NAME

mkbitmap − transform images into bitmaps with scaling and filtering

SYNOPSIS

mkbitmap [*options***] [***filename...***]**

DESCRIPTION

mkbitmap reads an image, and applies one or more of the following operations to it, in this order: inversion, highpass filtering, scaling, and thresholding. Each operation can be individually controlled and turned on or off.

The principal use of **mkbitmap** is to convert color or greyscale images into a format suitable as input for other programs, particularly the tracing program **potrace**(1). It is particularly useful for converting scanned line art, such as cartoons, handwritten text, etc., to high-resolution bilevel images.

Highpass filtering can be used to ensure that foreground features such as lines and text are preserved, while at the same time compensating for uneven background. Optional *blurring* can be applied to smooth out the image and remove visual noise. *Scaling* is important because a scanned greyscale image contains more visual detail than a bilevel image at the same resolution. By scaling the image to a higher resolution (using interpolation) before thresholding it, some of this detail is preserved. *Thresholding* means converting a greyscale image to a bilevel image using only black and white pixels. Pixels that are darker than a certain threshold value are converted to black. Optional *inversion* is useful if the input image shows bright features on dark background, such as a picture of chalk drawings on a blackboard.

Supported input formats are PNM (PBM, PGM, PPM) and BMP. The output formats are PBM for bitmaps, and PGM for greymaps.

OPTIONS

General options:

-h, --help	print help message and exit.
-v, --version	print version info and exit.
-l, --license	print license info and exit.

Input/output options:

filename	If filename arguments are given, then **mkbitmap** will by default create one output file for each input filename given. The name of the output file is obtained from the input filename by changing its suffix to ".pbm" or ".pgm". If the name of the input file and output file would be identical, then an additional suffix "-out" is appended to the output filename. If no filename arguments are given, then **mkbitmap** acts as a filter, reading from standard input and writing to standard output. A filename of "-" may be given to specify reading from standard input; the output for this argument will then be written to standard output. Each input file may contain one or more images.
-o *filename***, --output** *filename*	write output to this file. All output is concatenated and directed to the specified file. This overrides the default behavior of creating one output file for each input file. A filename of "-" may be given to specify writing to standard output.

Image processing options:

-x, --nodefaults	Turn off default options. Normally, the following options are preselected by default: **-f 4 -s 2 -3 -t 0.45**. The **-x** option disables these defaults; thus, **mkbitmap -x** does nothing but copy a greyscale image from the input to the output. Other processing options can then be added one by one; e.g., **mkbitmap -xf10** does only highpass filtering, **mkbitmap -xt0.5** does only thresholding, etc.
-i, --invert	Invert the input image. If this option is chosen, it is applied to the image before any other operation. It is used to deal with white-on-black images, such as photographs of chalk drawings on a blackboard. Note that the behavior of this option is not in general the

same as inverting the *output* bitmap, unless the thresholding value is also inverted.

-f *n*, **--filter** *n*	Apply a highpass filter to the image. This filter is approximately Gaussian and non-directional. The effect is to preserve small detail while compensating for background gradients. The parameter *n* is a radius (in pixels) which corresponds approximately to the size of details which should be preserved. More precisely, the filter is implemented by subtracting a blurred version of the image from the original image. The parameter *n* is equal to the standard deviation of the blur. The output of the filtering step is a normalized image whose average brightness is exactly 0.5. The default filter radius is 4.
-n, --nofilter	Turn off highpass filtering.
-b *n*, **--blur** *n*	Blur the image. The effect is to smooth out fine details and to reduce visual noise in the image. The parameter *n* is the blurring radius, and should be chosen small (1 is a good value to start with). This is implemented as an approximately Gaussian, non-directional blur with standard deviation proportional to *n*. Blurring is applied after the highpass filter, but before scaling and thresholding. If this option is not given, the default is not to apply any blurring.
-s *n*, **--scale** *n*	Scale the image by an integer factor *n*>0. Scaling is done after highpass filtering, but before the thresholding step. A scaling factor of 1 indicates that no scaling is to be done. Otherwise, interpolation is used to fill in the in-between pixels. If the output of **mkbitmap** is to be used as input to a tracing program such as **potrace**, a scaling factor of 2 is recommended. This preserved the right amount of detail for the tracing algorithm to work well. If a scaling factor of 1 is used, too much detail is lost. If a scaling factor of 3 or higher is used, the interpolation tends to "invent" detail which was not present in the original image, thus preventing **potrace** from doing a good job.
-1, --linear	Use linear interpolation when scaling to a higher resolution. This is slightly faster, but less nice, than the default cubic interpolation.
-3, --cubic	Use cubic interpolation when scaling to a higher resolution. This is the default. It is slower than linear interpolation, but leads to better results.
-t *n*, **--threshold** *n*	Set the threshold grey value for bilevel conversion. The parameter *n* is a brightness value between 0 for black and 1 for white. Any pixels below this brightness will be converted to black (thus, smaller values of *n* will lead to whiter output).
-g, --grey	Disable bilevel conversion. If this option is given, processing stops after the scaling step and a greymap is output.

EXIT STATUS

The exit status is 0 on successful completion, 1 if the command line was invalid, and 2 on any other error.

VERSION

1.11

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WEB SITE AND SUPPORT

mkbitmap is distributed as part of the **potrace** package, and the latest version is available from http://potrace.sourceforge.net/. This site also contains documentation and information on how to obtain support.

SEE ALSO

potrace(1)

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