ARK TASK-2

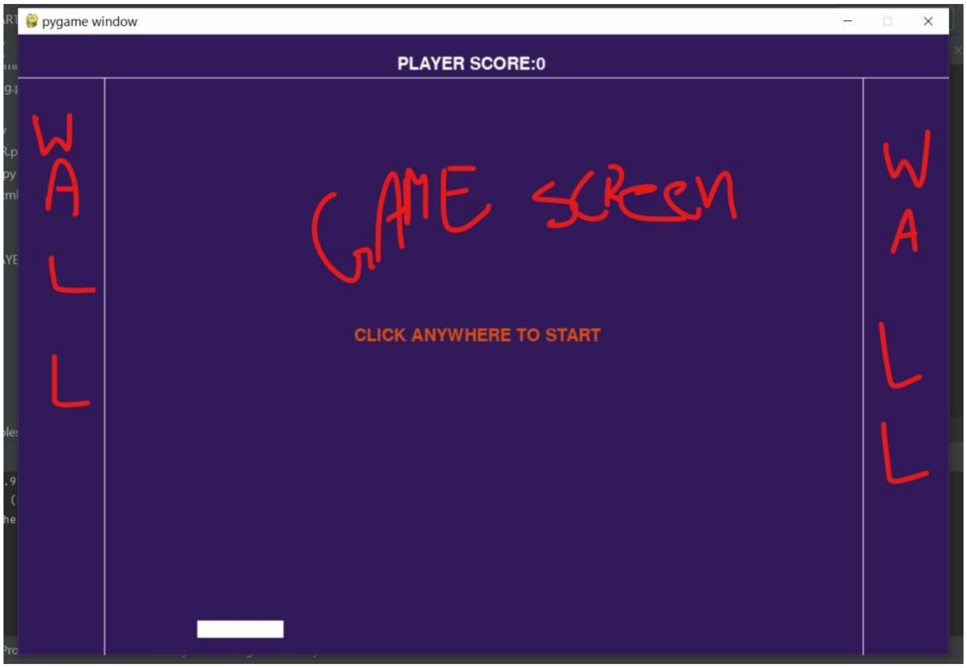
PROBLEM STATMENT:

Have a look at the animation provided here. You have to make a game environment where you can play a similar game. Your face will replace Tom's face. For that you have to detect and track your face, assume your face to be a perfect circle. You'll have to keep a track of the ball as well. The ball should follow the laws of physics and the collisions can be assumed to be perfectly elastic. The game ends if the ball drops to the floor. Note: 1. You do not have to consider gravity, i.e., the ball comes down only after hitting the upper wall. 2. Not using built-in functions for face detection and/or tracking will fetch you extra points

INITIAL ATTEMPT AND APPROACH:

For this task I had to learn openCV from scratch.I learnt if from youtube from a channel called MURTAZA's WORKSHOP.Then I got the idea about face haarcascade which Is quite efficient in detecting the face.I had some knowledge of pygame so I decided to use pygame for the project.I used a rectangle to detect face as when I wa susing circle it gave rise to so many problems.First of all the haar cascades is not so accurate in detecting dynamic position.So using a circle can cause unexpected changes in position.Also in a circle the area of contact is very less(120 degree).A rectangle(or paddle) gives a greater surface area which helps us in playing the game seamlessly.

Initially I created a dodge game in opencv but it was hard to cause the collisions in only opencv,so I used pygame to create an attractive GUI which looks as shown.



Click anywhere with left mouse button to start.The white paddle represents the face.For better performance have a plain background and do not stay too near the screen!

I have used many of pygame functions by reading it from python documentation.

FUTURE WORK:

I will try to work on AI of the game that is the CPU must be able to play the game alone(I had made a similar game but did not have time to use it for this game).

I will develop more games such as SHOOTING ALIENS,BALOON POPPER etc.

I will also try to use pure openCV to model the collisions.(albeit I had created a dodge game in opencv where we dodge the football falling from top).

REFERENCES:

1.Python documentation

2.A crash course on python(NOSTARCHPUBLICATION).