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WHAT IS HAWK EYE TECHNOLOGY?

Hawk-Eye is a computer system used in cricket, tennis and other sports to track the path of the ball. It was developed by engineers at Roke Manor Research Limited in 2001; the patent being held by Paul Hawkins and David Sherry. Later, the technology was spun off into a separate company, Hawk-Eye Innovations Ltd., as a joint venture with television production company Sunset + Vine.
HOW DOES HAWK EYE WORK?

Hawkeye uses six specially placed cameras around the ground to track the path of the ball, from when it was released from the bowler's hand right up until when it’s dead. The images captured by the camera are then turned into a 3D image by a special computer to show how the ball will travel on an imaginary cricket pitch.

It can track any types of bounce, spin, swing
And it's about 99.99% accurate too. So you can see on the TV whether the ball would have gone on to hit or miss the stumps on an lbw decision. Hawk-eye has a couple of other useful features.

Hawkeye can also measure the speed of the ball from the bowler's hand, so it can tell exactly how much time the batsman has to react to a ball.
EVOLUTION OF HAWK EYE TECHNOLOGY?

The hawk eye technology was invented by Dr Paul Hawkins who used to be a cricketer and played for county side Buckighamshire. He has a PHD in Artificial Intelligence. Here in the 1st picture Paul Hawkins, Managing Director of Hawk-Eye poses for photographers as he takes a break from calibrating the 'Hawk-Eye' video line call system on Number One Court at Wimbledon All England Tennis Club, London, Friday, June 15, 2007. In the second picture he is calibrating the 'Hawk-Eye' video line call system on Number One Court at Wimbledon All England Tennis Club, London, Friday, June 15, 2007.
FEATURES OF HAWK EYE TECHNOLOGY AND ITS WORKING A BIT MORE IN DETAIL?

The hawk eye system consists of two significant parts
(a) Tracking System
(b) Video Replay System
TRACKING SYSTEM

The tracking system consists of High speed vision processing cameras to track the ball from the bowler’s hand to the batsman. The system will automatically calculate the following information:

1-The speed of the ball leaving the bowler's hand
2-The reaction time for the batsman.
3-The swing of the ball from the bowler's hand to where the ball pitched
4-Where the ball pitched
5-Where the ball was bowled from
6-How much the ball bounced
7-How much the ball deviated sideways off the wicket (i.e. seam or spin)
8-A prediction of where the ball would have passed the stumps
VIDEO REPLAY SYSTEM

Though the tracking data provides the coaches and players with the information for HOW they have performed. The Hawk-Eye Cricket System can incorporate more video replay cameras for better analysis from different camera angles, which can be controlled remotely. The video is captured and stored digitally on hard disks.
APPLICATIONS OF HAWK EYE TECHNOLOGY

Hawk eye technology since from its beginning has gained huge popularity due to its highly innovative and state of the art features. Though initially it was made for the benefit of umpires regarding decisions in cricket but now it is being used in tennis, snooker, video games and also for enhancing military strength.
USE OF HAWK EYE TECHNOLOGY IN CRICKET-----

The technology was first used by Channel 4 during a Test match between England and Pakistan at Lord's Cricket Ground, on 21 May 2001. However, the system is not used by the umpires to adjudicate on LBW decisions in Test cricket or One Day International cricket. It is used primarily by the majority of television networks to track the trajectory of balls in flight.

Its major use in cricket is in analyzing leg before wicket decisions, where the likely path of the ball can be projected forward, through the batsman's legs, to see if it would have hit the wicket. Currently this information is only visible to television viewers, and these days it is adopted in the IPL matches by the third umpire, who gives the decisions by watching the slow motion replays.

The Hawk-Eye software can accurately pinpoint the speed, line and length of each delivery bowled.
BOWLERS:
1-see how fast they can bowl
2-watch each delivery back in 'Virtual Reality'
3-measure how far they are turning the ball through spin, seam or swing
4-view 'beehive' formations marking where each delivery meets the batsman.
the pictures shows how beehive graphics are made and are used.

BATSemen:
1-analyse their play against spin, seam and swing
2-improve awareness of their footwork and positioning against different bowling
3-generate 'wagon wheels' on a 'Virtual Lord's' to see where they score their runs around the ground
the pictures shows how hawk eye helps batsmen.

umpires:
can use the technology to sharpen their skills too, on LBW decisions and more.
USE OF HAWK EYE TECHNOLOGY IN TENNIS——-

In the autumn of 2005 Hawk-Eye was tested by the International Tennis Federation (ITF) in New York City and was passed for professional use.

It was first tested at the Champions Tour's event at the Royal Albert Hall. The US open was the first grand slam tournament where the hawk eye technology made its debut. It helped the line umpires in giving accurate decisions regarding whether was out or in. The players also benefited from this as the decisions were 99% accurate.

The pictures shows use of hawk eye technology in tennis
USE OF HAWK EYE TECHNOLOGY IN SNOOKER---

At the World Snooker Championship 2007 and 2008, the BBC used Hawk-Eye in its television coverage to show player views, particularly in the incidents of potential snookers.

USE OF HAWK EYE TECHNOLOGY IN VIDEO GAMES---

The use of the Hawk-Eye brand and simulation has been licensed to Code masters for use in the video game Brian Lara International Cricket 2005 to make the game appear more like television coverage, and subsequently in Brian Lara International Cricket 2007
USE OF HAWK EYE TECHNOLOGY IN STRENGTHENING MILITARY POWER----

The use of hawk eye technology is used to retrieve the enemy locations from far away distance without coming to their notice. The E-2C aircraft used by US army uses this technology.

The primary role of the E-2C Hawkeye aircraft supplied by Northrop Grumman is as an all-weather airborne early-warning aircraft to the naval task force.
USE OF HAWK EYE TECHNOLOGY IN AUTOMOBILE FIELD

Hunter Engineering Company Introduced HawkEye™ to offer shops the multiple benefits of precision, high-speed alignment and greater productivity, while using a minimum amount of space. Optimized for speed and efficiency. The new HawkEye alignment system significantly reduces service time by providing alignment measurements in less than two minutes and the potential to complete the job, including adjustment, in as few as three trips around the vehicle.

In addition to the performance benefits the HawkEye system also significantly reduces the distance required from the front turn plates to the front bay wall to secure accurate alignment readings.

The pictures show the use of Hawk-eye technology in wheel alignment.
FUTURE OF HAWK EYE TECHNOLOGY

The future looks bright as within a few years of its origin and use it has made a huge impact in the field of sports, army and many other fields. If this is the beginning then we can hope for the the best in the coming years.
• Conclusion

The Hawk-eye Technology is a wonderful invention as far as sports like Cricket, Football, Snooker etc are concerned. Its still in its infancy. But with the developments happening each and every day in this field, the day is not far when we can say that the all umpiring decisions are completely accurate and correct.

I have tried to make a brief explanation of the hawk eye technology and its properties. I hope that I have satisfied my proffessors, lecturures, and my fellow friends regarding the intricacies of hawk-eye technology.
Thank You