

**A Multi-Modal System for Soccer Video Summarization**

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Abstract:

Soccer is one of the most popular team sports all over the world. Most sports games are naturally organized into successive and alternating plays of offence and defense, cumulating at events such as goals or attacks. If a sport video can be segmented according to semantically meaningful events, it then can be used in numerous applications to enhance its value and enrich the user’s viewing experience. According to this, soccer video summarization and analysis has recently attracted much research and a wide spectrum of possible applications have been considered.

Soccer video summarization and analysis is concerned with the extraction of valuable semantics by efficient and effective processing of combination of visual, audio and text information.

The proposed system presents the idea of using cinematic features extracted from the input soccer video for the purpose summarization using an automotive and efficient framework.

The proposed system consists of several basic stages such as (dominant color detection, shot-boundary detection, shot classification and replay detection) which they are considered as low-level soccer video processing algorithms combined with some higher-level processing algorithms such as event detection.

Modules:

1. Pre-processing phase
2. Shot boundary phase
3. Shot classification phase
4. Replay detection phase
5. Excitement event detection phase (including audio analysis)
6. Event detection and summarization phase

Tools:

1. OpenCV -> for video and image processing
2. MoviePy -> for video and audio processing
3. TensorFlow & Keras -> for machine learning for face detection and shot classification
4. Pytesseractocr -> for optical character recognition

