AI Project

Initial Proposal

1. *Motivation*

Object detection is well known computer technology connected with computer vision and image processing that focuses on detecting objects or its instances of a certain class such as humans, flowers, animals in digital images and videos.

This technology is globally used in industries to ease user, save time and parallelism. Similarly, it is being used in sports analytics. It has recognized as a growing multidisciplinary field which incorporates sports, statistics, mechatronics, electrical engineering and computer science with imaginative and intuitive approaches. In order to improve on-field player-based performances and to assist sport management the statistical analyses are combined with both on-field and off-field measurements.

Sports analytics have been recognised as a growing multidisciplinary field. It has been widely used by coaches and analyst experts to evaluate and improve performance of players. Considering popularity of badminton, it has become most prevalent sports around world. High-speed cameras can be used in computer vision system to track shuttlecock and players on court. Collected information can be used by coaches for performance enhancement or by referees to verify their decisions or to enrich television broadcast.

2. *Research Gap*

Computer vision technology is not new but has improved a lot over the course of years. It is being used for face detection in security, vehicle detection in roadside surveillance system for monitoring parking spots, biometric recognition, medical analysis and human computer interaction.

While researching for this project we came across a surveillance system for intelligent transport in smart cities[1]. This system has passed the barrier of affecting input data by vehicle speeding using ICT and IoT technology. The recent advancement of deep learning algorithms has paved a way for many successful applications. The computer visions powered with convolutional neural networks and real-time region-proposal algorithms have exhibited close-to-human object detection and classification capabilities.

3. *Problem Definition*

3.1 Contribution

- We are planning to modify existing model in a way that it can detect unnecessary crowd and even provide an automatic notification to faculty in such situation so that we can

4. *Proposed Methodology*

- We want to research as much as possible information about IoT and computer vision, related project papers and study them.
- Searching current models for object recognition and human detection and trying to run them.

- Understanding algorithm of codes so that we can try and modify it according to our objectives.
- Data set collection for testing our model.

- If we get suitable model, with modifications made, then run it on collected data set and campus to study its performance.

5. *Possible Result*

We wish to create a running model which can detect number of humans(players in our case) in designated area (Badminton court), their temporal details. Distinguishing between players of opposite teams by colour detection of jersey. If any emergency situation occurs in court like dispute in team members or unnecessary crowd, automatic notification should be sent to faculty.

References

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