

DECISION REVIEW SYSTEM

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ABSTRACT

A proper decision is very important in the game of cricket. A wrong decision can create a big impact in the game and it can create injustice and due to this a small error can change the result of the game. This paper focuses on decision review system which assist the umpire to make the decision such as out not out no ball stump out, lbw, runout etc. With the help of good quality camera. The decision review system is capable to give decision such as a runout stump out etc. Graphic user interface of DRS is developed by using tinkercad. The Umpire Decision Review Method (UDRS) is a strategy used in cricket or any other sport to circumvent the on-field umpires' contentious decisions about ruling a batsman out or not (in cricket). The accuracy of UDRS comes to around 90%. It uses number of specific simulations such as Super Slow-Motion and other video replay etc. On-field Umpires, Batsmen, Fielding Captains and TV Umpires are instruments within a dynamic system of contact protocols. With the live camera, the Third Umpire DRS will help the umpires evaluate the case and will allow him to use functions such as reviewing, pacing it quickly, pacing it slowly, and pacing it very slowly to help him determine the original decision's outcome. It will make decision making clearer and easier. It is cost effective, easily implemented, and doesn't require any complex AI technology. We have plethora of investment made on UDRS in national international sport ventures which are complex in terms of their financial and technological capacity. Therefore, we wish to present this cost-effective system for grass root level matches such as the state and district level. This will not only improve decision making quality effective from the roots it will also give a technological exposer to the district and state- local games.

I. INTRODUCTION

1.1 Background

In the game of cricket umpires have the authority to check whether the delivery is legal or not. They have the complete authority. Decision cannot be given by normal human eye there for the technology of decision review system takes place. Umpires cannot have eye on each and every place on the field. Therefore it becomes necessary to use decision review system. As umpire cannot be right every time so we use decision review system for a fair game. So umpire simply ask for decision review system by giving signal of the square sign. Then the third umpire will look into this process. The decision review system must use on large scale for a fair play. The decision review system can also be opted by player.

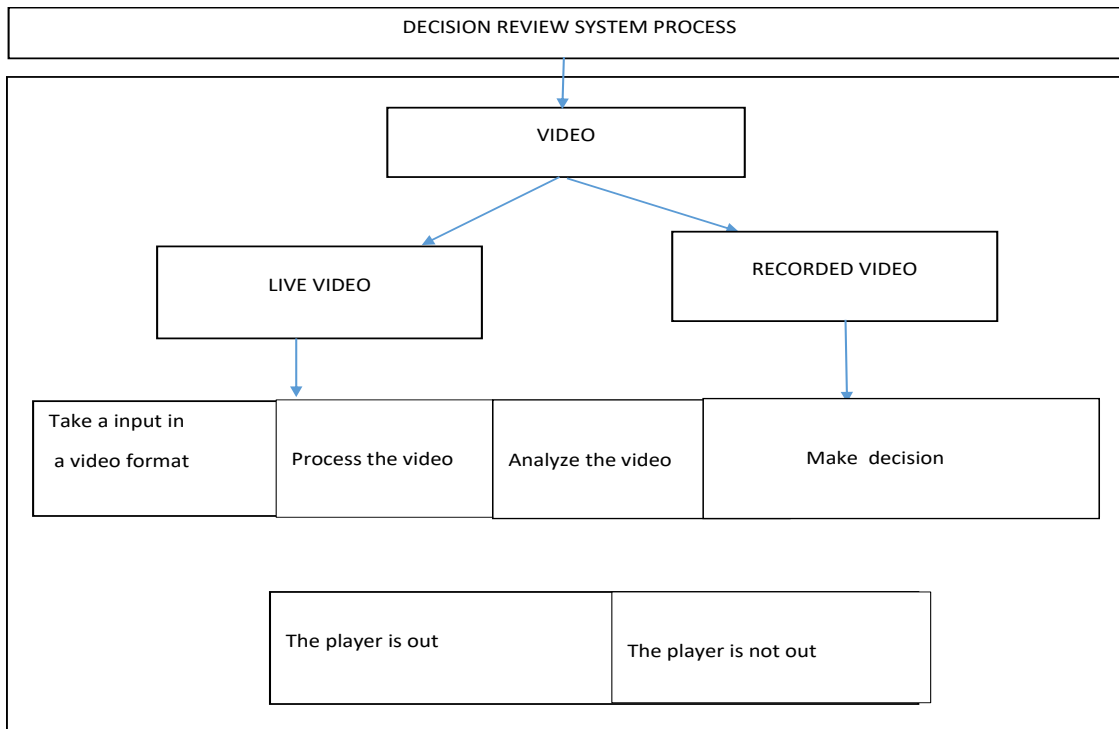
The important factor is that are considered here are television replays. Technology place a key role in every international sports in modern era. The decision gives the fair and proper result by using technology. And thus there are no controversies happening. By using the DRS people are knowing the rules of games. And this is how DRS place an important role in the system.

1.2. Aims and Objectives

It is necessary to eradicate the debate to increase the acceptability of the decisions. If this can be achieved by using the technology the game will be fairer and more enjoyable. Previously proposed research regarding this field have tried to solve issue, but these are infeasible, costly, and prone to error because of the usage of sensors on field and bowlers. While we have proposed computer vision-based approach in this paper which does not need extra infrastructure because it will get video feed from broadcasting cameras. Our system is very familiar and easy to use as well as low cost system. Which can give result very accurate and performance Better. In this game, an umpire is a designated authority on field who has the responsibility to make decisions on the field, as per the regulations of the game. A promising direction for study (and other related items in the sense of cricket) and techniques to further refine and anticipate multiple findings and decisions for the use of computer vision to define, locate and track the ball. Together with the different Machine Learning algorithms and techniques, using just one camera that can be of a quality comparable to everyday mobile-cellphone cameras will enable us to achieve a system that helps the umpire effectively and operates at a cheap cost. This

dissertation aims to produce a very cost effective and affordable computer mechanism that supports and facilitates the cricket umpire, runs at a low budget, has lower technical (software and hardware) requirements, and can be used in cricket tournaments at local district level, this indeed with train the network as well as improve the efficiency of the game from a grass root level “Cricket umpire assistance and ball tracking system using a single smartphone camera” by Udit Arora, Rohit Verma, Sarthak Shani, and Tushar Sharma proposed a system that involved.

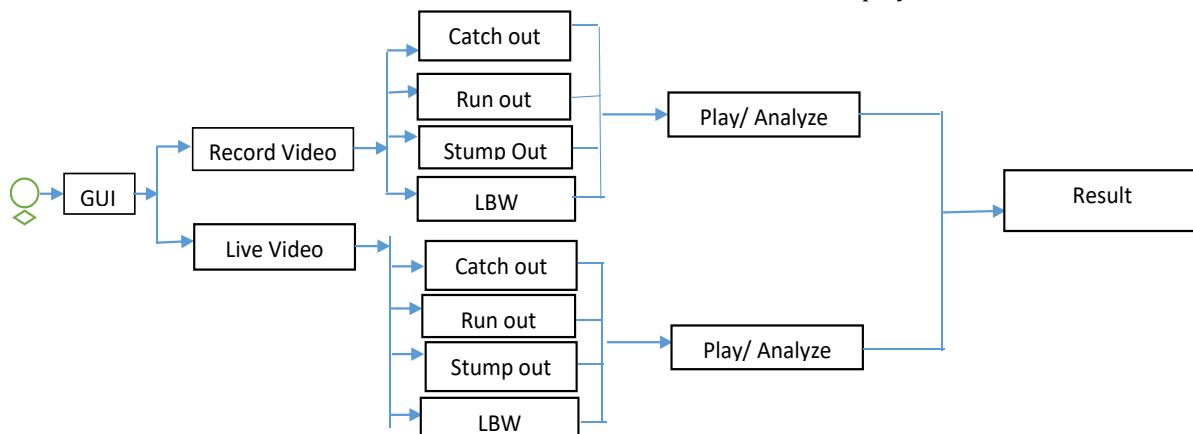
II. SYSTEM DESIGN



Our project “Decision review system” is implemented using Python and Tkinter. GUI of our project i.e. DRS gives options to choose from to the user which contains Stump out, Run out, No ball and LBW decisions. Stump out and Run out can be decided by playing the source video in slow or fast motion. Further decisions like LBW and No Ball can be implemented by extracting frames through the source video.

In our decision review system project we use live camera as a source video from which the live video will be recorded. The recorded video will be analysed and thus some certain checks will be performed on it by checking each and every frame of the video. For making a correct decision whether the batsman is out or not out we need to analyse the video that has been recorded from the live camera.

Thus by analysing the video and performing the certain task we can make the decision. If the batsman is out on the Screen it will show out and and if the batsman is not out then the result display will be not out.



Here in this project Administration will see user interface first. Then he will be able to choose any one option between recorded video and live video. By choosing any one option he will be redirected to interface where he will be able to choose which type of decision he wants to check. Catch out, run out, stump out and lbw are some of the basic decisions he will be able to check. Thus the video which we have taken as input will be played in software and then he has to analyse the video and make the decision by reading the frame whether the batsman is out or not out. When the final result is made then the admin will directly display that on the output screen.

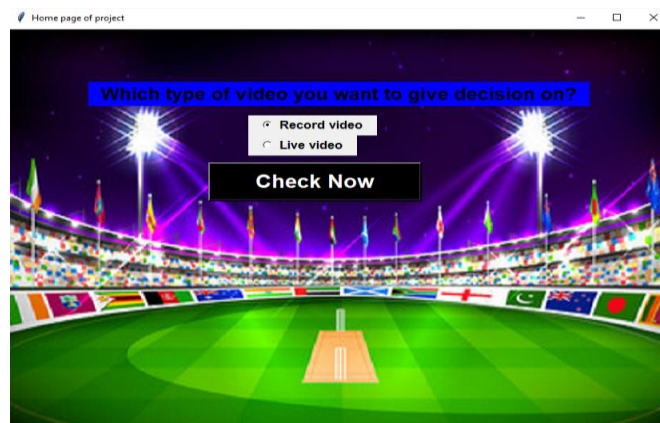
III. WORKING PRINCIPLE

By using our decision review system project we can easily find whether the batsman is out or not out. Not only that, we can even check other decisions. In this system we first take input in the form of video. Then we process the video and then we analyse the video and therefore we are ready to make a decision. We have 2 options of input, one is recorded video and the other is live video. After taking the input we process the video frame by frame and thus it becomes easy to make a result. And thus after making a result we display it on the output screen.

IV. RESULT

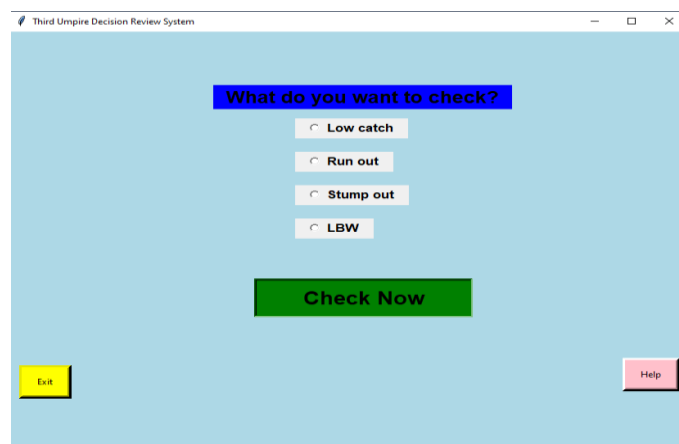
GUI:

It provides facilities to give any decision like No-ball, Stump out, LBW and Run out. We have used Tkinter to make the GUI of the Decision review system and various computer vision algorithms are used to give these decisions based on the criteria's.



Live camera:

In our decision review system project we use live camera as a source video from which the live video will be recorded. The recorded video will be analysed and thus some certain checks will be performed on it by checking each frame of the video. For making a correct decision whether the batsman is out or not out we need to analyse the video that has been recorded from the live camera.



Catch out:

The catch out decision is determined by playing the video in slow motion also in fast motion based on further conditions. If the player touches the ball to the ground then the batsman is not out. But if the player takes a safe catch

without touch to ground then the batsman will not be given out. The striker is out Caught if a ball delivered by the bowler, not being a No ball, touches his/her bat without having previously been in contact with any fielder, and is subsequently held by a fielder as a fair catch, as before it touches the ground



Run out:

To determine the run-out decision the system plays the selected video in slow motion as well as in fast motion. If the wicketkeeper Run out: To determine the run-out decision the system plays the selected video in slow motion as well as in fast motion. . A run out usually occurs when the batsmen are attempting to run between the wickets, and the fielding team succeed in getting the ball to one wicket before a batsman has crossed the crease line near the wicket.



Stump out:

The Stump-out decision is determined by playing the video in slow motion also in fast motion based on further conditions. Stumped is a method of dismissing a batsman in cricket, which involves the wicket-keeper putting down the wicket while the batsman is out of his ground. (The batsman leaves his ground when he has moved down the pitch beyond the popping crease, usually in an attempt to hit the ball). If player comes inside crease before keeper hits the stump then player is not out. If player fail to do so then he is out.



LBW:

Leg before wicket is one of the ways in which a batsman can be dismissed in the sport of cricket. Following an appeal by the fielding side, the umpire may rule a batter out lbw if the ball would have struck the wicket but was instead intercepted by any part of the batter's body.



Our project DRS assisting umpire using computer vision gives the following results:

Live camera:

In our decision review system project we use live camera as a source video from which the live video will be recorded. the recorded video will be analyzed and thus some certain checks will be performed on it by checking each frame of the video. For making a correct decision that is the batsman is out or not out we need to analyse the video that has been recorded from the live camera.

2. Catch out, stump out and Run-out decisions by playing video either

In slow or fast motion.

3. LBW decision based on

- a) The impact is outside or inside.
- b) Wicket hitting the stump or not hitting the stump.



Fig: Drs Gui

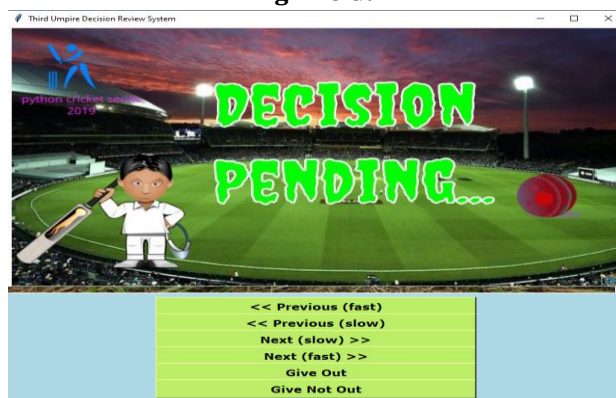


Fig: Decision Pending



Fig: Player is Out



Fig: Player is Not Out

V. CONCLUSION

The main objective of our project is to assist the umpire in game of cricket to make fair decision in efficient way. Our project discusses the use of computer vision algorithms to extract frames and to detect, tracked the ball from the provided source video. Python helps to visualize the results of various decisions which makes the UI more attractive and interactive. Also use of single smartphone camera makes the system cost efficient and easy to use. Counting semantic structure, cinematography, framing, iconography, focus management and feedback, there's quite a lot it takes when creating Avery efficient third umpire review system so everything we've learned here will help us create a simple and very efficient DRS system applicable in big range of outdoor sports. There is always that instinct of patriotism in sports with fair decisions at the lesser level of sports tournaments to be played and this DRS can provide them a very cost effective and quality decision review system that will boost up the game spirit of each player. Without any fancy equipment and with the help of a computer system and a camera this system can run efficiently, thus making it compatible for all scale tournaments. This project is only an infant and there is always room of improvement and modifications making it more ready to go out and rock the gully cricket world. DRS technologies have been associated generally with very costly applications. Certain decision review systems are not so cost effective and highly unreliable as they consume too much data and are time consuming.

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