Project Design Phase-II
Technology Stack (Architecture & Stack)

Date	03 October 2022
Team ID	PNT2022TMID2564
Project Name	Project - Virtual Eye-lifeguard for swimming pools to detect active drowning
Maximum Marks	4 Marks

Technical Architecture:

The Deliverable shall include the architectural diagram as below and the information as per the table1 & table 2

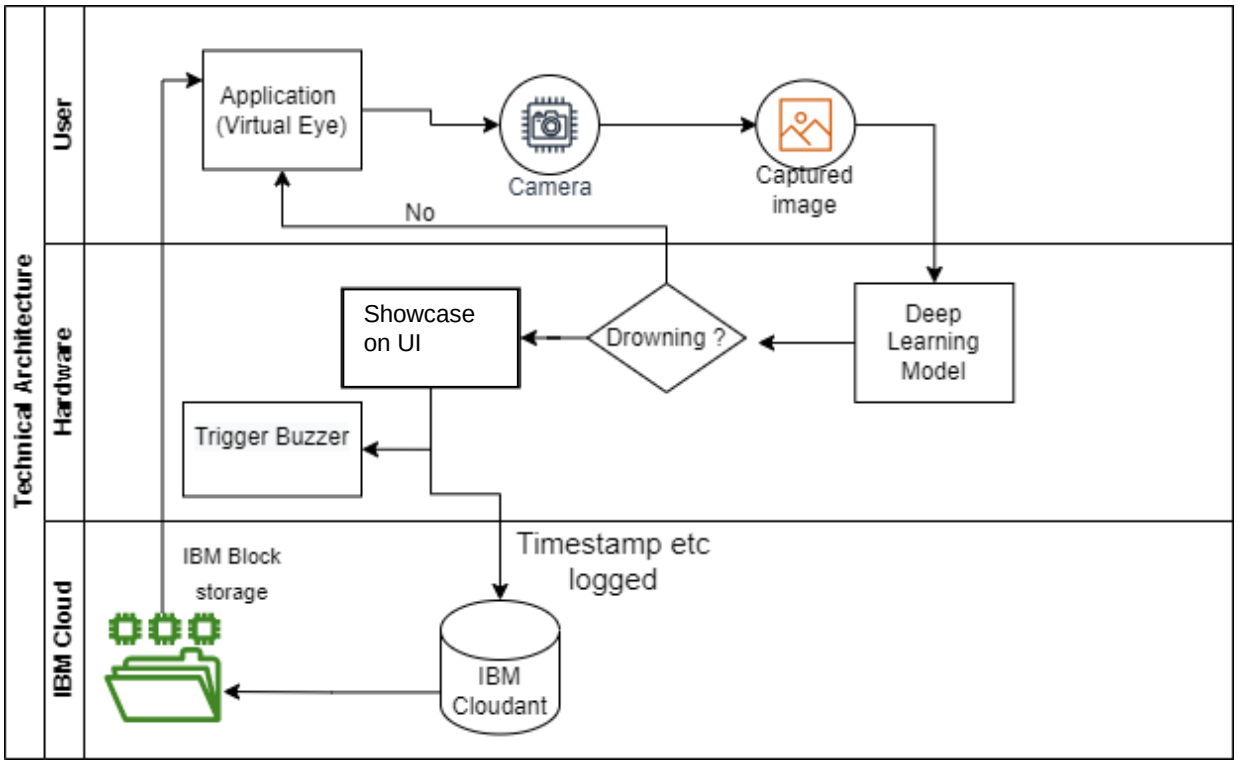

Table-1: Components & Technologies:

S.No	Component	Description	Technology
1.	User Interface	An web UI provided to the admin who installed the software on the swimming pool	HTML, CSS, JavaScript
2.	Image Capture	Application captures the image(s) of the swimming pool in regular intervals	IBM Maxima Image Inspection
3.	Segmentation	To get the video feed and segment humans for further processing	Python packages
4.	Drowning detection model	A Deep learning model to find and detect for a drowning person	Machine Learning & Image Processing using Python
5.	Cloud Database	All the drowning instances with timestamp and segmented images are logged in for future uses	IBM Cloudant etc.
6.	File Storage	User details pertaining to the apartment(private use case)	IBM Block Storage or Other Storage Service or Local File system
7.	Open CV	External API for object detection and segmentation might be used to assist	Open CV API
8.	Machine Learning Model	Captured images are processed using machine learning models to identify for drowning	Object detection & recognition Model, etc.
9.	Infrastructure (Server / Cloud)	The application is deployment on cloud for use	Cloud Foundry

Table-2: Application Characteristics:

S.No	Characteristics	Description	Technology
1.	Open-Source Frameworks	Google colab, VS Code, Online websites	Python, HTML, CSS, JavaScript
2.	Security Implementations	Trigger once drowning is detected and send notifications to pertaining authorities	SMTP
3.	Scalable Architecture	Application is highlight scalable and multiple cameras can be introduced in further updates	Customer feedback, reviews, and ratings
4.	Availability	Users should be able to access the application that is hosted on the cloud at all times as it is very important to be up all the time and should not face any issues such as application crash	IBM Cloud
5.	Performance	Application should handle large number of requests and detect multiple cases of drowning if that happens	Testing - Black, White, and Beta Revise application in a iterative manner