NAME

pnmtofiasco - Convert a portable anymap to FIASCO compressed file

SYNOPSIS

pnmtofiasco [*option*]... [*filename*]...

DESCRIPTION

pnmtofiasco compresses the named pbm, pgm, or ppm image files, or Standard Input if no file is named, and produces a FIASCO file on Standard Output.

OPTIONS

All option names may be abbreviated; for example, --optimize may be written --optim or --opt. For most options a one letter short option is provided. Mandatory or optional arguments to long options are mandatory or optional for short options, too. Both short and long options are case sensitive.

The basic options are:

−i *name*, **−−input-name=***name*

Compress the named images, not Standard Input. If *name* is **-**, read Standard Input. *name* has to be either an image filename or a template of the form:

prefix[start-end{+,-}step]suffix

Templates are useful when compressing video streams: e.g., if you specify the template **img0[12-01-2].pgm**, then **pnmtofiasco** compresses the images img012.pgm, img010.pgm, ..., img002.pgm.

If *name* is a relative path, **pnmtofiasco** searches for the image files in the current directory and in the (colon-separated) list of directories given by the environment variable **FIASCO_IMAGES**.

−o *output-file*, **−−output-name=***name*

Write FIASCO output to the named file, not to Standard Output.

If *name* is a relative path and the environment variable **FIASCO_DATA** is a (colon-separated) list of directories, then **pnmtofiasco** writes the output file to the first (writable) directory of this list. Otherwise, **pnmtofiasco** write it to the current directory.

−q *N*, **−−quality=***N*

Set quality of compression to *N*. Quality is 1 (worst) to 100 (best); default is 20.

−v, **−−version**

Print **pnmtofiasco** version number, then exit.

−V *N*, **−−verbose** *N*

Set level of verbosity to *N*. Level is 0 (no output at all), 1 (show progress meter), or 2 (show detailed compression statistics); default is 1.

−B *N*, **−−progress-meter** *N*

Set type of progress-meter to *N*. The following types are available; default is 1:

0: no progress meter

1: RPM style progress bar using 50 hash marks

2: percentage meter

−f *name*, **−−config=***name*

Load parameter file *name* to initialize the options of **pnmmtofiasco**. See file**system.fiascor c** for an example of the syntax. Options of **pnmmtofiasco** are set by any of the following methods (in the specified order):

1) Global ressource file **/etc/system.fiascorc**

2) $HOME/.fiascorc

3) command line

4) --config=*name*

−h, **−−info**

Print brief help, then exit.

−H, **−−help**

Print detailed help, then exit.

The options for advanced users are:

−b *name*, **−−basis-name=***name*

Preload compression basis *name* into FIASCO. The basis *name* provides the initial compression dictionary. Either use one of the files "small.fco", "medium.fco", or "large.fco" that come with **pnmmtofiasco** or create a new ASCII basis file.

−z *N*, **−−optimize=***N* **Set optimization level to**

N. Level is 0 (fastes) to 3 (slowest); default is 1. Be warned, the encoding time dramatically increased when *N*=**2** or *N*=**3** while the compression performance only slightly improves.

−P, **−−prediction**

Use additional predictive coding. If this optimization is enabled then the image is compressed in two steps. In the first step, a coarse approximation of the image is computed using large unichrome blocks. Finally, the delta image is computed and the prediction error is approximated using the standard FIASCO algorithm.

−D *N*, **−−dictionary-size=***N*

Set size of dictionary that is used when coding the luminance band to *N*; default is 10000, i.e., the dictionary is not restricted.

−C *N*, **−−chroma-dictionary=***N*

Set size of dictionary that is used when coding chroma bands to *N*; default is 40.

−Q *N*, **−−chroma-qfactor=***N*

Reduce the quality of chroma band compression *N*-times with respect to the user defined quality *q* of the luminance band compression (**−−quality**=*q*); default is 2.

−t *N*, **−−tiling-exponent=***N*

Subdivide the image into 2ˆ*N* tiles prior coding; default is 4, i.e. the image is subdivided into 16 tiles. The processing order of the individual tiles is defined by the option **−−tiling-method=***name***.**

−T *name***, −−tiling-method=***name*

Order the individual image tiles (the image is subdivided into; see option **−−tiling-exponent=***N*) by method *name*; default is "desc-variance".

desc-variance: Tiles with small variances are processed first.

asc-variance: Tiles with large variances are processed first.

desc-spiral: Tiles are process in spiral order starting in the middle.

asc-spiral: Tiles are process in spiral order starting at the border.

−−rpf-mantissa=*N*

Use *N* mantissa bits for quantized coefficients.

−−dc-rpf-mantissa=*N*

Use *N* mantissa bits for quantized DC coefficients.

−−rpf-range=*N*

Coefficients outside the quantization interval [-*N*,+*N*] are set to zero.

−−dc-rpf-range=*N*

DC coefficients outside the quantization interval [-*N*,+*N*] are set to zero.

Additional options for video compression are:

−s *N*, **−−smooth=***N*

Smooth decompressed reference frames along the partitioning borders by the given amount *N*. *N* is 0 (no smoothing) to 100; default is 70. This factor is stored in the FIASCO file.

−m *N*, **−−min-level=***N*

Start prediction (motion compensated prediction or additional prediction) on block level *N*; default is level 6. I.e., motion compensation is applied to all image blocks of at least 8x8 pixels (binary tree level *N*=6), 16x8 (*N*=7), 16x16 (*N*=8), etc.

−M *N*, **−−max-level=***N*

Stop prediction (motion compensated prediction or additional prediction) on block level *N*; default is level 10. I.e., motion compensation is applied to all image blocks of at most 16x16 pixels (*N*=8), 32x16 (*N*=9), 32x32 (*N*=10), etc.

−2, **−−half-pixel**

Use half pixel precise motion compensation.

−F *N*, **−−fps=***N*

Set number of frames per second to *N*. This value is stored in the FIASCO output file and is used in the decoder dfiasco(1) to control the framerate.

−p *type*, **−−pattern=***type*

Defines the type of inter frame compression which should be applied to individual frames of a video stream. *type* is a sequence of characters; default is "IPPPPPPPPP". Element **N** defines the type of predicting which should be used for frame **N**; the frame type pattern is periodically extended. Valid characters are:

I: intra frame, i.e., no motion compensated prediction is used at all.

P: predicted frame, i.e., a previously encoded frame is used for prediction (forward prediction).

B: bidirectional predicted frame, i.e., not only a previously shown frame but also a frame of the future is used for prediction (forward, backward or interpolated prediction).

−−cross-B-search

Instead of using exhaustive search the "Cross-B-Search" algorithm is used to find the best interpolated prediction of B-frames.

−−B-as-past-ref

Also use previously encoded B-frames when prediction the current frame. If this option is not set, only I- and P-frames are used to predict the current frame.

EXAMPLES

pnmtofiasco < foo.ppm >foo.wfa

Compress the still image "foo.ppm" to the FIASCO file "foo.wfa" using the default options.

pnmtofiasco -2 -p "IBBPBBPBB" -fps 15 -o video.wfa foo0*.ppm

Compress the video frames "foo0*.ppm" to the FIASCO file "video.wfa" using half pixel precise motion compensation at a frame rate of 15 frames per second. Intra frame 1 is used to predict P-frame 4, frames 1 and 4 are used to predict B-frames 2 and 3, and so on. Frame 10 is again an intra-frame.

FILES

/etc/system.fiascorc

The systemwide initialization file.

$HOME/**.fiascorc**

The personal initialization file.

ENVIRONMENT

FIASCO_IMAGES

Search path for image files. Default is "./".

FIASCO_DATA

Search and save path for FIASCO files. Default is "./".

SEE ALSO

fiascotopnm(1), **ppmtojpeg**(1), **pnmtojbig**(1), **ppmtogif**(1), **pnm**(5)

Ullrich Hafner, Juergen Albert, Stefan Frank, and Michael Unger. **Weighted Finite Automata for Video Compression**, IEEE Journal on Selected Areas In Communications, January 1998
Ullrich Hafner. **Low Bit-Rate Image and Video Coding with Weighted Finite Automata**, Ph.D. thesis, Mensch & Buch Verlag, ISBN 3-89820-002-7, October 1999.

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