TEAM ID	PNT2022TMID33743

Project Structure:

In this project we have proposed a method for automatic
detection of a active drowning in the swimming pools using AI and YOLO-based Convolutional Neural Network family of models for object detection.

Overview:

The idea is based on real-time video analysis using cameras placed around the pool in a way that allows for coverage of the entire pool.
The captured images are stored and connected with Artificial intelligence. Object_detection.py python file would be created in such a way that the captured images in the camera can be detected using the file. The python file would detect the different objects such as persons, bicycles, cars, chairs, etc.

The data collected are stored in the data folder. It contains caffemodel. CAFFE model-> Convolutional Architecture for Fast Feature Embedding. A CAFFEMODEL file is **a machine learning model created by Caffe**. It contains an image classification or image segmentation model that has been trained using Caffe. CAFFEMODEL files are created from . PROTOTXT files. It is a deep learning framework that enables users to build models for picture segmentation and classification. Users initially generate and save their models as PROTOTXT files in plain language.
Although there are numerous algorithms that may be used to identify objects in photos and in real-time. We employ a deep learning method that is more precise than OpenCV HAAR cascade object detection to recognize the many faces in the image. This method makes use of a ResNet-10 neural network architecture. After a user trains and refines their model using Caffe, the program saves the user's trained model as a CAFFEMODEL file.

In this model we use Flask Application. Flask is a compact Python web framework that offers helpful tools and features for developing web applications. Because one can quickly create a web application using only one Python file, it allows developers flexibility and is an approachable framework for new developers. HTML page is created and stored in the templates folder and a python script app.py is created and stored for server-side scripting. The static folder has the CSS files which are necessary for styling the HTML page and for executing the actions.

The main code app.py contains the flask code which is used to detect the drowning person in a video input. It can be detected by some of the warning signs, such as The person is quiet — this is particularly the case with children, they are hyperventilating or gasping, they remain upright in the water, not using their legs, their eyes are glassy, unable to focus or closed, they're trying to roll over on their back, unsuccessfully,etc.

When such a case arises Alarm sounds and alerts the active drowning and saves the life. The project also explains it with a demo video that is displayed in the web page.