

Video Segmentation and DASH Manifest Creation

This Python script processes video files by transcoding them into multiple resolutions, converting HDR to SDR if needed, adding watermarks, and generating DASH-compatible manifest files using `ffmpeg` and `Bento4`.

Prerequisites

Ensure the following dependencies are installed on your system:

1. **FFmpeg:**
 - FFmpeg is required for transcoding, watermarking, and converting HDR videos to SDR.
`sudo apt-get install ffmpeg`
2. **libzimg-dev:**
 - This library is required for the `zscale` filter used in HDR to SDR conversion.
3. **Bento4:**
 - Bento4 is required for fragmenting videos and creating DASH manifests.
 - You can download and install Bento4 from [here](#).

Script Usage

Running the Script

To use the script, simply pass the path to your video file as the first argument when running the `video_segmentation.py` script.

Example

```
python3 video_segmentation.py /path/to/your/video_file.mp4
```

What the Script Does

1. **Creates Output Directory:**
 - The script creates an output directory in the same location as your video file named `output_<video_name>`.
2. **Transcodes Video:**

- The video is transcoded into multiple resolutions (360p, 480p, 720p, 1080p) with appropriate watermarks.
- If the video is HDR, it also converts the video to SDR.
- 3. **Converts HDR to SDR:**
 - If the video is detected as HDR, it converts the HDR video to SDR using the `zscales` filter.
- 4. **Fragments Videos and Generates DASH Manifest:**
 - The transcoded videos are fragmented, and a DASH manifest is created for both HDR and SDR content.

Project Structure

- **`video_segmentation.py`**: Main script that processes the video and generates the output.
- **`transcode_and_watermark.py`**: Contains functions to transcode videos and add watermarks.
- **`convert_hdr_to_sdr.py`**: Contains functions to convert HDR videos to SDR.
- **`detect.py`**: Contains functions to detect if a video is HDR.
- **`manifest_creation.py`**: Contains functions to fragment videos and create DASH manifests.

Logging

The script logs all major steps and any errors encountered during processing. Check the logs for detailed information about the processing.