Project Design Phase-I
Proposed Solution Template

Date	19 October 2022
Team ID	PNT2022TMID51524
Project Name	VirtualEye - Life Guard for Swimming Pools to Detect Active Drowning
Maximum Marks	4 Marks

Proposed Solution Template:

S. No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	To save people from drowning
2.	Idea / Solution description	The main idea revolves around capturing the swimmers real time and using only the important features like the joints and hand movements to predict if the person is drowning or not. This can be implemented using a media-pipe or Yolo package such a way that we reduce the computational overload by considering only the important features for prediction. The real time capturing of the swimmers is done using a camera and the captured footage is usedfor further processing. The important features like the joints and hand position are extracted using a media-pipe. Then the extracted skeleton feature is used for prediction in the model.
3.	Novelty / Uniqueness	By integrating the camera under the water surface, it can recognize struggling motions before a fatality occurs. The camera's location captures a complete view of the facility, including swimmers, wanderers, and occupied objects. Swimmers are individually identified using object detection, and noise cancellation and individually tracked using media pipe to identify a possible drowning. On detection, the location coordinates of the drowning person are immediately calculated based on the ground coordinates (a grid system linked to x and y blocks) and sent to the lifeguard. By gathering a nighttime dataset that increases the accuracy of the data in low light.
4.	Social Impact / Customer Satisfaction	About 360,000 people die from drowning across the world in a year, making it the third leading cause of unintentional injury-related deaths in the world. The world is in a dire need of a drowning detection and prevention system to reduce these dangerously high numbers Hence a drowning detection system could have a huge

		societal impact in mitigating this problemand help better notify the lifeguards when a plausible person is detected to be drowning. This solution could also help in reducing the load on the lifeguards and will be best suited for use cases where the area under surveillance of the life guard is quite huge and impossible to have aconstant check on the whereabouts of every person.
5.	Business Model (Revenue Model)	The model is not a onetime investment, if any pool owner buys this model (App) they will use this model forever as it saves people's life. It can generate lifelong freecash flow as every customer will pay a monthly subscription to use this model. This model does not require any other improvements as long as it does the job of drowning detection. With a smallsupport team for the application it can generate huge profits with very little investments.
6.	Scalability of the Solution	This model is highly scalable as in the majority of the cases drowning occurs in similar patterns. The same model can be used anywhere in the world without any big difference in the performance. The model might under perform with respect to pool size and pool populationdensity. But in most cases the model is capable of detecting the person who is drowning irrespective of the pool size and population density. So the proposed model can be incorporated into a live system for different hostile environments faced by any swimming pools in the world.