



# Greg's Hugin project file

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Work in progress

This page attempts to document the *Hugin* project file. The main source is the rather unexpectedly named <http://hugin.sourceforge.net/docs/nona/nona.txt>.

## General format

The project file is in plain text with a mixture of lines and comments. There are some suggestions that not everything that looks like a comment (line starting with #) is in fact a comment. There's something in old messages (2011?) in the mailing list to suggest subtle differences.

Each line starts with a single letter from the set 'p', 'o', 'i', 'm' and 'k'. The stitcher requires one **p** line (panorama description), one **i** (image) line per input image, and one **m** line per input image.

## **p** line

```
# w1000           width in pixels
# h600           height in pixels
# f0            projection format,
#                 0 - rectilinear (for printing and viewing)
#                 1 - Cylindrical (for Printing and QTVR)
#                 2 - Equirectangular ( for Spherical panos), default
#                 3 - full-frame fisheye
#                 4 - Stereographic
#                 5 - Mercator
#                 6 - Transverse Mercator
```

```
#          7 - Sinusoidal
#          8 - Lambert Cylindrical Equal Area
#          9 - Lambert Equal Area Azimuthal
#         10 - Albers Equal Area Conic
#         11 - Miller Cylindrical
#         12 - Panini
#         13 - Architectural
#         14 - Orthographic
#         15 - Equisolid
#         16 - Equirectangular Panini
#         17 - Biplane
#         18 - Triplane
#         19 - Panini General
#         20 - Thoby Projection
#         21 - Hammer-Aitoff Projection
# v360      horizontal field of view of panorama (default 360)
# nPICT     Panorama file format, one of:
#           PNG      png-format, 8 & 16 bit supported
#           PNG_m    png-format, multi-file, one image per file
#                      alpha layer with non-feathered clip mask at image border
#           TIFF     tiff-format, all tiff types supported (8,16,32 bit int,
float, double)
#           TIFF_m   tiff-format, multi-file, one image per file
#                      alpha layer with non-feathered clip mask at image border
#           TIFF_multilayer tiff-format, multi-image-file, all files in one image
#                      alpha layer with non-feathered clip mask at image border
#                      This filetype is supported by The GIMP
#           JPEG     Panoramic image in jpeg-format.
#           JPEG_m   jpeg-format, multi-file, one image per file
#                      without alpha layer, not suitable for further blending or
fusing
#           some more supported file formats (mostly only 8 bit support)
#           PNM, PGM, BMP, SUN, VIFF
#
#           Special options for TIFF output:
#           n"TIFF c:NONE"
#                      c - select TIFF compression, possible options: NONE, LZW, DEFLATE
#
#           Special options for TIFF_m and TIFF_multilayer output:
#           n"TIFF c:NONE r:CROP"
#                      c - TIFF compression, possible options NONE, LZW, DEFLATE
#                      r - output only used image area (cropped output). The crop offsets
#                          are stored in the POSITIONX and POSITONY tiff tags
#           p1 - save coordinate images (useful for further programs, like vignetting
correction)
#
#           Special options for JPEG output:
#           n"JPEG q95"
#                      q - jpeg quality
#
# E12.3      exposure value for final panorama
# R1         stitching mode: 0: normal LDR mode, 1: HDR mode
# T"UINT8"   bitdepth of output images, possible values are
#           UINT8 - 8 bit unsigned
#           UINT16 - 16 bit unsigned
#           FLOAT - 32 bit floating point
#           By default the bit depth of the input images is use.
#
# S100,600,100,800 Selection(left,right,top,bottom), Only pixels inside the rectangle
#                      will be rendered. Images that do not contain pixels in this area
#                      are not rendered/created.
```

```

#
# k1           Image number of reference image for photometric correction
#
# P"100 12"   Parameters for tuning projection, number of parameters depends on projection
#
p w1000 h600 f0 v360 E12.3

```

## m (mode) line

```

# 'm'-line options
# -----
# Set mode for stitcher, not required
#
#
# g2.5        Set gamma value for internal computations (default 1.0)
#                 See <http://www.fh-furtwangen.de/~dersch/gamma/gamma.html>
#                 This is especially useful in conjunction with the vignetting correction
#                 by division
#
# i2          Set interpolator, See <http://www.fh-furtwangen.de/~dersch/interpolator/interpolator.html>
#               one of:
#                   0 - poly3 (default)
#                   1 - spline16,
#                   2 - spline36,
#                   3 - sinc256,
#                   4 - spline64,
#                   5 - bilinear,
#                   6 - nearest neighbor,
#                   7 - sinc1024
#
# m i2

```

## i line

i lines each describe a single input image.

```

# f0           projection format,
#                 0 - rectilinear (normal lenses)
#                 1 - Panoramic (Scanning cameras like Noblex)
#                 2 - Circular fisheye
#                 3 - full-frame fisheye
#                 4 - PSphere, equirectangular
#                 8 - orthographic fisheye
#                10 - stereographic fisheye
#                21 - Equisolid fisheye
#                20 - Fisheye Thoby (Nikkor 10.5)
# v82          horizontal field of view of image (required)
# y0           yaw angle (required)
# p43          pitch angle (required)
# r0           roll angle (required)
# a,b,c        lens correction coefficients (optional)
#                 (see http://www.fh-furtwangen.de/~dersch/barrel/barrel.html)
# d,e          initial lens offset in pixels(defaults d0 e0, optional).
#                 Used to correct for offset from center of image
#                 d - horizontal offset,
#                 e - vertical offset
# g,t          initial lens shear. Use to remove slight misalignment

```

```
# of the line scanner relative to the film transport
# g - horizontal shear
# t - vertical shear
#
# Eev exposure of image in EV (exposure values)
# Er white balance factor for red channel
# Eb white balance factor for blue channel
#
# Vm vignetting correction mode (default 0):
#   0: no vignetting correction
#   1: radial vignetting correction (see j,k,l,o options)
#   2: flatfield vignetting correction (see p option)
#   4: proportional correction: i_new = i / corr.
#       This mode is recommended for use with linear data.
#       If the input data is gamma corrected, try adding g2.2
#       to the m line.
#
#           default is additive correction: i_new = i + corr

# Both radial and flatfield correction can be combined with the
# proportional correction by adding 4.
# Examples: i1 - radial polynomial correction by addition.
#           The coefficients j,k,l,o must be specified.
#           i5 - radial polynomial correction by division.
#           The coefficients j,k,l,o must be specified.
#           i6 - flatfield correction by division.
#           The flatfield image should be specified with the p option
#
# Va,Vb,Vc,Vd vignetting correction coefficients. (defaults: 1,0,0,0)
#   ( 0, 2, 4, 6 order polynomial coefficients):
#   corr = ( i + j*r^2 + k*r^4 + l*r^6), where r is the distance from the image
center
#           The corrected pixel value is calculated with: i_new = i_old + corr
#           if additive correction is used (default)
#   for proportional correction (h5): i_new = i_old / corr;
#
# Vx,Vy radial vignetting correction offset in pixels (defaults Vx0 Vy0, optional).
#   Used to correct for offset from center of image
#   Vx - horizontal offset
#   Vy - vertical offset
#
# Vf filename of flatfield image.
#   For additive correction the image will be used as it is.
#   In the case of correction by division, the flatfield will be divided by
#   its mean value.
#
# Ra,Rb,Rc,Rd,Re EMoR photometric model parameters. (defaults: 0,0,0,0,0)
#
# TrX,TrY,TrZ mosaic mode translation offsets.
#
# Tpy, Tpp orientation of remapping plane for translation offsets.
#   (have no effect if TrX, TrY and TrZ are zero)
#
# S100,600,100,800 Selection(l,r,t,b), Only pixels inside the rectangle will be used for
conversion.
#           Original image size is used for all image parameters
#           (e.g. field-of-view) refer to the original image.
#           Selection can be outside image dimension.
#           The selection will be circular for circular fisheye images, and
#           rectangular for all other projection formats
```

```
# j0          stack number
#
# nName      file name of the input image.

i f2 r0  p0    y0      v183    a0 b-0.1 c0  S100,600,100,800 n"photo1.jpg"
i f2 r0  p0    y180    v183    a0 b-0.1 c0  S100,600,100,800 n"photo1.jpg"
```

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