**INTRODUCTION**

- The use of Optical flow analysis along with the shot boundary detection can greatly help in the analysis of broadcasted sports’ videos. In this paper we classify different types of cricket strokes played by a batsman during the match into four different directions.
- This requires solving problem of shot boundary detection in a video. We split the video into shots by supervised learning approach using colour histograms.
- We then classify the video frames into four classes namely, ground, fielder, pitch and other using multi-class SVM.
- We do optical flow analysis [2] on video segment in which batsman play the stroke, to determine the direction of the stroke played.

**MOTIVATION AND PREVIOUS WORK**

- This can be a major step in further developing an automatic commentary system which would be a huge contribution to the field of sports.
- Our approach although presently tested on complete videos, can be easily used with streaming videos also.
- Some work like ball-start detection and cricket highlights retrieval have already been done in this field.

**SHOT BOUNDARY DETECTION**

- A shot is an uninterrupted sequence of frames captured by a single camera. Two consecutive shots can be separated by various transitions like cut(fig 1) or fades(fig 2)(also called shot boundaries).
- We have followed a histogram based approach using color histogram [4].
- For each frame we compute YUV image histogram which stores the total number of pixels in each bin (distribution of colors in an image).
- We compute both global and local histograms corresponding to a frame and represent each frame as a feature vector.

\[
\text{GlobalHist}(f,g) = \frac{\sum_{c=1}^{C} \max(Hist_{f,c}(g),Hist_{g,c}(g))}{|f|}\]
\[
\text{LocalHist}(f,g) = \sum_{c=1}^{C} \max(Hist_{f,c}(g),Hist_{g,c}(g))\]

- Training and testing were done using K-fold cross validation method with K=3.
- For cut and fade classification in testing data we used K-NN algorithm with K=5.

**FRAME CLASSIFICATION**

- A frame in a cricket match video can be classified into 7 major classes - (Ground view, Batsman view, Crowd view, Long shot, Pitch view, Fielder view and others).
- For the classification we first tried the grass pixel ratio - colour based approach [5] to classify the frames into field view (Ground view, Long shot and Pitch view) and non-field view (Crowd view, Batsman view, Fielder view and others)(fig 4).

**RESULTS AND DATASETS**

- We chose an 8 over cricket match video played between Australia and England (25 fps) as the dataset.
- Training and testing were done using K-fold cross validation method with K=3.

**REFERENCES**

-ICVGIP08. Sixth Indian Conference on. IEEE, 2008.