AI Project

Introduction

For quantifying occupancy in IISERB Badminton Court using modern tools such as IOT and Computer Vision. As there have been a lot development in past few years for performing to analyze the movement of players and ball in sporting events. Computerized human motion analysis form video sequences are one of the most important tasks in computer vision, since it leads to machine to be furnished with ability to identify, recognize, and understand human motion in order to monitor human.

Motivation

The Internet of Things (IOT) has become increasingly appealing to industry and even hobbyists since it emerged to the public. In the world of IOT, people can make better decision and have more convivence in life by virtue of the comprehensive information collected detailing every aspect of their lives. Smart sensors play an indispensable role in the IOT which can be used in badminton. In addition to sensors, robotics and electronics will also be designed to be intelligent and connected in terms of raw data collection and action execution. IOT implementation follows three pivotal steps: -
(1) Intelligence

(2) Connectivity

(3) Interaction

Computer vision also plays an important role as the detections of players made by cameras can be used track the players on the court, as this can be used by coaches for performance chart and to take a valid decision in game.

Research Gap

Computer vision have got boosted in various fields which involves facial recognition, machine vision, Unmanned Aerial Vehicles (UAV's), medical Imaging, computer aided diagnosis. IOT involves speedy operations, and balance automation and control.

In searching information for this model, we have come across various articles which helped us in understanding and solving our problems. Improvement of

Badminton-Player Tracking Applying Image Pixel Compensation [1]. This paper proposes a method to improve the player-tracking accuracy in badminton video by applying an image pixel compensation technique, such as Image Inpainting. A Statistical Method for Analysis of Technical Data of a Badminton Match Based on 2-D Seriate Images [2]. The use of 3-D information should be able to provide accurate statistical data for analysis of a badminton match. This paper described a method to obtain statistical data of a badminton match based on 2-D seriate images. Moving portions of the images, including the shuttlecock, rackets and players, are detected and labelled as white pixel blocks based on an image difference method. Vision Based Automated Badminton Action Recognition Using the New Local Convolutional Neural Network Extractor [3]. The local CNN extractor introduced in the deep learning pipeline as a part of pre-processing can improve the performance action recognition

Objectives

- To make a model which can detect the following teams in the court.
- Detection and classification of image.
- This project will determine various factors such as different team's member, audience, referee and can also detect no. of peoples.
- By this model we can also collect / record the data of previous matches and can also analyze for future.
- It can reduce human efforts.

Methodology

In the research we have come across various research articles and by that we got to know about some basic's knowledge about the model and the code. We have to build a website which will share all the information related to the badminton court (players, audience, game score).

Possible results

We are creating a model which will detect players in the court and can classify and detect the images. Model will make sure to count no. of peoples in

the court and differentiating them in players, audience, referees. It can also handle the social disputes arising on the platform.

References

[1] https://www.researchgate.net/publication/316019768_Paper_Improvement_of_Badminton-Player_Tracking_Applying_Image_Pixel_Compensation

[2] https://ieeexplore.ieee.org/document/6071801

[3] https://www.researchgate.net/publication/340865233_Vision_Based_Automated_Badminton_Action_Recognition_Using_the_New_Local_Convolutional_Neural_Network_Extractor