

VIDEO INDEXING

STEP 3: SEGMENTATION





Purpose of Segmentation



Divide the video into manageable parts (shots, scenes, chapters).

Helps us organize content and attach metadata (e.g., "scene 1: Howl rescues Sophie").

Essential for indexing, so users can jump to important parts easily.



Techniques Used



SHOT DETECTION



TOOL

OpenCV.



HOW

Uses HSV histogram differences and optical flow motion analysis to detect shot boundaries.



Why

Identifies camera cuts or major changes for segmenting video.





Techniques Used



SCENE GROUPING



TOOL

scikit-learn's K-means.



HOW

Clusters shots into scenes based on Step 2 features (colors, motion, audio energy).



Why

Organizes shots into thematic scenes for browsing (Clustering).





Techniques Used



EVENT DETECTION



TOOL

Custom logic on Step 2 features.



HOW

Tags shots with events (action, dialogue, social) based on motion, transcript length, and face counts.



Why

Highlights significant moments for indexing.





Techniques Used



SEGMENT SAVING



TOOL

OpenCV.



HOW

Saves shots as MP4 files with metadata
(timestamps, frame numbers).



Why

Prepares segments for feature
analysis and retrieval.

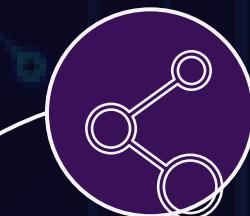




Importance of Step 3



**ENABLES
GRANULAR
SEARCH**



**SUPPORTS
MULTIMODAL
ANALYSIS**



**PREPARES FOR
INDEXING**



**ENHANCES
USABILITY**

Shots and scenes allow searching for specific moments (e.g., “action scene with dogs”).

Uses visual (motion, faces) and audio (dialogue, energy) features

Segments and events feed into metadata (Step 4) and indexing (Step 5).

Organized scenes make browsing intuitive (e.g., “show all dialogue scenes”).

