

LITERATURE SURVEY

| S.NO | TITLE | AUTHOR | METHOD/APPROACH | ADVANTAGES | DISADVANTAGES | YEAR |
|------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 1 | Automated Vision-based Surveillance System to Detect Drowning Incidents in Swimming Pools | Abdel Ilah N. Alshbatat, Shamma Alhameli, Shamsa Almazrouei, Salama Alhameli, Wadhha Almarar | The system consists of a Raspberry Pi with the Raspbian operating system, a Pixy camera, an Arduino Nano board, stepper motors, an alarm system, and motor drivers. The proposed system is based on the color-based algorithm to position and rescue swimmers who are drowning. The device then sends an alarm to the lifeguards. | The model not only detects drowning but also tracks the swimmers. The system performed well during several experiments carried out in the laboratory. | There is no proof that this system will work in any pool. This system is customly built for a particular environment. And the effectiveness of the model is not tested in any new environment. | 2020 |
| 2 | Computer Vision Enabled Drowning Detection System | U. Handalage, N. Nikapotha, C. Subasinghe, T. Prasanga, T. Thilakarthna and D. Kasthurirathna | Using convolutional neural network (CNN) models, it can detect a drowning person in three stages (drowning detection, the rescuing drone, and the hazardous activity detection). Whenever such a situation like this is detected, the inflatable tube-mounted self-driven drone will go on a rescue mission, sounding an alarm to inform the nearby lifeguards. | Identifies drowning victims in a minimum amount of time and dispatches an automated drone to save them | Confined with a few of the hardware limitations, such as the use of a single camera and the Jetson Nano at the presence of better-quality hardware, could affect the speed and accuracy of the overall system. | 2021 |
| 3 | Identification of Drowning Victims in Freshwater Bodies using Drift Prediction and Image Processing based on Deep Learning | Anjana Unnikrishnan, Roshni A T, Anusha P R, Anju M Vinny, Anuraj C K | Using multiple sensor data in underwater human rescue detection system to spot drifting and drowning person in a natural water eco system. The water flow sensor which is attached to the portable device calculates the drift distance and tracks drowning person. | The Approach detected human drifting and drowning up to a range of 5m in water bodies. The final result achieved an average of 82.10% accuracy. | The performance of the model depends on the nature of the water body concerned as the drift distance is different for different water eco systems. | 2022 |
| 4 | Deep Learning Used to Recognition Swimmers Drowning | Jia-Xian Jian, Chuin-Mu Wang | Using image processing technology to introduce artificial intelligence motion technology, mounting the camera on the bottom of the swimming pool, and use OpenPose to mark the image joint point features, and input the captured joint point features into the recursive neural network to determine whether the swimmer is drowning.. | The final training result is about 89.4% accurate, so it can be used to assist on-site lifeguards to detect swimmers who may be drowning. | Too much air bubbles generated by the drowning swimmer in the water will also occur. There is a chance that the action cannot be captured by the computer | 2021 |
| 5 | Video Based Drowning Detection System | Pavithra P, Nandini S, Nanthana A, Noor Tabreen Aslam, Praveen Kumar P | The proposed system structure here comprises of a Raspberry Pi (Single Board Computer) equipped with a USB camera for taking the live feed from the pool area. The system also covers the alerting phenomena using a buzzer so that necessary actions are taken intermittently without any delay | Alerting a drowning state is done without any delay here, GPIO system for alerting and short message service used in cohesion with a Raspberry | A working implementation of this module is quite extensive to implement, and multiple hardware components working to near proximity of water can also lead to some malfunctioning | 2021 |

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| | | | | pi computer makes this possible | | |
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