**Automatic Highlight Generation from Sports Video**

**Introduction:** Large amount of multimedia content is available on cloud. The need of data analysis and content management is challenging task for human and Computer machines. Video summarization and processing techniques have been used in various application like sports, surveillance, healthcare, home videos, news and entertainment.

**Video Summarization in Sports:**  In our work we are focusing on sports videos where at every day we got number of generated sports broadcast videos. Video summarization is used to extract important events of video from full length video. There are common approaches currently used in video summarization one is summarization from live videos and second is summarization using replay detection. Ekin and Dian combined both approaches by using live and replay detection which is the best approach of event detection and highlights generation. Existing reply to detection has learning-based and non-learning-based approaches e.g., logo detection which is depends upon various logo classifiers, reply structure and motion features. To overcome limitation of learning-based approach, non-learning-based techniques proposed. Like Nguyen used histogram, contrast feature to compute the difference of frames for reply detection and similarly Eldib used statistical features to detect the replay sequences. To Address the limitation of existing replay detection techniques a new hybrid computational method proposed in this our project we will use this approach to detect replay of video summarization in sports events.

**Proposed System:**

GT Detection and SC Detection

**Diagram

Description automatically generated**

***A)Gradual Transition (GT) Detection***

Replay segments in sports video

accumulative histogram difference against a computed threshold TU.

if, histogram lies between TL and TU =>

Segement line s ≥ NGT then its possible GT

***Replay Segment (RS)***

GTs= {Si …….Ei}

Nr Separation of frames

2𝑁𝐺𝑇 + 𝑁𝑅𝐿 ≤ 𝐸(𝑖+1) − 𝑆𝑖 ≤ 2𝑁𝐺𝑇 + 𝑁𝑅𝑈

Where NRL and NRU represent lower

Diagram

Description automatically generated

***B) Score Caption Detection***

Candidates RSs analyzed to extract SCs. It is used to detects replay from live frames.

It has Following Parts

1. Preprocessing

Transform Candidate RSs sequences into grayscale images and further adjustment using top hat filter by structuring element subtracting from real image.

𝐼 𝑡ℎ𝑖𝑛 (𝑖) = 𝐼 (𝑖) ⨂ 𝑆𝐸 (2)

𝐼𝑎𝑑𝑗 (𝑖) = 𝐼 (𝑖) − 𝐼 𝑡ℎ𝑖 (1)

1. Temporal Running Average

L frames used to computer running average

𝐼𝑎𝑣𝑔 (𝑖) = (𝐼𝑎𝑣𝑔 (𝑖−1) − 𝐼 (𝑖−1) + 𝐼 (𝑖+1) ) / (4)

1. Imgae Binarizaton

Used to convert Iavg image into binary image

𝐼𝑏𝑖𝑛 (𝑖) (𝑥, 𝑦) = { 0 ,𝑖𝑓 (𝜇𝑖 − 𝑝 ∗ 𝜎𝑖 ) ≤ 𝐼𝑎𝑣𝑔 (𝑖) (𝑥, 𝑦) ≤ (𝜇𝑖 + 𝑝 ∗ 𝜎𝑖 ) 1, 𝑜𝑡ℎ𝑒𝑟𝑤𝑖𝑠𝑒 (

1. Morophological Thinning

Removing outliners morphological thining used

𝐼 𝑡ℎ𝑖𝑛 (𝑖) = 𝐼𝑏𝑖𝑛 (𝑖) ⨂ 𝑆𝐸

1. SC by OCR

For SC recognition OCR process is applied on thinned image