Video Summarization

Preprocessing of video:

1. Noise Reduction:

**Spatial Noise Reduction:** This reduces noise within each frame.

* Replaces each pixel’s value with the median value of the pixels in its neighborhood.
* Uses a Gaussian function to smooth the image, reducing noise.

Tools and Libraries:

**OpenCV:** Python library that provides functions for Gaussian blurring (cv2.GaussianBlur) and median filtering (cv2.medianBlur).

**FFmpeg:** Command-line tool that supports advanced noise reduction filters like hqdn3d for high-quality denoising.

1. Video Compression:

Video compression reduces the file size of the video by eliminating redundant information, which helps in saving storage space and bandwidth.

Tools and Libraries:

**FFmpeg:** Widely used for video compression with various codecs(lossless compression).

1. Transcoding:

Transcoding converts a video from one format to another, which can include changing the codec, resolution, bit rate, etc. This step ensures compatibility with different devices and platforms.

Steps involved:

Determine the desired format (e.g., MP4, AVI, MKV).

Select appropriate video and audio codecs (e.g., H.264 for video, AAC for audio).

Modify bit rate, frame rate, resolution, etc.

Tools and Libraries:

**FFmpeg:** A powerful tool for transcoding video and audio files.