Cricket Video to Text Summarization Using Neural Networks

# Introduction

This project introduces an innovative approach that focuses on extracting key highlights and events of a cricket match, to generate a concise textual summary by utilizing advance neural networks. The proposed system aims to outperform and overcome the limitations of traditionally summarizing systems. The proposed system uses a combination of various technologies like VGG16 Convolutional Neural Networks (CNNs), Optical Character Recognition (OCR) and Long Short-Term Memory Recurrent Neural Networks (RNNs) to build a powerful neural network architecture. This system allows transforming visual cues into short textual summaries which can be easily understandable by varied category of viewers. This technology of transmuting complex information into written summaries brings an entirely new way to produce insights and review matches effectively. By integrating neural networks into this process, the information extracted from cricket sport videos passes through one more layer of refinement and comes off as a unique text summary. Ultimately, this project aims to make a potential next stage of easier access to streamlined cricket content, without making the trouble that sports coverage often experiences.

# Project Objectives

This project is designed to revolutionize the analysis of cricket match videos by implementing a multi- faceted approach, leveraging advanced technologies for enhanced information extraction and summarization. The key objectives are outlined as follows:

## Frame Generation:

* + Generate frames from the provided cricket match video input.
  + Implement a mechanism to eliminate redundant frames, optimizing the analysis process for subsequent stages.

## OCR Model for Player Information Extraction:

* + Develop a robust Optical Character Recognition (OCR) model tailored to extract pertinent information, including names and scores, from cricket players (bowlers, batsmen, fielders) featured in each frame.

## Transcripts Creation:

* + Create detailed transcripts for each frame, capturing and accurately describing the nuanced actions taking place during the cricket match.

## Transcripts Generation with OCR Integration:

* + Integrate information derived from the OCR model, incorporating player names and scores, into the raw transcripts.
  + Generate comprehensive transcripts that provide a meticulous and accurate account of the events unfolding in each frame.

## Match Summary Generation:

* + Utilize the detailed transcripts generated in the previous stage to construct a concise textual summary encompassing all significant events that transpired during the cricket match.

# Expected Outcomes

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| --- | --- | --- | --- |
| **Module name** | **Input** | **Output** | **Completed** |
| Frame Generation | Figure Cricket video | Figure Extracted frames | **Yes** |
| OCR  Model | Figure Scoreboard from frames | Figure Player Names, Score | **Yes** |
| Transcripts Creation | Figure Frames | Figure Transcripts for each frame | **Yes** |
| Transcripts Generation | **+**    Figure Transcripts + Data from OCR | **(Yet to do)** | **No** |
| Summary Generation | **(Yet to do)** | **(Yet to do)** | **No** |