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ADVANCEMENT OF INFORMATION & COMMUNICATION TECHNOLOGY (ICT) IN CRICKET

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Abstract:

*In modern cricket, the bats are bigger and stronger than those used in the earlier eras. Boundaries are also currently smaller which provides batsmen with an added advantage of scoring runs easily and at a rapid rate. Considerable research has also shown the range of evolvments in the cricket sciences. As the demand of players' contracts increase, the commitment and performance levels from players also increase which might also place players at an increased risk for injury. Technology has emerged and has been used to assist players to improve their performances as well as ways to prevent injuries. Based on these interventions, technology and innovative approaches have also shown to have both advantages and disadvantages of the game. The relevant questions to ask is: how far have we really advanced in the cricketing world? Have all facets since the game's inception become institutionalized to a business model? Legislations, ethical considerations and education are needed in order to ensure that there is an equilibrium of effective transitions and management not only for players, but also for the credibility of this beautiful game. The gentleman's game cricket is played between two team of eleven player in a rectangular pitch (20.12*3.05m). As soon as the competition is increasing in the games the use of technology is following it. So cricket is not behind in this race. Innovation in cricket kept up pace with different things around the planet. An ever increasing number of cameras were included, speed gun were developed, and Spider cams came into the image, Decision Review System (DRS) which includes ball following, Snicko, Hotspot and we can continue endlessly and on.*

Keywords: Camera, Speed gun, DRS, Hotspot.

Introduction:

Information and communications technology (ICT) describe the variety of technological tools and resources used to produce, distribute, store and manage information and knowledge (Majoka, Fazal, & Khan, 2013). In the modern era, these tools have brought revolutions to training and teaching methodologies of sports and physical education. Rapid development in ICT has introduced

innovation and increases the effectiveness of training program. Using these advanced ICT tools, performance level continues to grow and expected level of performance increases to all time high (Harward, 2016). ICT improves accessibility and expand digital environment to the field of sports. International cricket matches have eleven players on each team. The game can also be played with fewer players, say about six on a team, with prior agreement from both teams.

Throughout the long term cricket has consolidated into the game a couple of the most recent mechanical advances accessible. There have been a few dismissals of innovation, for example, the utilization of aluminum cricket bats, however for the most part the ICC have been properly careful about making changes to the game that will affect the players and onlookers.

There is definitely no uncertainty that throughout the long term, innovation has become an essential piece of the game. In cricket's rich history of over 140 years, innovation has developed as time passes and decade.

In 1922, the principal at any point radio station of a cricket coordinate occurred in Australia covering a homegrown game which occurred at the Sydney Cricket Ground (SCG). The first run through a match was broadcast was route back in 1938. From that point forward, there were consistent ball-by-ball inclusion, nitty gritty inclusion of the matches being played (in any event global ones).

Gradually, yet doubtlessly, the innovation kept up pace as the game developed. An ever increasing number of games began being communicated; there was radio discourse more than ever. Third umpires came into the conflict as the twentieth century went into its last decade. Replays turned out to be better, the nature of broadcasting was continually improving.

Innovation in cricket kept up pace with different things around the planet. An ever increasing number of cameras were included, speed weapons were developed, and creepy crawly cams came into the image, Decision Review System (DRS) which includes ball following, Snicko, Hotspot and we can continue endlessly and on. Henceforth, innovation is an essential piece of the game today and players, umpires, investigators, everybody is subject to it some way or the other.

With Anil Kumble's Spektacom innovation which gives a top to bottom investigation on batting (bat speed, power, ball contact with the bat in addition to other things) making its presentation in the current year's Tamil Nadu Premier League (TNPL), we should investigate a portion of the advances that have affected and changed the sport of cricket throughout the long term.

SPIDERCAM:

The Spidercam gives a total and a point by point perspective on each little piece of the game. It capacities as the game advances and moves. As the bowler runs in to bowl a conveyance, it catches his/her run up right until the batsman plays a shot and the ball turns out to be dead. It at that point covers how the bowler is returning to his imprint or how the batsman is getting ready to confront the

following conveyance.



Subsequently, the Spidercam has been an incredible assistance not exclusively to the telecasters yet additionally the match authorities in the event that they need to watch explicit parts/subtleties of an example that occurred during the game. Each game played now (that is covered) has a Spidercam and it has become an indispensable part of broadcasting.

STUMP CAMERAS:

In the present game, we frequently have a falcon eye view and how the game looks from the stumps. This is a direct result of a camera introduced in the center stump (generally) at one or the flip side of the pitch.

This stump camera frequently helps third umpires settling on some vital run out or baffling choices, particularly in situations when the bat (or leg) is on the line (popping wrinkle). It furnishes them with an alternate point which encourages them decide if the bat (or leg) is in or not. It likewise helps in recording each snapshot of the game from a stump's view.

FLYING CAMERAS:



Drone camera by the company Batcam was used in the ICC Men's World Cup 2019. These cameras had 360 degree viewing angle and was used to capture shots from near ground level to skyline view. The camera was remotely controlled and equipped with automatic collision avoidance systems.

SPEEDOMETER:

We've frequently found out about previous quick bowlers who were advocate and how they

scared even the best batsmen on the planet. Any semblance of Dennis Lillee, Jeff Thomson, and the well-known West Indies pace groups of four and numerous others administered global cricket in their time. As the specialists and previous batsmen say, they were very speedy and it was once in a while a bad dream to confront them at their pinnacle. Consequently, the appearance and the presentation of the speed weapon helped in deciding who's bowling at what speed or which bowler is/was the snappiest. The speed firearm estimated at what speed the ball was conveyed i.e. the assessed speed of the conveyance bowled.

Decision Review System (DRS):

Cricket has joined some other world games and have incorporated an umpire reference framework in some global matches. Such a framework was first tested in 2008 (in a Test arrangement between Sri Lanka and India). Players are permitted to challenge choices made by the on-field umpires, and have them alluded to the TV official. For every innings of the Test, each group can challenge any choices, however they will be restricted to three fruitless difficulties for every innings. Just the batsman on the less than desirable finish of the umpire's unique choice or the chief of the handling side can claim by making a "T" sign with the two lower arms at shoulder stature. The third umpire utilizes the innovation of the problem area and moderate movement replays at various points to acquire data and decide.

HAWKEYE:

The Hawkeye framework was dispatched in 2001. It was first utilized in TV inclusion of games. The framework was first utilized during a Test coordinate among Pakistan and England at Lord's Cricket Ground, on 21 April 2001, in the TV inclusion by Channel 4. From that point forward it has been an essential apparatus for cricket analysts around the planet. It is utilized basically by most of telecom companies to follow the direction of balls in flight, generally for dissecting leg before wicket choices. The ball by ball following by the Hawk-Eye framework additionally permits the telecasters to exhibit numerous different highlights of the game, like looking at the bowlers' rates, turn, swing, line and length.



On account of LBW choices, Hawk-Eye can extend the possible way of the ball forward, through the batsman's legs, to check whether it would have hit the wicket. Notwithstanding giving data to TV watchers, the innovation is additionally utilized by the third umpire to mediate on LBW choices that have been alluded.

Despite the fact that Hawkeye is extremely exact in estimating the genuine way of a ball, with regards to anticipating the future way of the ball, for example, in LBW choices, it isn't as clear. In the event that the ball is going to the pitch, it's absolutely impossible Hawk-eye can advise if a conveyance will slip a smidgen more than ordinary or hit a break, piece of grass, or worn fix of the pitch. The anticipated way of the ball depends all things considered and anticipated pathway.

SNICKO-METER:

The Snickometer (known as 'snicko' for short) was imagined by English Computer Scientist, Allan Plaskett, during the 1990s. Snickometer innovation was first utilized in 1999 by Channel 4 in the UK, prior to being utilized in India and Australia.

The snickometer is made out of an exceptionally delicate mouthpiece situated in one of the stumps, associated with an oscilloscope that estimates sound waves. At the point when the ball scratches the bat, the oscilloscope follow will get the sounds. Simultaneously, a rapid camera records the ball passing the bat. The oscilloscope follow is then appeared close by sluggish movement video of the ball passing the bat, and by the state of the sound wave you can decide if of not the clamor got by the mouthpiece concurs with the ball passing the bat, and whether the sound appears to come from the bat hitting the ball or from some other article.



This innovation is utilized in broadcast cricket matches to graphically show the video of the ball passing the bat simultaneously the sound of any sounds at that point. It is simply used to give the TV crowd more data and to show if the ball did or didn't really hit the bat. The umpires doesn't get the advantage of seeing 'snicko'.

BALL SPIN RPM:

Beginning during the TV inclusion by Sky sports for the 2013 Ashes arrangement, they had the option to show a RPM (cycles each moment) counter, showing how quick the ball was turning after discharge. It isn't clear how this is estimated, however it would require a high velocity camera zeroed in ready, perhaps utilizing the very pictures that are caught for the Hawkeye framework.

HOT SPOT:

The problem area innovation is for the most part used to survey whether the bat has hit the ball, especially when there is a little scratch. In the event that there is contact, the modest quantity of warmth produced is shown by a change to that territory of the bat. Problem area utilizes two infra-red cameras situated at one or the flip side of the ground. These cameras sense and measure heat from rubbing created by an impact, like ball on cushion, ball on bat, ball on ground or ball on glove. Utilizing a deduction strategy, a progression of high contrast negative casings is created into a PC, exactly limiting the ball's place of contact. Following some debate after the 2012 Ashes arrangement, there is question over the precision of Hot Spot.

NEW TECHNOLOGY:

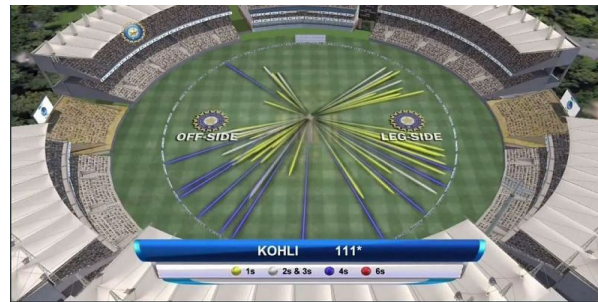
Cricket is a game saturated with custom. Making changes to the standards that have been set up for quite a while isn't messed with. Notwithstanding employments of innovation that are talked about above, here are a couple more thoughts

- **No Balls at the wrinkle** - Give the umpires some input about whether a front foot no ball has been made. It is easy to incorporate some innovation which gives the umpire a blaring sound if the bowler crosses the popping wrinkle.
- **No Balls for tossing** - It is hard to screen each bowling conveyance during a counterpart for twisted arm tossing, yet new innovation is being built up that might actually be utilized for something like this. Already, any player revealed with an unlawful bowling activity needed to attempt 3D biomechanical examination of their activity in a lab. New innovation utilizing inertial sensors is being built up that might actually be utilized to test a bowling activity during matches to check whether they are twisting their arm a lot during the bowling conveyance. Inertial sensors utilize comparative innovation to that pre-owned cell phones. These sensors will be light, financially savvy and wearable on the bowler's arm and in particular won't block bowling execution while as yet permitting data about the bowling activity to be surveyed in close to constant in both match and preparing conditions.

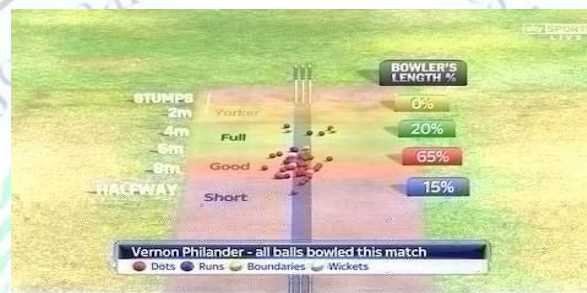
Wagon-wheel and Pitch-map:

Here are two advances that assist groups with examining and plan. The Wagon-wheel is that mechanical advancement which shows how a specific batsman has scored runs for example what

area or part of the ground, where does he get his limits, where does he search for ones and twos, etc. It gives a point by point perspective on a batsman's or group's innings or numerous innings also.



Then again, pitch-map gives a point by point perspective on the bowlers. It gives a total view on a specific bowler or a group has bowled in a specific innings or numerous innings. It causes them sort out what line and length they've bowled and what improvement can be made.



One of Vernon Philander's pitch-maps

LED BAILS:

The stumps and bails have likewise advanced with time. The stumps began having cameras and were utilized to record the stump-perspective on the game. In any case, presently the bails have developed as well. There are LED bails utilized in the present game. They were brought into the image to take out sticky cases during runouts and stumping's while deciding when the bails were off the depression. Thus, with the coming of LED bails (and stumps), we can undoubtedly know when the bails (and stumps) were totally removed. Otherwise called Zing bails, these contain sensors which light up when the bails are totally off their notch and consequently, choices on runout and stumping's can be made when these bails light up and where was the batsman when these lit up.

Bowling Machine-

These are machines which are fed balls (any kind of balls) and a particular speed is set for a batsman to practice. It can help a batsman face a particular kind of delivery while practicing.

Super Slo-mo-

This is only a progression in the cameras which record the movement of the video in exceptionally sluggish movement. It gives a total image of how a specific occasion occurred. For instance, take the new ball altering episode where Cameron Bancroft was found returning the

sandpaper to the pocket and afterward in his pants.

Software and applications-

Programming is set of guidelines which instructs the PC once educated. There are different sort of programming and applications accessible on the lookout. The utilizations of programming and applications in sports and actual schooling can additionally be arranged by their performed task. The greater part of the biomechanical investigation programming are coordinated with number of camcorders.

Fuzzy logic provides effective techniques for the representation of uncertainty and is therefore often used for the handling of vague conditions in a variety of application areas. In the field of sport, Zadeh's proposal is being applied in the analysis and classification of sports pecificexecutions such as in cricket player's ranking. In club cricket team owner follow player rating and ranking through analyzer; who analysis player performance during auction. Here FIS input most valuable part. The present paper suggests the design of fuzzy logic techniques for the evaluation of performances in cricket such as batting, bowling; overall performance.

PLAYER AND GAME GRAPHICS:

3D illustrations and activities have added fun remainder to the manner in which information can be examined and introduced to the crowds. There are a serious small bunch of organizations that work in both the investigation and realistic space. 3D player models introduced during the game and during post-coordinate critiques give intriguing approaches to imagine the expertise, strategies, and execution of the players.

POWER SHOT ANALYSIS:

Power Bat innovation, by Spektacom, gives continuous criticism on the batting execution, remembering information for bat speed, sway area, wind, dispatch point, and the force behind each shot. It utilizes super lightweight inconspicuous sensors, put behind the bat, to register the batting measurements utilizing AI calculations, which are then partaken continuously for broadcasting - the crowd would now be able to comprehend the science behind power hitting.



Umpires camera-

This camera is planned explicitly for the umpire, which fits on his cap. With this assistance, it is realized that where the umpire's eye is. With the assistance of the umpire camera, another point is found for the TV crowd.

THIRD UMPIRE:

In global cricket, the third umpire has been utilized to enhance the job of the two umpires on the ground. The third umpire is similarly qualified, and sits off the ground with admittance to TV replays of specific circumstances (like questioned gets and limits) to exhort the focal umpires. The umpires out on the field are in correspondence through remote innovation with the other umpire. The third umpire is additionally approached to mediate on run out choices, which he utilizes video replay and settles on a choice without discussion with the two focal umpires.

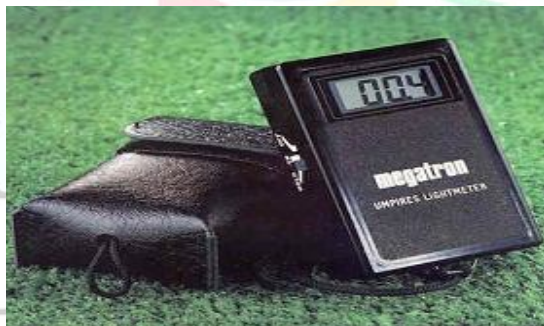
Cricket Umpire Counter:

This is a device that the umpire uses for counting. The device can count Balls, Overs and Wickets. It is designed as per the palm of a hand and its quite handy. It can count up-to 99 overs. The umpire has to rotate the wheels on the counter to change the number and keep track of the balls, wickets and overs.

Umpires Light Meter:

The Megatron Umpires Light meter (ULM) is a compact accurate digital instrument originally designed to indicate lighting levels on the cricket field. The reading can be taken directly, or using the HOLD position on the ON/OFF switch. **"Bad light" is usually offered to the batsman at a figure of about 3.5.**

The Ball Gauge-



When a ball lost its shape due to hard-hitting/thrashing like the explosive batsman AB de Villiers and Chris Gayle then the umpires use a ball gauge to check whether the ball is usable or not. The ball is made to pass through the ring and if it does, it is considered usable and if it doesn't, it is replaced.

Benefits of Information Technology in sports-

There are some of the ways technology can provide or facilitate most of the types of support that someone trying to become or stay physically active needs. Now a day's computer is widely used

as a teaching aid. In this era of globalization black board is quit away. Power point presentations, Video clips, Animation, Graphics, and Sound have become much more effective and needful, CD, DVD, MP3, is more useful in teaching. Computer is applied in sports sciences, scoring systems, computerized test all evaluation can be largely followed. A coach keeps monitoring on the players. A computer helps us if any deficiency is found. Records of the player can be maintained for future plan Selection of players for various game and sports is an important for this multiple regression helps in many ways. Hence computer plays a significant role in storing research data and its analysis. Treatments in sports medicine involve Cardio-Vascular, Flexibility and strength building programme. Sports Medicine is the study, prevention and treatments of sports and fitness related injuries. In cricket use of lasers to compliment run out decisions. E spectators in IPL 2020 & recorded sound. Use of sensors in bails and in the boundary rope to determine if the batsman is out OR hit a 4.

Advantage and disadvantage of Information Technology:

Technology in Cricket is constantly changing in today's era. This change is making a big impact, whether the technology is a disadvantage to the cricket and slows down the speed of the game or uses the technology to an advantage and speeds the game up to help make accurate calls. People are always looking for the technology to be able to get ahead of other opponents. The use of technology has crept into the player's games. Technology is more of an advantage or disadvantage. One of the main reasons' through which technology compromise a sports experience is that people are watching the games at home instead of watching the games that are played live. Some people would rather stay at home than spend the money to go to view the game. With the game being shown on television, means fewer supporters in attendance. Fewer supporters mean less money for the teams in terms of income and profits. The enhanced experience of technology has made it easy for teams to know and learn about the opposite teams. Some people believe that it was necessary for technology. Sometimes the referee's decision will be wrong, there technology will work and give accurate result will be given.

Conclusion:

In modern world era, Information technology play vital role in the field of sports and games. It helps to avoid mistake in organization and administration of various sports and games at world level. Information Technology in Sports has established scientific discipline, Research activities, improve Learning and coaching, Bio-mechanical analysis and field research have evolved. In future very soon the way computer with be applicable in sports with good quality and best results.

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