A short guide to Comskip
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Introduction
Before using Comskip it is essential to understand the basic operation of Comskip. Comskip reads and decodes a recorded mpeg file based on instructions Comskip reads from a so called ini file. The recording is analyzed on various characteristics such as black frames, silences and changes in aspect ratio.
Based on this information Comskip segments the recording in blocks and using heuristics, together with additional information such as the presence of logo, the scene change rate, Close Captioning information and other information sources Comskip tries to determine what blocks of the recording are to be characterized as commercials.
After the analysis is done Comskip writes out the information on the detected commercials in various possible formats.

Instalation
This guide describes how to use Comskip in combination with GBPVR. GBPVR is an excellent free PVR software for Windows. Other PVR software's may also be able to make use of Comskip.
Copy all files from the distribution zip file that start with Comskip into the GBPVR home directory. This is normally c:\Program Files\devnz\gbpvr\

Running Comskip automatically by GBPVR
There are multiple ways to let GBPVR activate Comskip. The simplest approach is to enable Comskip in the configuration tab of GBPVR. This will start Comskip as soon as a recording ends. Only one Comskip will be active at any time so when one recording ends while Comskip is still busy GBPVR will delay the start of Comskip on the new recording till the previous of Comskip is finished.
Another approach is required when more then only Comskip has to run after the recoding is finished. One option is the use a postprocessing.bat file. GBPVR will run the postprocessing.bat file found in the GBPVR home directory after a recording is finished with two parameters. The first parameter is the fully qualified filename of the just finished recording. The second parameter is the channel number from which the recording was done.

The postprocessing.bat file that is included inside the Comskip distribution file gives examples of how this information can be used.

A third way to run Comskip is from the parallelprocessing.bat file. This parallelprocessing.bat is activated directly after a recording has been started and it uses the same parameters as the postprocessing.bat file.

When run on an ongoing recording Comskip will detect when it has reached the end of the file and wait some time to see if the file has been growing. If so it will continue reading until it again reaches the end of the file. If the file no longer grows Comskip assumes the recording is finished and will start the finalization of the commercial detection.

The two batch files will only be used by GBPVR when the running of Comskip in the GBPVR configuration Tab is disabled.

Manual running of Comskip

Comskip is a console window program. This means it does not have a nice windows user interface. This can be confusing for many users. The biggest problem is that error messages are possibly only shown in the console window and when Windows automatically closes this window when the Comskip execution is finished one can not read the error messages anymore.

The best approach to see all the possible output from Comskip is to start a console window and then to activate Comskip inside that console window. This prevents Windows from closing the windows automatically and will allow the reading of all messages.

To start a console window click on "Start", then on "Run…" and enter "cmd" without the quotes and click OK. A black window with a command prompt will appear. If you have never used a console window you may enter "help" without the quotes and then the ENTER key.

This will show what command you can give. Use the cd command to go the GBPVR home directory and activate Comskip by entering the word Comskip together with the name of the file you want Comskip to run on enclosed in double quotes. An example:

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comskip  "c:\My Videos\my film.mpg"
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Entering only the word Comskip will show the possible use of the Comskip program and its parameters. Parameters between [] are optional and [a|b] denotes either a or b can be used as an optional parameter. The parameter <file> should be a filename. Filenames with spaces should be surrounded by double quotes.

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Usage:
  comskip  [-h|--help] [-w|--debugwindow] [-n|--playnice] [--zpcut] [--zpchapter] [--videoredo] [--
csvout] [-p|--pid=<int>] [-t|--ts] [-d|--detectmethod=<int>] [-v|--verbose=<int>] [--ini=<file>] [--
logo=<file>] <file>

 -h, --help               Display syntax
 -w, --debugwindow        Show debug window
 -n, --playnice           Slows detection down
 --zpcut                  Outputs a ZoomPlayer cutlist
 --zpchapter              Outputs a ZoomPlayer chapter file
 --videoredo              Outputs a VideoRedo cutlist
 --csvout                 Outputs a csv of the frame array
 -p, --pid=<int>          The PID of the video in the TS
 -t, --ts                 The input file is a Transport Stream
 -d, --detectmethod=<int> An integer sum of the detection methods to use
 -v, --verbose=<int>      Verbose level
 -m, --demux              Demux the input file into Elementary Streams
 --ini=<file>             Ini file to use
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  --logo=<file>              Logo file to use
  <file>                     Input file


Detection methods available:
         1 - Black Frame
         2 - Logo
         4 - Scene Change
         8 - Fuzzy Logic
        16 - Closed Captions
        32 - Aspect Ratio
        64 - Silence
       255 - USE ALL AVAILABLE
```

Input files
Comskip can operate on 3 types of files. The first file type is an MPEG file. The extension must be mpg, mpeg (for mpeg Program Streams), ts (for mpeg Transport Streams) or dvr-ms for DVR-MS). Maximum resolution is 2000 by 1200 and the content must be MPEG2 video and MPEG2 or AC3 audio as recorded by most mpeg encoders. When an mpeg file is provided as input Comskip will do a full decoding and commercial detection. When the demux switch is used Comskip will demux the mpeg input file into a separate audio and video elemtary stream suitable for many editor tools. A second input file type is a csv file. This file can be created by a previous run of Comskip by setting output_framearry=1 or using the –csvout parameter. This type of input file is useful when Comskip must be run multiple times to tune certain parameters. This skips the mpeg decoding and results in a substantial faster execution. The third type of input file is a .txt file with the commercial cutpoints as generated by a previous run of Comskip. When this type of input file is used Comskip will open the debugwindow and it is possible to review quickly the detected commercials and modify the cutpoints if required and write a new .txt file.

Running Comskip the Windows way
When Comskip is configured correctly it is convenient to run Comskip by dragging and dropping an input file on the Comskip executable. Its is also possible to create a desktop shortcut to Comskip.exe, possibly with added parameters and then drag and drop the input file on the desktop shortcut. A third way is right clicking on the input file, selecting "Open width…" and then to chose the Comskip executable. After some use Comskip will appear as one of the quick "Open width" options.

Configuring Comskip
Comskip has many configurable parameters. They are read from the default Comskip.ini file as found in the same directory as Comskip.exe of from the file specified in the optional "–ini=<filename> " parameter. This makes it possible to have configuration files optimized for certain conditions. An example of this kind of usage can be found in the Postprocessing.bat inside the distribution zip file. The tuning of the parameters is described in the tuning manual.

The debug window of Comskip.
When ComSkip is started with the –w or --debugwindow switch a graphics window will appear. Once finished Comskip will NOT automatically exit but has to be closed manually by killing the console window or by hitting ESCAPE. Do not use the debug window when Comskip is called automatically from GBPVR or other PVR software.
The debugwindow window will show the decoded mpeg in black and white.
Next to this it will show some information to debug the settings of Comskip.
Another use of the debugwindow is when Comskip is used to review the output of a previous run of Comskip. This

is done by starting Comskip with the name of the previously generated .txt file as its single parameter. The detailed analysis information is not available in this mode but it provides some additional keys for modifying the commercial locations and writing out the resulting information.

Frame number

At the top the frame four numbers are shown. The first number is the frame number of the current frame. The second number is the brightness. A letter 'B' after the brightness indicates the current frame is Black. The third number is the volume. A letter 'S' after the volume indicates the current frame is regarded as Silent. The fourth number is the uniformity of the frame. A letter 'U' after the uniformity indicates the frame is regarded as uniform.

Aspect Ratio information

Two blue lines are drawn at the border between the black bars at the bottom and the top and the active video. This will allow to check if the detection settings for max_brightness, test_brightness and max_avg_brightness are correct because these are use to detect the black parts of the screen
The blue lines will always stay minimally the border size from the top and bottom of the video size.

Logo information

A rectangle will be draw around the logo position as soon as it is found. As soon as the detection level is above the logo_threshold the logo detection mask will overlay the logo to indicate the tested pixels. If no logo is detected the frame is red.

Timeline information

At the top a timeline is shown indicating information detected for each frame.
The bottom 5 pixels of the timeline signal the detection of silence. Any sound volume level below max_volume will be show as green upon white background. Speech without music should give a lot of silence.
The next 5 pixels on the timeline signal the detection of black frames. A red line on a white background signals a black frame or any other frame that is signaling an equally relevant scene change.
When silence is detected on a black frame both above bars will be drawn in black. These lines are the principle cut points for Comskip
The next 5 pixels of the timeline signal the presence of logo. The presence of logo is signaled by black, the absence by white. When logo is disabled, the logo presence is signaled by gray bars instead of black.
The next 10 pixels of the timeline signal the aspect ratio. A blue line on a white background depicts the detected aspect ratio where the height of the line above the logo bar is proportional to the detected aspect ratio. When the detection is finished or when live_tv=1 this bar is also used to show the position of commercials. A gray bar signals commercial and a white bar signals show.
When cut_on_ar_change=1 in the ini file (default) changes in the aspect ratio will create additional cut points when sufficient logo is found.
The next 5 pixels are used to show the position of the commercials as indicated in an optional reference file as soon as detection is finished. Black depicts where commercial are expected, white depicts where show is expected.

Graph on video information

The colored graphs enabled/disabled by pressing the 'g' key show detailed information about the recording.
From the bottom to the top it shows brightness, sound, non_uniformity, scene change, logo match, aspect ratio and black bar positions.
Through zooming ('z') and unzooming ('u') of the timeline you can have both a good overview and see on a per frame basis the transitions. The parts of the graphs that reach a value below the Blackframe limits (max_avg_brightness, max_volume, non_uniformity) get a white color.
The bottom four graphs have an additional white/red line showing the block average value that is red when above the

"total average times punish_threshold" and that is white otherwise.

Navigation
When decoding of the mpeg is finished or when the .csv file is loaded it is possible to navigate through the mpeg file. Navigation can be done with the cursor keys and with page up/down. Look at the frame number to see the step taken for each of the keys. A red vertical line in the timeline shows the current position. Left clicking with the mouse in the timeline repositions the current frame to the click position. This can be used to quickly review the correctness of the commercial detection.

Pressing 'n' skips to just before the next black frame, pressing 'p' skips to just after the previous next black frame. Pressing 'e' skips to just before the end of the next block, pressing 'b' skips to just after the beginning of the previous block

Video and frame position is not always 100% aligned, the actual error depends on the mpeg file being used.

Commercial reviewing mode
When started with the .txt file as its single parameter the frame number is shown and in the timeline black bars show the location of the detected commercials.

The navigation is identical except the letter keys.

The 'n' key jumps to the next end of a detected commercial.

The 'p' key jumps to the previous beginning of a commercial.

The 'b' key sets the beginning of the commercial that ends after the current frame position

The 'e' key sets the end of the commercial that begins before the current frame position.

The 'i' key inserts a short commercial at the current location

The 'd' key deletes the commercial around the current frame position

The 'w' key writes the current commercial list to the .txt file and all other selected output formats

Terminating
To stop the session, close the console window or hit the ESCAPE key