

Guidelines

- Feel free to use any other template of your choice, given it covers all the mentioned points of the sample template.
- The ideal size of the presentation should not be more than **10 slides**.
- While in this stage the evaluation will only be made on the basis of the idea, you are welcome to add as many **POCs** and **design concepts** to support your **idea**, if already prepared.
- The idea should be feasible and the team members should be capable enough, to come up with the prototype of the same idea if required.
- In case of queries drop in a mail at **nextin-support@hack2skill.com**



Team Name : **Badam Breakers**

Problem Statement : Fan Experience

Brief about the Idea:

We present a tool aimed at accurately identifying pivotal moments such as boundaries, fall of wickets and extract corresponding replay segments from video sequences.

This endeavor holds significant value in video analysis enhancing fan experience while offering the potential to streamline various aspects of video processing and content generation.

Opportunity :

How different is it from any other existing ideas out there?

Our proposed idea stands out by introducing **automation** into the process of generating highlights and replays, a departure from the conventional manual methods employed by pre-existing systems.

How will it be able to solve the problem?

Automatically generating a video summary is difficult and necessitates a smaller number of multimodal data that results in compact representations. This model addresses the challenge by employing an efficient pipeline that adeptly integrates visual features allowing precise identification of critical moments.

List of features offered by the solution :

- **Shot boundary detection:** detect visual discontinuities caused by shot transitions by distinguishing abrupt and gradual transitions to precisely segment video frames for event detection.
- **Replay detection** feature aids to detect specific visual transitions, distinguish replays by recognizing a higher frequency of shot views compared to regular play segments.
- **Shot classification** that categorizes shots into specific views, such as field, pitch, boundary, close-up, crowd, etc., enabling tailored analysis processes for each shot type.
- **Excitement-based highlight recognition** approaches extract interesting snippets from videos by utilizing characteristics such as audio energy, motion features, and shot cut density.



Frame sequence for Six



Frame sequence for Four



Frame sequence for Wicket fall events



Abrupt transition



Field

Pitch

Boundary

Sky



Close-up

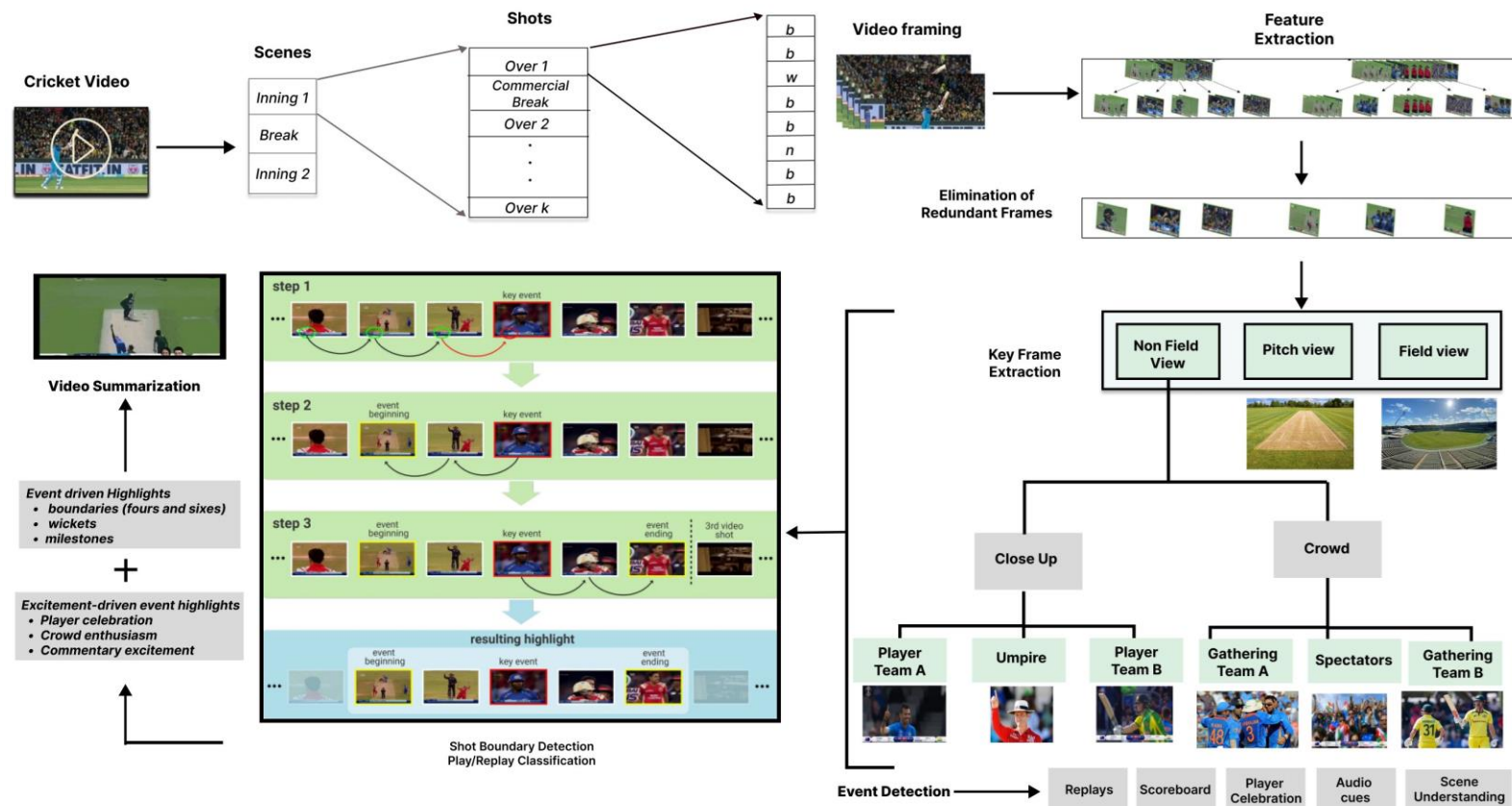
Umpire

Crowd

Audience

- Text-based event detection
- Motion-based event detection
- Umpire's gesture detection
- No ball detection
- Stroke classification

Process Flow Diagram/ Use case Diagram:



Business Logic of the solution :

- **Labor Efficiency:** The solution minimizes the need for manual effort in segmenting and classifying crucial moments in a match, streamlining the workflow.
- **Computation Optimization:** By focusing on keyframes rather than processing the entire video, computational resources are conserved, resulting in faster analysis.
- **Content Creation & Promotion:** The replay detection model provides valuable content for social media platforms, potentially driving engagement and promotion efforts.
- **Wider Audience Reach:** The simplified presentation of the game makes it more accessible to a broader audience, enhancing its appeal and potentially attracting a larger viewership.
- **Content Quality Enhancement:** The solution elevates the quality of content by ensuring that key moments are accurately identified and highlighted, providing a more engaging viewing experience for the audience.

Technology used :

Programming Languages

- Python

Libraries and Frameworks

- **OpenCV** - Computer vision library for video processing tasks like shot boundary detection, object detection, and tracking.
- **TensorFlow** or **PyTorch**

Machine Learning and Deep Learning Models

- **CNNs** (Convolutional Neural Networks): For feature extraction in shot classification.
- **RNNs** (Recurrent Neural Networks): Useful for analyzing sequences of events, such as in replay detection.

Database Storage

- Cloud storage

GPU Acceleration

- Utilize GPUs (Graphics Processing Units) for accelerated deep learning computations, which can significantly speed up processing times.

Estimated cost of/after implementing the solution :

- Good computational resources like GPUs are required.
- Requires maintenance and frequent updating of the proposed model.
- With the use of AWS Cloud (AWS Kinesis, AWS S3, AWS DynamoDB etc) we can have cost- optimized , scalable and reliable computational resources for processing and storage.

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THANK YOU