MIXELS

PROBLEM STATEMENT - FINALS

General Instructions:

1. **Code must be in C or C++ or Python only**
2. **Use OpenCV as your image processing library and try not to use any other dependencies**
3. **Write clean and formatted code so that we can properly take into account the logic and novelty of your code.**

1.Outcry over Ronaldo's Ballon D'Or [25 Points]

Problem Description:

Neymar feels Ronaldo's Ballon D'Or was not justified this year, and challenges him to a juggle off. Ronaldo decides to use a method of stratified sampling from the original video challenge given by Neymar to easily count the number of juggles, and creates a video in the process. Given this video juggling a football, you need to keep track of the number of times he has juggled the football.

Input Format:

<program> <input_video> <output_video>

Output Format:

The output video must have a counter that increments every time a juggle is completed.

Evaluation Criteria:

Points are awarded based on the correctness of the counting. A juggle is considered valid if it bounces back from the leg

https://www.youtube.com/watch?v=6sJONBO2ur8

Bonus Points **[10 Points]**

Count the number of times Neymar performs an around the world.

2.Helping move to a cashless economy [25 Points]

Problem Description:

The RBI would like to move all notes out of the economy. However, their own offices are filled with notes that are lying around. You will be given as input, an image with some currency notes. You need to output the number of notes corresponding to each denomination (Rs.10, Rs.20, Rs.50, Rs.100, Rs.500, Rs.2000). The currency notes may be placed with any side on the top. The notes will not be folded. The notes may be placed in any orientation.

Input Format:

<program> <input_image>

Output Format:

N_{10} N_{20} N_{50} N_{100} N_{500} N_{2000}

Here, N_{10} denotes the number of notes of denomination Rs.10, and so on.

Sample Input:

Sample Output:

2 1 1 2 1

Evaluation Criteria:

Points are awarded based on the correctness of the answer. Say X is predicted output and N is the actual output for some denomination, then the score would be calculated by max{0,25-25*|N-X|/N}.

Score for each test case is calculated by averaging out the scores across the different denominations. Final score is the average score across all test cases.

Bonus Points **[10 Points]**

Now input image has the old 500 rupee and 1000 rupee currency notes as well. Count only the new 500 rupee currency notes and ignore the 1000 rupee currency notes and display the output in the same format.

3.Let's put a smile on that face **[25 Points]**

Problem Description:

Predict, in real time, whether the person in front of the webcam is smiling or sad.

Input Format:

<program>

Output Format:

The video must be displayed in real time along with the emotion of the person.

Evaluation Criteria:

The question will be evaluated based on the how correctly it predicts. Extra points will be given for providing creative captions :P

4.Can't stand traffic anymore?
You know what's not for you? Bangalore. [25 Points]

Problem Description:

The traffic situation in Bangalore is well known to anyone who has been there. Being the IT hub of India, they decide to try to improve their situation by automating the traffic signals based on traffic. Design a system which, given a video of one road on a junction, estimates the number of cars that are present in the scene.

Input Format:

<program> <Input_video>

Output Format:

The output video must have to display the number of cars estimated at any given point of time.

Evaluation Criteria:

Exactness of the estimate of traffic quantification is not a criteria for evaluation. Approximate quantification would suffice. Solutions will be graded by their robustness to work in Indian environments, with a high density of two wheelers.