

Transforming ELAN Annotations to Burned Subtitles

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Abstract

ELAN is an excellent tool for annotating video, but it does not display video well. This document provides a guide for transforming video annotated with ELAN into subtitled video. It includes instructions for ‘burning’ the subtitles into the video so that they display wherever the video is played. ‘Burning’ is usually necessary if you plan to display your annotated video outside of a media player application – for example, if you want to embed the video into a slide.

Organization

As input, this workflow takes:

1. An ELAN file with transcription
2. A video file (mp4 format)
3. An audio file, other than the video camera audio (wav format)
 - a. The workflow still works if you do not have an audio file.

As output, it produces:

1. A video clip which has
2. The corresponding audio from your wav file, and
3. Subtitles, taken from your ELAN file, that are ‘burned’ onto the video.
 - a. ‘Overlaid’ subtitles – the most common format – work only if you play the video in a subtitles-capable app, such as VLC.
 - b. ‘Burned’ subtitles work anywhere.
 - c. Video with burned subtitles is better for embedding in manuscripts or presentations, where overlaid subtitles may not be supported.

You must have the following software to use the workflow:

1. ELAN
 - a. These instructions are based on ELAN v5.9
2. ffmpeg – a free, command line-based video editing tool
 - a. These instructions are based on ffmpeg v4.2.2

The workflow has four main steps.

Step 1. Clipping the video, audio, and transcript which you want to present

Step 2. Exporting the transcript clip to subtitle format

Step 3. Replacing the audio stream of the video with the audio clip

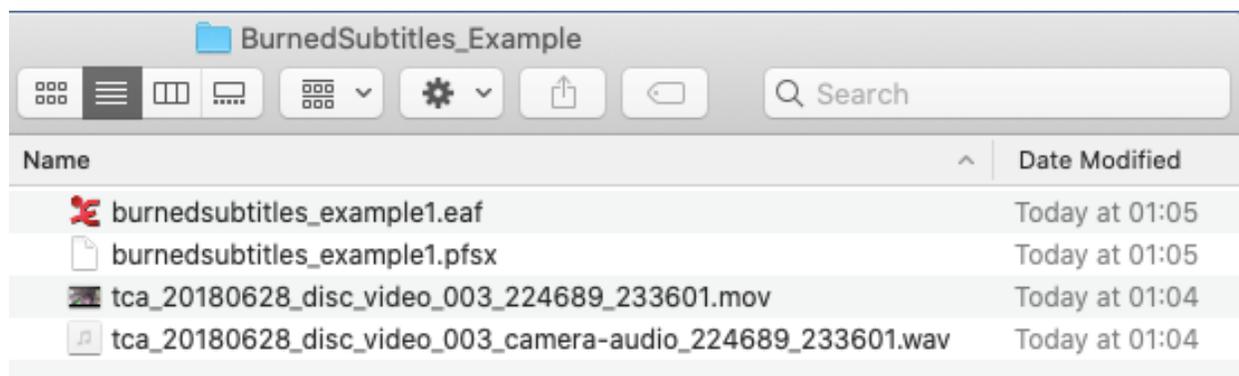
Step 4. Burning subtitles into the video stream

Steps 1 and 2 are updated from a guide by Mark Dingemans (<http://ideophone.org/subtitles-in-elan-and-beyond/>).

Step 1: Clip the video, audio, and transcript

1. Open your original (“long”) ELAN file. Make sure that your audio and video files are linked and displaying properly in ELAN.
2. In Segmentation Mode or Annotation Mode of ELAN, select the interval that you want to export.
3. Choose ‘File,’ then ‘Save selection as .eaf.’
4. Tell ELAN where to save the selected content. You do not need to keep it in the same folder as the original EAF.
5. After you give ELAN a path to save the file, it will produce a dialog box with the text ‘Clip media for the selection using clip-media script’. Check the box and continue.
6. ELAN will now produce 3 files:
 - a. a short EAF file with only your selected content
 - b. a video clip with only the timepoints corresponding to the short EAF
 - c. an audio clip with only the timepoints corresponding to the short EAF
 - i. If you have >1 video linked to the EAF, ELAN will produce as many short clips as you had linked videos; same for audio.
7. The short EAF and clips will all appear in the same folder.

Here’s a sample of what this will produce. ‘burnedsubtitles_example1.eaf’ is my short EAF. The PFSX settings file is its corresponding settings file. The video and audio are clips of only the 9 seconds contained in the EAF. ELAN has named each media file for me using its original name followed by the clip timepoints in milliseconds.



Once you have a directory that looks like this, go on to step 2.

Troubleshooting:

If no media files appear in the directory with your short EAF, then you have a problem with the path in ELAN’s Clip-Media script.

Do this:

1. Go to your ELAN settings folder
 - a. (On Mac) This is: /Users/<yourusername>/Library/Preferences/ELAN

- i. By default the Library folder is not visible from your home username directory. Hit Cmd-Shift-.(period) to make it visible.
 - b. (On Windows) This is: C:\Users\\.elan_data
 2. In the ELAN settings folder, open the file named clip_media.txt
 3. The first line of this file should be:
 - a. /<filepath>/ffmpeg -ss \$begin(sec.ms) -i \$in_file -vcodec copy -acodec copy -t \$duration(sec.ms) \$out_file
 - i. Where <filepath> stands for the path to your installation of ffmpeg
 4. Confirm that the first line of clip_media.txt contains the correct path to ffmpeg on your machine.
 - a. To confirm on Mac: Finder > Go > Go to Folder and enter the path.
 5. If the path to ffmpeg is not correct, update it.
 6. All lines in the clip_media.txt file except the ffmpeg line should be commented out (they should begin with #). If not, comment out any un-commented lines by typing # as the first character of the line.
 7. Save the clip_media.txt file, go back to ELAN, and try your export again.

If fewer media files than you expected (like only one) appear in the directory with your short EAF, then you have a problem with the media editing preferences in ELAN.

Do this:

1. Go to Edit > Edit Preferences
2. At left, select 'Media'
3. Scroll to the heading 'Media clipping with a script'
4. Select the box 'Clip multiple media files in parallel'
5. Try your export again.

Step 2: Export the transcript to subtitle format

1. Open your clipped (“short”) ELAN file.
2. Go to File > Export As... > Subtitles Text.
3. In the dialog box, select the tiers that you want to use for subtitles.
4. Uncheck ‘Add master media offset time to annotation times.’
5. By default, the time each subtitle appears is the same as the time of the annotation.
 - a. If you only have relatively long annotations, this is not an issue – don't follow the next step.
 - b. If you have very short annotations, the annotation time might not be enough time to read the subtitle. You'll want to set a floor for the subtitle time. Do this by checking ‘Minimal duration per subtitle in ms’ and entering your desired floor in the box at right. I like to use 1500 ms.
6. Hit export. Save your subtitles file with the same name as your video.

You will now see a subtitles (.srt) file in your directory.

Once it's there, continue to step 3.

Step 3: Swap the audio in your video clip

When I'm making video recordings, I always record a simultaneous audio track on a device besides the video camera, such as a lavalier microphone or body-worn audio recorder. In the presentation version of my videos, I prefer to use the cleaner audio from the lav mic/body-worn device, rather than the video camera audio. If you want to do this too, take the following steps.

1. Open a command line window (Mac: Terminal, Windows: PowerShell) and navigate to the directory that contains your clips.
2. From the command line, run these two commands. Replace <your_video> and <your_audio> with the names of your video and audio clips.
 - a. Mac
 - i. `ffmpeg -i <your_video>.mp4 -codec copy -an <your_video>_no_audio.mp4`
 - ii. `ffmpeg -i <your_video>_no_audio.mp4 -i <your_audio>.wav -shortest -vcodec copy -acodec aac <your_video>_new_audio.mp4`
 - b. Windows
 - i. Same as above, but use path to `ffmpeg.exe` rather than `ffmpeg` as first term of command.
3. Open your video and confirm that the audio has been replaced.

Troubleshooting:

If your video is in MOV format, these commands will still work – just use .mov extensions for the intermediate file (<your_video>_no_audio) and final file (<your_video>_new_audio).

Step 4: Burn the subtitles into your video clip

Before you take this step, ask yourself where you plan to display your video.

Are you going to display the video only in VLC? If so, you don't need to burn in subtitles. Just take the following steps:

1. Edit the filenames of your video clip (from step 3) and your .srt subtitles file (from step 2) to be identical.
2. Open the video clip and .srt subtitles file together in VLC.
3. Play the video – the subtitles will automatically be overlaid on the video.
4. They may conflict with other text that VLC overlays on the video, such as the file name. You can turn off the other text in VLC preferences.

Are you going to display the video anywhere other than VLC? For example, will you:

- Play the video in a conference talk (etc.) using unfamiliar equipment?
- Send the video to others (who need subtitles) to view on their own machines?
- Embed the video in a manuscript?

If any of these are true, you're best off burning in subtitles. Burned subtitles are visible wherever the video is played and can't be turned off. Take the following steps:

1. Open a command line window (see Step 3) in the directory that contains your clips and your .srt subtitle file.
2. Subtitles in .srt format (the only format ELAN can export) cannot be burned into video. To burn the subtitles in, you must first convert them to .ass format. Run the following command, where <your_subtitles> is the name of your subtitle file:
 - a. Mac: `ffmpeg -i <your_subtitles>.srt <your_subtitles>.ass`
 - b. Windows: Use path to `ffmpeg.exe` instead of `ffmpeg` alone
3. Burn the subtitles in by running this command, where <your_video> is the name of the video file you want to use in the final subtitled video (if you did step 3: it should be the file with your new audio).
 - a. Mac: `ffmpeg -i <your_video>.mp4 -vf ass=<your_subtitles>.ass <your_video>_burned_subtitles.mp4`
 - b. Windows: As above
 - c. This step will take approximately 2x the time of the video.

Troubleshooting:

These commands also work with .mov files – just change the extensions.

If you receive errors saying that ffmpeg doesn't have the .ass filter, then you do not have the .ass library installed in your build of ffmpeg – which probably means you have an outdated version of ffmpeg. As far as I know, the only solution is to reinstall ffmpeg from the current version. To get access to the new install including its libraries, you must completely delete the old install and then reinstall from scratch.