VirtualEye - Life Guard for Swimming Pools to Detect Active Drowning

(An IBM guided project)

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Literature survey

1) An Automatic Video-Based Drowning Detection System for Swimming Pools using Active Contours

Nasrin Salehi,Maryam Keyvanara ,
Department of Artificial Intelligence,
University of Isfahan.

ABSTRACT:

Safety in swimming pools is a crucial issue. In this paper, a real time drowning detection method based on HSV color space analysis is presented which uses prior knowledge of the video sequences to set the best values for the color channels. Our method uses a HSV thresholding mechanism along with Contour detection to detect the region of interest in each frame of video sequences. The presented software can detect drowning person in indoor swimming pools and sends an alarm to the lifeguard rescues if the previously detected person is missing for a specific amount of time. The presented algorithm for this system is tested on several video sequences recorded in swimming pools in real conditions and the results are of high accuracy with a high capability of tracking individuals in real time. According to the evaluation results, the number of false alarms generated by the system is minimal and the maximum alarm delay reported by the system is 2.6 sec which can relatively be reliable compared to the acceptable time for rescue and resuscitation.

2) Automated Vision based Swimming Pool Surveillance System

Darshan, Sai Anish, Swetha,
Department of Computer Science and Engineering ,
S J C Institute of Technology.

ABSTRACT:

nowadays swimming pools are everywhere, Like in homes, restaurant, clubs. There will be lifeguard at every pool and many swimmers in the swimming pool also, but after that also there are many number of drowning incidents. And the numbers are increasing day by day. To protect the people from drowning in swimming pool, we are using machine learning and mesh lifting system to prevent drowning incidents. The

system will contain a mesh which will help the drowning person to lift up in the water, this mesh movement will be controlled by the stepper motors which are connected to the Arduino Nano board, and there will be buzzer that will alert the people near swimming pool and. 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

3) An automatic drowning detection surveillance system for challenging outdoor pool environments

How-Lung Eng, Kar-Ann Toh, Alvin H.
Institute for Infocomm Research

ABSTRACT:

Automatically understanding events happening at a site is the ultimate goal of visual surveillance system. This paper investigates the challenges faced by automated surveillance systems operating in hostile conditions and demonstrates the developed algorithms via a system that detects water crises within highly dynamic aquatic environments. An efficient segmentation algorithm based on robust block-based background modeling and thresholding-withhysteresis methodology enables swimmers to be reliably detected amid reflections, ripples, splashes and rapid lighting changes. Partial occlusions are resolved using a Markov Random Field framework that enhances the tracking capability of the system. Visual indicators of water crises are identified based on professional knowledge of water crises detection, based on which a set of swimmer descriptors has been defined. Through seamlessly fusing the extracted swimmer descriptors based on a novel functional link network, the system achieves promising results for water crises detection. The developed algorithms have been incorporated into a live system with robust performance for different hostile environments faced by an outdoor swimming pool.