HAND CRICKET GAME

Objective:

Design a hand cricket game which is played between user and computer using hand detection method.

Software used:

Python, open cv

Assumptions:

1. player always chooses head
2. pc always chooses tail
3. both chooses to bat on winning the toss

Project:

The code here is a hand-cricket game which is played between user and pc. The computers move are recorded using random function using random library of python and users move is recorded using hand-recognition using open-cv library of python.

Lets see how hand cricket game is played, here two players (in our case user and computer) both made there move i.e. a number from 0-6 (7-case).

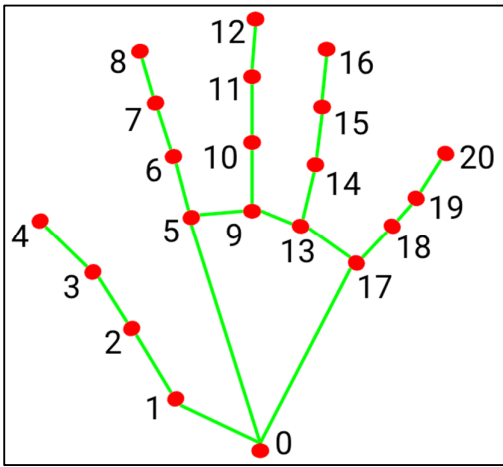
Let say user bats first then, then both play there move and the number shown by user will added to its total score until both shows the same number and the same process goes for the computer.

After both have played, the winner of the game will be the one with higher total.

How to get users move/number using hand detection method:

For this I used open-cv to get the video feed using webcam, then used "media pipe" library to which used to detect the hand gesture. Media

Pipe Hands is a high-fidelity hand and finger tracking solution. It employs machine learning (ML) to infer 21 3D landmarks of a hand from just a single frame. After reading the complete palm, it mark 21 3D hand-knuckle coordinate as landmark and number each one of them as shown:



0. WRIST
1. THUMB_CMC
2. THUMB_MCP
3. THUMB_IP
4. THUMB_TIP
5. INDEX_FINGER_MCP
6. INDEX_FINGER_PIP
7. INDEX_FINGER_DIP
8. INDEX_FINGER_TIP
9. MIDDLE_FINGER_MCP
10. MIDDLE_FINGER_PIP
11. MIDDLE_FINGER_DIP
12. MIDDLE_FINGER_TIP
13. RING_FINGER_MCP
14. RING_FINGER_PIP
15. RING_FINGER_DIP
16. RING_FINGER_TIP
17. PINKY_MCP
18. PINKY_PIP
19. PINKY_DIP
20. PINKY_TIP

After that applying different on each landmark to get the finger count.

Here, if only finger is open then it counts 1 and if two finger open then it counts 2 and so on it counts to 4. Then if at last the thumb is open then it counts 5. And it the gesture is a “index finger open and pinky figure open” sign then its counts 6. Code of counting is shown in the code.

In my code, first we toss to find which one of them will bat first, if it’s a head then user bat first and if it’s a tail then computer bat first. Toss is done using random function which chooses a random value from an array “a”.

Then we have a variable count, it counts the number of turn occur i.e. lets say user bat first after its turn end then count become 1 and then after the computer played its turn then count become 2. When the count greater than or equal to 2 then the game complete and we check the condition for winner.

Then we have players_total, players_score, pc_total, pc_score which counts the total run of user and the number played in each move , pc's total score and number pc played in each move respectively.

Here we have a main function named "hand_cricket" which includes the overall code.

Functions:

display_score(): It display the scoreboard of the game, which display total of player and computer after every move and after both have played it displays the winner and provide option to start a new game or exit the game.

restart(): It is a supportive function of the display_score() function, it helps the start and exit button to work on mouse button click.

game(): its is main code of the whole game, it apply media pipe library and if-else ladder to get the count of finger in a particular gesture. Then check the if the numbers are equal or not and increase the total accordingly and display the score on scoreboard. When count is greater than or equal to 2, then it compares the totals to find the winner of the game and display it on score board.

Then we have a gamescreen window which is the first window to be displayed while running the game, it have a start and exit button which provide the user to start or exit the game, it uses the check() function to work on mouseclick.