NAME

make_ffv1 -- Generate a Matroska/FFV1 file

SYNOPSIS

make_ffv1 -i *input_path* **-o** *output_file*
make_ffv1 -h | -x

DESCRIPTION

Bash_AVpres is a collection of Bash scripts for audio-visual preservation. One of these small programs is **make_ffv1**. It encodes a video file or a folder containing single images into an FFV1 stream and muxes it into a Matroska container (".mkv" file). If a sound stream is present, then by default it is copied without any re-encoding.

This script should work correctly with Bash from version 3.2 (released back on 2006-10-11), however we strongly advise using the current version 5.3.9 (released on 2025-12-10).

OPTIONS

BASIC OPTIONS

-i *input_path*, **--input=***input_path*

input_path is a file if the content is stream based, or a folder if the content is single-image based

When a folder is passed, the script extracts the regular expressions ("regex") for processing all the files and determines the actual number of the first frame. The naming must follow one of the two formats:

path/to/filename_digits.extension
path/to/digits.extension

where *digits* is the numbering, which must be either alone or at the end of the filename, divided by an underscore from the rest of the filename and by a period from the extension (the filename can contain other underscore signs). The numbering can start at any number, but all successive frames must be present, from the beginning to the end of the interval. This can be verified by using the **missing_files** script.

-o *output_file*, **--output=***output_file*

output file

ADVANCED OPTIONS

The default arguments of the advanced options can be overwritten by the user. Please remember that any string containing spaces must be quoted, or its spaces must be escaped. To cancel a default argument use:

--<option>='#'

--ffmpeg='/bin/ffmpeg'
path to the **ffmpeg** command

--ffprobe='/bin/ffprobe'
path to the **ffprobe** command

--ff_glo_opt='-y'
A possibly already existing output file is overwritten.

The following two input file default parameters are used only when single-image-based content is provided:

--f='image2'
Probably this parameter should never be modified. It forces the use of the image file demuxer for the input.

--framerate=*framerate*
The default frame rate for video is *25*. The standardised projection speed for sound films is *24* frames per second, which is the default value in **make_ffv1**. Silent films or amateur films have often a different projection speed, for example *18*.

Video codec options with their default parameters:

--c_v='ffv1'
video codec

--level='3'
Select version 3 of FFV1, which is the default in recent FFmpeg versions. Valid values are *0*, *1* and *3*.

--coder='1'
Select the range coder. Possible values are:
0 = Golomb-Rice coder
1 = range coder with the default state transition table
2 = range coder with a custom state transition table

Please do not use this option, unless you know exactly what you are doing.

--threads=''
A positive integer gives the numbers of threads to use while processing. Adjust this to match how many of the available CPU cores you want to use. We advise to use a very small multiple of the number of cores. You can see the actual default value of a specific computer by running:

```
make_ffv1 -x
```

--context='1'
Select the large context.

--g='1'
Select the group of pictures (GOP) size. For archival use this should always be set to *1*.

--slices=''
Each frame is split into a number of slices. This affects multithreating performance as well as filesize: increasing the number of slices may speed up performance, but also increases the filesize. We advise to use the number of threads multiplied by a small power of two. The possible range spans from 4 to 1023, but sadly not all values are valid. If an invalid value is chosen, then the nearest smaller one is used. You can see the actual default value of a specific computer by running:

```
make_ffv1 -x
```

--slicecrc='1'
Enabling this option adds CRC information to each slice (*0* = off, *1* = on). This makes it possible for a decoder to detect errors in the bitstream, rather than blindly decoding a broken slice.

--filter_v=''
This can be used, for example, to provide scaling and/or padding video filters.

Audio codec options with their default parameters:

--c_a='copy'
If no sound stream is present, then the **ffmpeg** parameter '-an' is used instead.

--filter_a=''
This can be used to provide audio filters.

Output file default parameters:

--suffix='_ffv1'
The suffix is inserted at the end of the filename, immediately before the period and the extension. Note that a preceding underscore, if wished, must be added.

--extension='(mkv|avi|mov|mxf)**'**
Matroska (".mkv" files) is the "natural" container for the FFV1 video codec, but **make_ffv1** also supports Audio Video Interleave (".avi" files), QuickTime (".mov" files) and Material Exchange Format (".mxf" files).

INFORMATIVE OPTIONS

-h, --help
display a help message

-x, --options
display the advanced options with their default arguments and indicate if a local configuration has been defined or not

NOTES

CONFIGURATION FILE

An external configuration file
${HOME}/.config/AVpres/Bash_AVpres/make_ffv1.txt

can be defined, allowing the script to import alternate default values for the following options:
ffmpeg_bin
ffprobe_bin
ff_glo_opt
f
framerate
filter_v
c_v
level
threads
coder
context
g
slices
slicecrc
filter_a
c_a
suffix

extension

Example:
slices='48'
suffix=''

LOG FILES

Temporary log files are stored at
/tmp/AVpres/make_ffv1.XXXXXXXXXX

The log files can be used for debugging, for example by running **cat** on the address prompted with fatal error messages:

cat /tmp/AVpres/make_ffv1.*XXXXXXXXXX*

SEE ALSO

Reto Kromer: "Video into FFV1" entry of the "FFmpeg Cookbook for Archivists", since 2013
https://avpres.net/FFmpeg/im_FFV1.html

Reto Kromer: "Image sequence into FFV1" entry of the "FFmpeg Cookbook for Archivists", since 2013
https://avpres.net/FFmpeg/sq_FFV1.html

RFC 9043 -- Michael Niedermayer, Dave Rice and Jerome Martinez: "FFV1 Video Coding Format Version 0, 1, and 3", August 2021
https://www.rfc-editor.org/info/rfc9043

verify_ffv1(1); **ffmpeg**(1) and **ffprobe**(1).

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