VIDEO INDEXING

STEP3: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

Custom logic on Step 2 features.

HOW

Uses keyframes generated from the previous steps as boundaries where we used HSV then store them in a JSON file.

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

Python’s json module.

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

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

SUPPORTS MULTIMODAL ANALYSIS

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

PREPARES FOR INDEXING

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

ENHANCES USABILITY

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