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SIMULATION OF ANALYZED DATA & HAWK EYE TECHNOLOGY

Prof. Amit Manikrao1, Nikhil Ghuse2, Ashwini Khodwe3, Gaurav Gangamwar4, Ankitkumar Darji5
1(Department of CSE , AVBIT, Wardha/RTM Nagpur University, India & Video Analyst(BCCI), India) 2, 3, 4, 5(Department of C.S.E, AVBIT, Wardha /RTM Nagpur University, India)
Computer Science & Engineering,
Acharya Vinoba Bhave Institute of Technology, Wardha.

ABSTRACT

In many sports there are many decisions which cannot be determined by human interfaces. So we need to use different types of technologies to determine the decisions perfectly .one of most prominently used technology is HAWK-EYE technology. It is used in sports like cricket, tennis, snookers and in some games. It is a technology where we can determine speed, deviation of ball from actual track etc. Hawk-Eye as the most innovative technology provider in sports broadcasting and is a development that will reinforce the group's presence and influence. It is primarily used by the majority of television networks to track the trajectory of balls in flight. Currently HAWK EYE technology is only applicable on live videos which are worked on real time. In this technology we are implementing new concept in which the analyzed data can be simulated to produce the Hawk Eye. This system will take analyzed data of cricket and generate its hawk eye which helps to take correct decision. This will be useful to empires, trainers, and trainees too.

Keywords: Cricket, Hawkeye, Analyzed data, Trajectory.

I. INTRODUCTION:

What is Hawk Eye? HAWK EYE is a computer system generally used in cricket, tennis, snooker etc. to trace the path of ball. Six cameras are stationed at strategic points around the ground. These six cameras recognized the ball and 3D trajectory is created. Kalman Filtering process is used to generate 3D trajectory from image data. Using this trajectory speed, angle, deviation can determine. This is all about the HAWK EYE technology.

Fig 1: Cameras Position

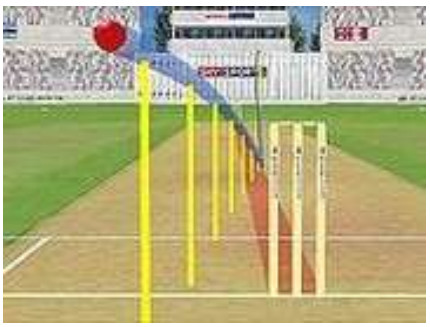


Fig 2:Generated Hawk Eye

Use of Hawk Eye Technology

Hawk Eye technology currently is applicable on live videos means when the match is running only then the Hawk Eye is able to generate. Our proposed system is used to generate Hawk Eye from analyzed dimensions. Means using analyzed data Hawk Eye can be generated. If we want to generate the Hawk Eye of video for study or for any purpose then we need not to wait for the live match, we can generate the Hawk Eye using any video analyze it and drawn its Hawk Eye. We design the system specially for the cricket videos which helps to take correct decision. This is useful to empires, trainers, and trainees too.

II. METHODOLOGY:

Hawk Eye technology is already implemented on videos but condition is that the videos must be live videos. This technology was used on 21 may 2001 first time, that means the matches which are played after 2001 can have a generated hawk eye but what about the previous one? If any new empire or trainee wants to study each and every match then it is not possible to him to study. So to overcome this problem we designed this software which helps to generate the hawk eye of any video by analyzing it.
To developed this software, there are some requirements:
Front End :- C#.Net
Operating System :- Windows 2007 and above IDE :- Microsoft Visual Studio 2010 ++

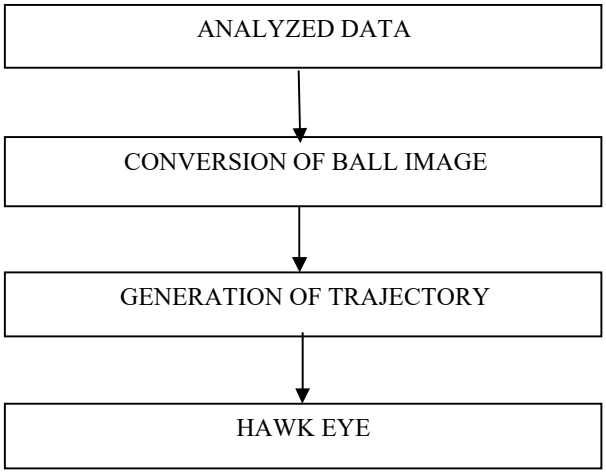


Fig 3:-Steps To Generate Hawk Eye From Analyzed Video

PROCESS

The working of this software is as follows
1. Take a analyzed data of stored video as an input.
2. The input data will be ball length, balling side, pitch dimensions, bowler type, bowling speed,
3. After completion of adding the data click on Hawk Eye button.
4. This results into draw a trajectory in separate window. That is nothing but the Hawk Eye.

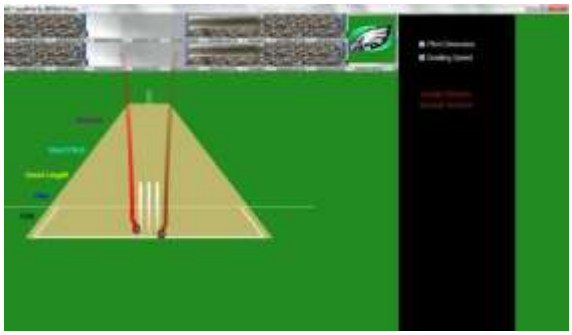
RESULT:

Main Form

Fig 4:Entry Form

Fig 5:Hawk Eye Form

Fig 6:Generated Hawk Eye



FORMULAE:

$$\text{Bit / pixel} = \frac{\text{Bit Rate(kb/s)} * 1000}{(\text{Width} * \text{Height} * \text{frames/s})} * 100$$

Accuracy = 100 – Bit / pixel

Formats / Hawk Eye	AVI	3GP	MPEG
Offline	√	√	√
Real Time	--	--	--
Accuracy	95.64	81.48	90.44

From table it is observed that, using AVI, 3GP, MPEG formats hawk eye is generated accurately in offline mode. Accuracy of AVI is more than the 3GP and MPEG. Mathematically accuracy is shown as follows

AVI > MPEG > 3GP

V. CONCLUSION:

Current system is worked on live videos so it is not useful for study purpose. If we want to generate the HAWK EYE then we have to wait for live match. But using this system we are able to generate HAWK EYE of stored videos. If anyone wants to generate the HAWK EYE for study purpose then there is no need to wait for live match, he/she can able to generate the Hawk Eye using any stored video which they already have. It is helpful to empires, trainers, trainees for study. It is an offline project, and easy to handle.

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AUTHORS BIBLIOGRAPHY

	**First Author: NIKHIL D. GHUSE,** Pursuing B.E. C.S.E Degree in Acharya Vinoba Bhave Institute Of Technology, Wardha from RTM Nagpur University.
	**Second Author: ASHWINI S. KHODWE,** Pursuing B.E. Degree in Acharya Vinoba Bhave Institute Of Technology, Wardha from RTM Nagpur University.
	**Third Author: GAURAV P. GANGAMWAR,** Pursuing B.E. Degree in Acharya Vinoba Bhave Institute Of Technology, Wardha from RTM Nagpur University.
	**Fourth Author: Ankitkumar S. Darji,** Pursuing B.E. Degree in Acharya Vinoba Bhave Institute Of Technology, Wardha from RTM Nagpur University.