

CRICKET UMPIRING WRIST GADGET FOR SCORE UPDATION

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Abstract: Imagine how annoying it is for the scores to update the scoreboard after each ball delivery during a cricket match. They need to be alert during any point in the match, watch every single ball, record ball by ball events, modify the score and coordinate with the umpire the entire time. A system that can update the scoreboard automatically after every ball will reduce their effort by half; the time taken for the updating and the chances of errors will also be reduced. A novel method for umpire pose detection for updating the cricket scoreboard during real-time cricket matches is suggested in this work. The proposed system identifies the events happening in the pitch by recognizing the gestures of the umpire and then updates the scoreboard accordingly.

Keywords: Cricket, Gloves, Hand Gesture, Umpiring

I. INTRODUCTION

The technological demands for Cricket in the 21st century are vastly different from that of the previous era. In the 20th century, the focus for tech companies was primarily on broadcasting and in enhancing the reach of the game - more countries, more players, more matches and more audience. [1]The first-ever radio commentary for cricket happened in 1922 in Australia, covering a domestic game at the Sydney Cricket Ground. [3]The television broadcasting happened in 1938, for the test match played at the Lord's cricket ground between England and Australia - the broadcast transmission happened from Alexandra Palace in North England and the signal was available only for 20 km range. The growth was exponential from thereon. Around 1.6 billion people were estimated to have watched the live coverage of ICC's Men's Cricket World Cup 2019. Today; cricket became one of the most watched sports in the world, only next to soccer. The technology focus for cricket in the 21st century has shifted towards enhancing the fan engagement of the game enabling a better experience by making the game more credible, connected, and enjoyable for the audience.

[9]We are introducing a new game-changer device which is wrist gadget. It is a virtual scoreboard on the umpire wrist and he is using it to input the match score card. We are going to find some solutions which are currently unavailable and develop a plans and method and then finalize the design and developing the hardware. After

that we work on sensor and embedded programming then we are testing our hardware. After that testing of hardware we are going to work on data gathering, visualization and representation which are the most important. By using this device when a change in score happens umpire will change the score from the wrist band and it will send the data to the scoreboard and it will show output of the input new score to the system.

A. Making the game more conclusive:

Credibility [3] plays a key link in retaining the engagement of the fan. [1]Any umpiring errors, especially howlers, often undergo heavy criticism from both players and fans, in both physical and online mediums. Some can even change the complexion of the game completely. The Umpire Decision Review System (DRS), often used as a combination of technologies mentioned below, was brought to address some of the gaps in the real-time decision making of the umpires.

For example: In a match one team is batting and opposition is bowling them and the batsman hits a six umpire will use his wrist-gadget to add 6 runs in scoreboard and if in the very second ball batsman gets out the umpire will add a wicket in the points table

B. What are the new things we are offering:

This project is a promise to all the cricket fans who wants to see an uninterrupted match and have fun with the sports the interruption can cause most of the rhythm happening in the match to that only one decision updating as we have seen in cricket umpire. [8]As we see in the cricket matches in anywhere at least once we may observe that that umpire maintain fair shares of contribution to the match result as they are the jury and judge of the match metaphorically. And now a days we can see as the technology progress the priority has been shifted towards TV umpire rather than on-field umpire and people also prefer the final decision which has been given by third umpire so this technology will give on-field umpire some more technical devices and the new updating will definitely.

In Cricket information that was once considered extra which were provided by the TV networks are now integrated into the decision referral system (DRS), such as hawk-eye and hot spot, and also snick-o-meter. Over

the years, cricket has incorporated into the sport a number of the most recent technological advancements. Some of the innovative technology that are being used currently are discussed below.

Third Umpire - Before this technology was used, there were only two umpires i.e. the main umpire and the leg umpire. The third umpire was later introduced to supplement the two umpires on the field. The third umpire is equally qualified, and sits off the ground with access to TV replays of certain situations (such as disputed catches and boundaries) to advise the central umpires. The on field umpires constantly communicate with each other using wireless headsets. The third umpire was mostly asked to judge if a player is run out or not, for which he uses instant video replays and determines the outcome without consulting the other two umpires.

Decision Review System (DRS) - This sport has also joined a few other worlds sports and have implemented an umpire referral system in most of the international matches.[2] A system like this was first tried in the year 2008 in a Test series between Sri Lanka and India. Unlike the sport of tennis where the challenge and referral decisions are definite by using the hawk-eye technology, the cricket referral system is judged by the third umpire and can be less fault tolerant. The particular method to use it may become different and develop, however when it was initially introduced, this is the particular method that was used. Players are granted the permission to challenge conclusions made by the umpires on the field, after which the TV official examines them and declares the correct result. A team can challenge any decision made by the umpire up to three failed challenges. This is applicable for all innings of Test Cricket, One Day Cricket and T20 Cricket.[10] The option to exercise this rules rests with the batsman who is the recipient of the umpire's original call or the captain of the fielding side. This is done by making a "T" sign with both forearms at shoulder height. Various technologies are used by the third umpire to gain information to make the final decision. It is a great way to maintain the fairness of the game and sounds nice for the players and viewers at home, however the pressure is on the umpires. In reality, the method really takes a lot of time and can distract people from the game. Hence problems still exist which need to be improved, but the referral system is a great step forward for cricket.

This are some various technology we are gone a discuss and implement our new ideas with are innovative contribution and proposed system for cricket umpiring.

C. Contribution:

The user matching studied in this paper is closely related to several problems that have been observed in the international cricket.[3] In this section, we present a brand new our approach with related problems from

several issues, and share our contributions relative to existing work.

II. REVIEW OF LITERATURE:

After studying many different journals about cricket Umpiring and Scoreboard updated, we made some comparison with our proposed system which shows as the unique approach and helps us to defend our patent with the project study and review paper we have seen many literatures and papers about this topic and come to see that the most of the ideas and methodology are currently not that implemented or executed in the practical form. We on the have made and worked on that project and make a working wrist gadget the mechanism is mostly based on the umpire hand gesture which will be giving the acknowledgement to scoreboard with the help of gloves in-built wireless technology the technology can be used by the umpire in domestic cricket as it very light weight and easy to use after encoding with the information of umpiring the umpire are very much the most important person who calls the final decision so it is obvious that we should update the score as per his instruction that will gives an significant improvement to the cricket umpiring model and ethics of gameplay will also be not damage because their will be no extra work. Many have seen the cricket journal where there is talk of umpiring problems or time consumption so we are here to solve some of them with our precious contribution on the project we are working and showing the new ideas we have come across with this innovation in sports.

Paper/Article & Author	Content	Differences
How is Technology Used in cricket? Utsav Mishra	This article is based on the Technologies of cricket currently used by ICC in the domestic format.	The prior difference we can say is that the technology which was discusses here is currently in implementation but our project has not yet implemented in the domestic cricket.
Cricket Score card system K. KALAI SELVAN	This cricket score card updater is based on sql which will be updating the score as backend programming.	The score card updater which has been use here is sql and it needs one separate operator and no deficiency in the time or cost consumption. But in our case the project is saving those time and power consumption.

An Approach to Automate the Scorecard in Cricket with Computer Vision and Machine Learning Md. Asif Shahjalal	This is an ideal approach to update scoreboard which capturing technology.	This automation is an approach which hasn't been practically implemented and mostly theoretical for which our idea is similar but the execution is different where they use computer vision and we have already implemented and patent it with hand glove.
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Table II.1.0: Comparison Table

In the above table we can see the comparison between all the previously published articles and journals. The point we come across is that this cricket umpiring project has one of its kind others are different or has been not successful in the current studies [4]. In the domain of automatic score update, several works such have been reported. L. Bhansali and M. Narvekar has explored the scope of subtraction technique, gradient technique and region of interest technique to recognize umpire gesture. A. Shahjalal et. al makes use of Haar Cascade Algorithm to detect human wrists from the video stream and then classifies the gesture using logistic regression based on the pixel intensity values. Though this system has a pretty good accuracy for static gestures like out, no, six, wide etc., the efficiency was found to be poor for dynamic gestures like four. In addition, the system fails when the frame comprises of multiple subjects. In the method D.T. John et. al propose, a pre-trained model from Opens called Caffe is used to extract the skeletal joints from the images given as input. A deep neural network is subsequently trained on the skeleton images constructed from these skeletal joints which are supposedly unique for every gesture. Since the umpires have different physiques the length between two skeletal points can vary. This results in the corresponding attribute having a greater value range. Consequently, the system must be trained on colossal amounts of data to make certain that the gesture is not misclassified. Extracting skeletal points is difficult if the figure in the image is not properly oriented or if any limbs of the figure is foreshortened or occluded. Another limitation of this work is that only images can be given as input. There are also chances of the system misclassifying the actions out and bye.[5] During pose estimation using Caffe Model, the joints in the fingertips are not identified. With the only skeletal joint identified in the hand being the wrist, the skeletal images obtained for Out and Bye will be the same.

III. Existing System

The Present system is used software saves all the team and team members games format system manually. [5] Manage the activities like manual decision making, processing, announcement, scoring data and handling players & team information are very tough process. Moreover which will make lot of confusions and risks to make further process? This leads to wrong decision making in the event. The existing system is to manually alerts the system to customer and maintains the player details, and status are in records. It will be more difficult to maintain and gathering information about specific records. It will take more time. As there is lot of data work involved, skilled staffs are used. So it becomes dependable for the management on these people. The reports are not verified to the highest extend to avoid any miscommunication and misfortune of the center. The existing system of watching cricket is generally on the television. Most matches are not scheduled on holidays and this will allow people access to the match regardless of their location. Some sites do exist that display text commentary but they are very impersonal.

Disadvantages of the existing system: -

- Time consuming:
The manual processing is taking more time. It takes lots of time to record the process and transaction into a paper.
- Security is not assured:
Security is not assured for the records of the organization. The need for computerizing arises in order assure the security of the records from fire or other destruction.
- Space consuming:
A lot of space is required to maintain the record physically. To solve the problem they are going for computerization.

IV. Proposed Work

The Proposed System "CRICKET UMPIRING WRIST GADGET FOR SCORE UPDATION" is a gadget to updating a scoreboard which is used by umpire. [7] We are inventing a new less time consuming device which is wrist gadget. It is a gadget which will virtually updates scoreboards with using umpire's hand gestures. We are going to find a new and better updated solution which is not in use and will going to develop a plans and method, then finalize the design and developing the hardware. After developing hardware we are working on sensor and embedded programming and then we are testing our hardware. After that we work on data gathering, data visualization, and data representation which are the most significant. By using this device when change in score occur, umpire will change the score from the wristlet and then it will send the data to the scoreboard

and it will show the result of input new score to the system.

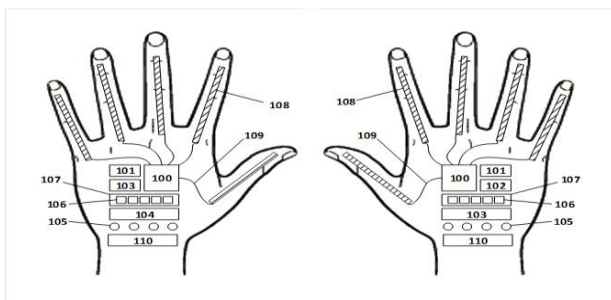
For example: In a match one team is batting and opposition is bowling them and the batsman hits a six umpire will use his wrist-gadget to add 6 runs in scoreboard and if in the very second ball batsman gets out the umpire will add a wicket in the points table.

The possibilities are limitless in terms of imagination the technology is also changing day by day ,so cricket is also changing with new technologies , because of new technologies there are lots of changes has occurs in cricket field. Such as following.

- Use of lasers to compliment run out decisions.
- Use of lasers to compliment run out decisions.
- Use of a stump camera to determine close catching decisions.
- Use of technology to give the distance the ball carried (e.g.' how far a 6 is hit)
- Use of biodegradable paint to color the infield and outfield.

So like this use of sensors in wireless wrist gadget of umpire, scores can update bye umpire hand gesture.

ARCHITECTURE



[6]Fig1.4: Architecture of Hand Gloves

Above is the tentative and current Architecture of the hand gloves which are going to be used in future decision taken by the umpire this structure will print the updating score as per the instruction(coded information) inputted in it which are based on cricket umpiring gesture use by on-field umpire. Below are shown below in the image.



Fig1.5: Umpiring Pre-define hand gesture

METHODOLOGY:

The working of these gloves can be explained and literate by comparing it with the methodology of Master and slave concepts of the technology we used in [6] Bluetooth headphone and flip flops. The system methodologies we use in the gloves are works in Microcontroller which we co-existing works in simultaneous manner. The representation of the methodology system is shown in the below diagram which will work on motion of hand and these are denoted by truth table concept.

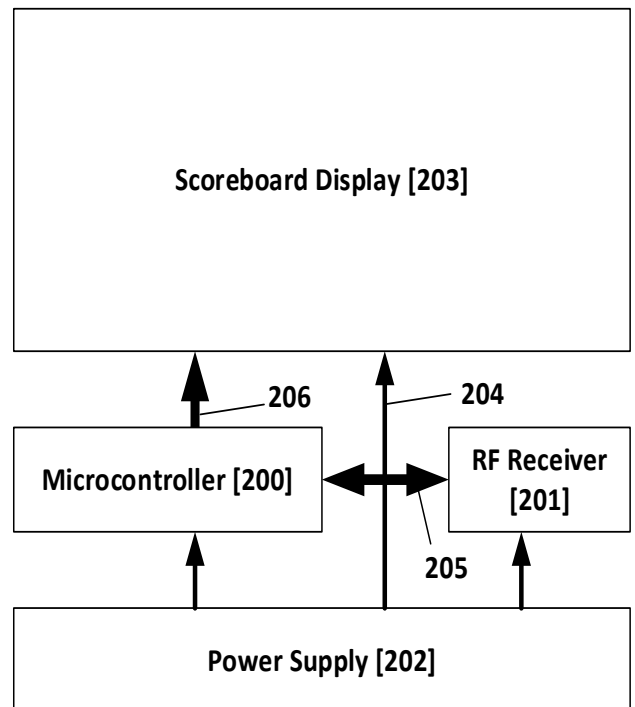


Fig.IV.1.6: Working Module of Gloves using Microcontroller

V. Conclusions:

After reviewing and implementing and watching the project on hands on model we come to a conclusion that it not only saves manpower but also time and costing of umpiring and scoreboard updating simultaneously. This will result in a continuous uninterrupted sporting event which will be delight for all the fans over the globe.

From a lot of time form cricket history, cricket umpiring and scoreboard updating was very two different kind of jobs for expertise of that field and they were inter-dependent on each other, so when we use this gadget, the interference of any middle or third person for scoreboard updating will not require.

We all know how cricket is very famous in countries like India, Australia, England and other countries, where fans always eagerly wait for something new and attractive towards this game and this project will definitely give them a new technology to talk about in next few decades.

This is not just a project for innovation but also a promise to every cricket fan who wants to see uninterrupted and continuous sporting event without any disturbance in rhythm of sports.

Even though most people says, current method is still very effective but our motto is if something is working properly doesn't mean it can't be improved-find it.

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