Project Initialization and Planning Phase

Date	07 November 2024
Team ID	team - 739994
Project Title	Virtual Eye - Life Guard for Swimming Pools to Detect Active Drowning
Maximum Marks	3 Marks

Project Proposal (Proposed Solution) template

The Virtual Eye system aims to detect drowning in real-time using a single underwater camera. By leveraging the YOLOv5 model, this solution detects three classes: Drowning, Swimming, When the system identifies a high drowning probability, it generates an alert to attract the lifeguard's attention. Upon detection, the system immediately alerts lifeguards, enhancing response time and improving swimmer safety.

Project Overview	
Objective	To develop an automated surveillance system that enhances pool safety by detecting and alerting lifeguards to active drowning incidents in real-time.
Scope	This project covers the design, development, and deployment of a computer vision-based system for swimming pools. It includes real-time image processing, alert mechanisms, and integration with pool surveillance infrastructure.
Problem Statement	
Description	Drowning is a leading cause of accidental death in swimming pools, often occurring silently and within minutes. Traditional lifeguarding can be challenging, especially in busy or large pools where continuous vigilance is needed.
Impact	An automated drowning detection system could significantly reduce response times, helping lifeguards intervene swiftly to prevent fatalities and injuries.
Proposed Solution	
Approach	The system uses **YOLOv5** for real-time object detection, analyzing

	video feeds from poolside cameras to identify active drowning behaviors, such as irregular body movements or prolonged submersion.
Key Features	• **Real-Time Detection**: Instantly recognizes signs of drowning and triggers alerts. • **Continuous Monitoring**: Operates 24/7, reducing the risk of missed incidents. • **Efficient and Scalable**: Suitable for both small and large pool facilities.

Resource Requirements

Resource Type	**Description**	**Specification/Allocation**
Hardware		
Computing Resources	CPU/GPU specifications, number of cores	Colab's GPU (typically an NVIDIA T4 or P100)
Memory	RAM specifications	8 GB
Storage	Disk space for data, models, and logs	1 TB
Software		
Frameworks	Python frameworks	Flask
Libraries	Additional libraries	ultralytics
Development Environment	IDE, version control	Google Colab, VS studio, Anaconda prompt
Data		
Data	Source, size, format	Kaggle dataset, 2000 images