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Significant roll of ultra edge technology in modern cricket

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Abstract

Cricket is one of the most widely followed sports in the world. With an audience base approaching the billion mark, the game has gained some serious fandom over the years. Rapid technological advancement has significantly increased the role of technology in sports. As the human limits of performance have been reached in many disciplines, reaching future limits will increasingly depend on technology. Each and every sport utilizing the technology assistants in such way suitability to the specific sports. Sports experts believe that the technology would help significant justification to the sportsmen whenever the human error happens further sports grow further. Further, it believed that sports go interesting it is also convincing people. It is accepted worldwide in all sports because of its accuracy. In particular sports like Cricket, technology inclusion time to time made the game significantly interesting. We have seen in the present and in the recent past how technology occupied the decision-making chair. There are so many changes and recent developments that have happened in cricket, contributing to the betterment of the game and ultimately helping to ease down the decision-making of the umpires. In the span of a few years, technology has also become an integral part of Cricket. Speed guns, spidercams, Decision Review System (DRS), Snick meter, Hot Spot and others were introduced and led to transforming the whole nature of the game. Results of many outs in the matches have been reconsidered and the decision has been taken based on the technology. Therefore players are benefitted in both sides it may be the batting team or the bowling team. The game of cricket has also seen a lot of technological influences in various aspects in modern days. Cricketers train by using technologies, administrators use technologies to govern and officiate the game. This paper describes how ultra-edge technology beneficial to cricketers in the recent past. In a few occasion, this technology really helped the players to get the justification though human errors are quite natural.

Keywords: Speed guns, spider cams, decision review system, snicko meter, hot spot and ultra edge technology

Introduction

Ultra Edge is an advanced version of Snickometer which is used for edge detection. The technology, Snickometer, was first invented by British computer scientist Allan Plaskett in 1990 and it was used in 1999 by UK's Channel 4 prior to being used match between India and Australia. Keywords: Speed guns, spidercams, Decision Review System, Snickometer, Hot Spot and Ultra Edge Technology. (Suman DC 2022) ^[9]. This technology graphically shows if the ball has touched the bat or not by using sound waves. This technological reform helped the umpires a lot in telling whether the batsman was caught behind or not. The ultra-edge technology has been approved for use by the International Cricket Council (ICC) after tests and verifications. This system has been thoroughly tested by engineers at the Massachusetts Institute of Technology (MIT). Ultra Edge helps determine any contact between the bat and the ball using sound frequencies. The Snickometer is composed of a very sensitive microphone located in one of the stumps, connected to an oscilloscope that measures sound waves. Oscilloscope is nothing but a piece of equipment that shows changes in electrical current as waves in a line on a screen. When the ball nicks the bat, the oscilloscope trace will pick up the sounds. At the same time, a high-speed camera records the ball passing the bat. The oscilloscope trace is then shown alongside a slow-motion video of the ball passing the bat, and by the shape of the sound wave you can determine whether or not the noise picked up by the microphone coincides with the ball passing the bat, and whether the sound seems to come

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from the bat hitting the ball or from some other object. This paper will discuss about the significant roll of ultra-edge technology in modern cricket.

Snickometer

It is the previous version of Ultra Edge Technology. It uses the stump microphone to pick up sounds in its surroundings, which helps the third umpire pick up the sound of ball hitting the bat. It filters out the noise and shows only the relevant signal like a waveform or a graph—a sharp spike on the graph will confirm the ball touch. The real-time snicko meter automates the process of combining the visual and the audio in order to assist the final decision of confirming the edge of the bat. All the findings are live telecasted to the big screen and to the viewers at home to keep it transparent among the spectators. This component is cost-efficient in terms of equipment requiring only a stump mic and a camera but is prone to inconclusive decisions where sounds from other sources may creep in its results.

What is Ultra Edge Technology?



<https://www.google.com/search?q=snicko+meter+technology+in+cricket>

Fig 1: Snicko meter technology view on television
Courtesy



<https://www.google.com/search?q=ultra+edge+technology+in+cricket>

Fig 2: Ultra-edge technology view on television
Courtesy

Ultra Edge is an upgraded version of Snickometer for edge detection which works on live sound from the stump mic and visual evidence. It is the latest introduced technology. This technology is used in televised cricket matches to graphically show the video of the ball passing the bat at the same time the audio of any sounds at the time. It is only used to give the television audience more information and to show if the ball

did or did not actually hit the bat. As the ball passes the bat, there can be other noises that can be confused with the ball-on-bat noises. The bat often hits the pads on the way through, making a sound at the same time the ball passes the bat. The sound/sound wave is purportedly different for bat-pad and bat-ball, but this is not always clear. The shape of the recorded sound wave is the key - a short sharp sound is associated with a bat on a ball. The bat hitting the pads or the ground produces a flatter sound wave.

How does it Work?

It is only the sound wave which contain the technology. It measures the decibels of sound captured by the microphone that is placed at the bottom of the stumps the stump mic is able to differentiate between the sound made by the bat and pads. As the ball approaches the bat, the cameras placed on the opposite ends of field track the ball for visual depiction. The sound microphone in the mic picks up the sound of the ball striking the bat to an oscilloscope. This oscilloscope displays the sound energy in waves which we visually see, in case the bat nicks the ball. Based on the evidence on the screen the third umpire will convey the decision on the screen as well as to the umpire.

Placement

This technology uses the mics placed inside the stumps and different cameras installed on the pitch and around the ground. When a ball touches the bat, the ball produces a particular sound that is picked up by the wicket mics and it is detected on the tracking screen. It measures the decibels of sound captured by the microphone that is placed at the bottom of the stumps. The background noise is filtered out so that the sound of the ball hitting the bat and the pad of the batsman can be picked up easily.

Need of Ultra Edge - Situations - LBW

The Ultra-edge technology, which is also a part of the Decision Review System (DRS), helps to capture the sounds created by the bat, pads, and clothing during the run of play. The technology uses the stump microphones to differentiate clearly between the sounds created by different sources, which helps in deciding the close calls in LBW bat-pad situations. If the ball hit the bat first, it will give clarity in taking the decision.

Situations in Catch

These technologies mostly will guild the umpires to give decisions at keepers catch. When umpires can't hear ball touching the bat sound under sound pollution during the heavy crowded match for the out situation. In, out situation it would help the fielding team to get the right decision. In not out situation it would help the batsman to protect himself by getting the right decision.

Decision Review System

A new Decision Review System was introduced in Test Series between India and Sri Lanka in July 2008. (DRS). Of the twelve decisions reversed in the context of the DRS, India served only one. Former India batsman Virender Sehwag (LBW) was the first decision reversed there under the UDRSS in 2008. (As it was called then). In the Tests section of November 2009, the system was officially implemented (Rana Akil 2020) ^[1]. The device was formally introduced in the testing portion of November 2009.

The ICC concluded with one review per squad in February 2017 on the usage of all possible ICC World T20 is events. The ICC Women's World Twenty 20 2018 was the first T20 tournament to use the technique. It was used in Pakistan Super League 2017, which was the first time DRS was used in a T20 league, in the playoff round. In the India-Australia T20I series in October 2017, DRS was used in a Twenty20 International for the first time.

Under November 2017's revised ICC rules, after 80 over's in test matches, will no further be a top-up of feedback, and teams present will only have 2 failed evaluations per innings. However, players will no longer lose the appeal of an umpire's call for an LBW challenge (Pallav Chaudhary, *et al.* 2021) [2].

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Conclusion

Modern-day Cricket is attracting billions of people because of the hype of the match. T20 Cricket became more interesting since the match would take hardly 3 hours. Technology implementation in cricket attracts many viewers in to the match. It also entertains people who watch the match lively in the stadium. Ultra edge one such technology keeping the audience at the edge of their seat. It not only providing justification to the players it also provides conformability to the umpires who working under the pressure.

Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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