Jadhav, Prof.Johnson Mathew (Department of Computer Engineering).

This project provides the insights of a real-time video surveillance system capable of automatically detecting drowning incidents in a swimming pool. Drowning is

the third reason for the highest unintentional deaths, and that's why it is necessary to create trustable security mechanisms. Currently, most of the swimming pool's security mechanisms include CCTV surveillance and lifeguards to help in drowning situations. But this method is not enough for huge swimming pools like in amusement parks. Some of security systems are using AI for drowning detection using cameras situated underwater at a fixed location and also by using floating boards having a camera mounted on the bottom side so that underwater view can be captured. But the main problem in this system arises when the pool is crowded and vision of the cameras are blocked by people.

### **3. Automated and Intelligent System for Monitoring Swimming Pool Safety Based on the IoT and Transfer Learning.**

**Author:** Aziz Alotaibi (College of Computer and Information Technology).

Recently, integrating the Internet of Things (IoT) and computer vision has been utilized in swimming pool automated surveillance systems. Several studies have been proposed to overcome off-time surveillance drowning incidents based on using a sequence of videos to track human motion and position. This paper proposes an efficient and reliable detection system that utilizes a single image to detect and classify drowning objects, to prevent drowning incidents. The performance of the specialized model is evaluated by using a prototype experiment that achieves higher accuracy, sensitivity, and precision, as compared to other deep learning algorithms. The collected data from different physical devices were processed by using ML techniques, to generate an action value.

### **4. Automated Drowning Detection And Security in Swimming Pool.**

**Authors:** Kanchana A, Kavya G.R, Kavitha C, Soumyashree V, Salila Hedge (Department of Electronics and Communication).

Swimming pool surveillance systems plays an essential role in safeguarding the premises. In this project, differential pressure approach is used for detection of drowning incidents in swimming pools at the earliest possible stage. The automated drowning detection system works on the principle of differential pressure. The system contains two fundamental modules: to begin with the wristband consisting of pressure sensors on the transmitter side. Second, the receiver module at the swimming pool territory should wear the wristband. The pressure at underwater is different and greater than the pressure at the air-water interface. The pressure at a particular depth is measured and set as the threshold.