The png2pdf program

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Contents

1 Overview

The png2pdf program can be used to convert PNG image files to PDF files.
If the PNG file contains an alpha channel one can mix the image against a background color and/or create a PDF image mask or PDF transparency data.
The program is mainly intended for pdfLaTeX users who want to create flyers or posters having colored background.

2 Usage

2.1 Common dkapp options

The program uses the dklibs library set for preferences handling, localization, logging etc.
At program startup the permanent options are read first before processing command line options. The options used are the result of combining the permanent options and the command line options.

2.1.1 Help and version information

- -h
  --help
  shows a help text.

- -v
  --version
  shows version information.

2.1.2 Permanent options handling

- -c *options*
  --configure *options*
  configures permanent options (preferences).

- -u
  --unconfigure
  removes all permanent options.

- -C
  --show-configuration
  shows the permanent options.

- -r *options*
  --reset *options*
  overrides the permanent options for this program invokation and uses the command line options only.

2.2 Png2pdf options

- -p 1.2
  -p 1.3
  -p 1.4
  --pdf-level=1.2
  --pdf-level=1.3
  --pdf-level=1.4
  chooses the PDF format version.

- -m *r,g,b*
  –mix-background=*r,g,b*
  sets a default background color for color mixing. This background color is used if the PNG file does not contain a background chunk or if the -s option is used (see below).
  -m-
  –mix-background=-
  turns explicit mixing off and leaves this up to the libpng library.

- -s
  --mix-specified
  ignores the background chunk contained in the PNG file. The program uses the background specified in the -m option (see above) regardless whether or not the PNG file contains a background chunk.
  -s-
  --mix-specified=off
  disables this behaviour.

- -a
  --transparency
  passes alpha channel data from the PNG file to the PDF file. This feature is available for PDF format 1.4 only.
  -a-
  --transparency=off
  denies writing of alpha channel information to the PDF file.

- -i
  --image-mask
  converts the alpha channel from the PNG file into a PDF image mask. This requires PDF format 1.3 or above. By default all pixels having opacity 0 are masked out. The -l option (see below) inverts the level so only pixels with full opacity are drawn, all others are masked out.
  -i-
  --image-mask=off
  disables image mask generation.

- -l
  --invert-levels
  can be used in conjunction with -i to invert the image mask level.
  -l-
  --invert-levels=off
  switches back to normal imake mask level.

- -t
  --alpha-transparency
  indicates that the alpha channel contains transparency data.
  By default alpha channel data is interpreted as opacity.

- -t-
  --alpha-transparency=off
  switches back to default behaviour (alpha channel is opacity).

- -b
  --fill-background
  can be used in conjunction with -a or -i to fill the image are with the default background color before applying the image.
  -b-
  --fill-background=off
  turns background filling off.

- -f
  --file-time-check
  inspects the modification time of source PNG and destination PDF file when png2pdf is run on a directory.
  -f-
  --file-time-check=off
  turns modification time inspection off (and forces a conversion for all files).

3 Examples

3.1 Overview

Figure 1: The original image

In the examples section we use the image stefan_255_rgba.png from the "Miscallenous Transparent PNGs Using Image Tags" page on the libpng home page.
The image contains a bird on white background, a gray shadow of the bird is created by composing a black foreground color against the white background using the alpha channel.
See figure 1. The image was included using

```
\begin{figure}[ht]
{\centering
\includegraphics[width=5cm]{stefan_255_rgba.png}
\caption{The original image}
\label{img:bird}
}
\end{figure}
```

The LaTeX source must be processed using pdfLaTeX three times to make sure to have all labels and bookmarks recognized.
The next step in processing is to run ppower4 to have the background effects.
Among others the packages color, ifthen, ifpdf, background and pause are needed for the examples.

3.2 Explicit background color

Figure 2: Now mixed against white background

Using the commands

```
bmeps -p2 -c -er8 stefan_255_rgba.png x1.eps
png2pdf -m 255,255,255 stefan_255_rgba.png x1.pdf
```

we create an EPS and a PDF version of the image. The image is included using

```
\begin{figure}[ht]
{\centering
\ifpdf
\includegraphics[width=5cm]{x1.pdf}
\else
\includegraphics[width=5cm]{x1.eps}
\fi
\caption{Now mixed against a white background}
\label{img:b2}
}
\end{figure}
```

4 Colored background

Figure 3: Now mixed against light red background

Now we create a light red background using

```
\pagecolor{bgred}
```

The images files are created by running

```
bmeps -p3 -c -e8f -am255,128,128s stefan_255_rgba.png x2.eps
png2pdf -m 255,128,128 -s stefan_255_rgba.png x2.pdf
```

This image was included using

```
\begin{figure}[ht]
{\centering
\ifpdf
\includegraphics[width=5cm]{x2.pdf}
\else
\includegraphics[width=5cm]{x2.eps}
\fi
\caption{Now mixed against light red background}
\label{img:b3}
}
\end{figure}
```

5 Background effects

5.1 Mixing against background color

Figure 4: Still the same image mixed against light red background

On this page we have a color effect, the top of the page is light red as on the last page, the bottom is lighter.
Including the images from section 4 on the page before results in a visible rectangle background, see figure 4. Depending on the PDF level we can use we have two choices:

- Mixing against a constant background and adding an image mask (PDF level 1.3 and above) or
- Passing the alpha channel to the PDF file (PDF level 1.4).

5.2 Adding an image mask

Figure 5: Image containing image mask

We create a PDF file containing an image mask by

```
png2pdf -i -m 255,128,128 -s *png x3.pdf
cp x2.eps e3.eps
```

The result can be seen in figure 5.

5.3 Using alpha channel

Figure 6: Image containing alpha channel

Best quality is achieved when passing the PNG file's alpha channel to the PDF file by running

```
png2pdf -a -m 255,128,128 -s *png x4.pdf
```

The result can be seen in figure 6.