Using FFMPEG for Video Processing

Introduction

FFMPEG is a powerful tool that can be used for various video processing tasks, including compression, format conversion, and subtitle management. This guide provides basic commands and formulas to help you get started with video compression and adding subtitles to your videos using FFMPEG.

Video Compression

To compress a video file and convert it to another format, the basic command structure is:

ffmpeg -i input.m2ts -vcodec libx264 -crf 28 -preset fast output.mp4

Key options for compression:

- `-vcodec libx264`: Use the H.264 codec for video compression.

- `-crf 28`: Sets the Constant Rate Factor to control quality. Lower values mean better quality.

- `-preset fast`: Controls the encoding speed and compression. Slower presets provide better compression.

Reducing File Size:

For more significant file size reduction, adjust the `-crf` value and consider lowering the resolution with `-s` (e.g., `-s 640x360` for 360p video).

Target Bitrate Formula:

FFMPEG Guide: Video Compression and Subtitle Management

To target a specific file size, use the formula: Target Bitrate (Kbps) = (Target Size (KB) * 8) / Video Duration (seconds)

Adding Subtitles

Adding subtitles can be done in two ways: embedding them directly into the video (hardsubs) or adding them as a separate track (softsubs).

Embedding Subtitles (Hardsubs):

```
ffmpeg -i input_video.mp4 -vf "subtitles=subtitles_file.srt" output_video.mp4
```

Adding Subtitles as a Separate Track (Softsubs):

```
ffmpeg -i input_video.mp4 -i subtitles_file.srt -c copy -c:s mov_text output_video.mp4
```

The `-vf "subtitles=subtitles_file.srt"` option is used for hardsubs, while `-i subtitles_file.srt -c copy -c:s mov_text` is for softsubs. The choice between hardsubs and softsubs depends on your needs and the playback environment.