NAME

pnmconvol - general MxN convolution on a portable anymap

SYNOPSIS

pnmconvol *convolutionfile* [*pnmfile*]

DESCRIPTION

Reads two portable anymaps as input. Convolves the second using the first, and writes a portable anymap as output.

Convolution means replacing each pixel with a weighted average of the nearby pixels. The weights and the area to average are determined by the convolution matrix. The unsigned numbers in the convolution file are offset by -maxval/2 to make signed numbers, and then normalized, so the actual values in the convolution file are only relative.

Here is a sample convolution file; it does a simple average of the nine immediate neighbors, resulting in a smoothed image:

```
P2
3 3
18
10 10 10
10 10 10
10 10 10
```

To see how this works, do the above-mentioned offset: 10 - 18/2 gives 1. The possible range of values is from 0 to 18, and after the offset that's -9 to 9. The normalization step makes the range -1 to 1, and the values get scaled correspondingly so they become 1/9 - exactly what you want. The equivalent matrix for 5x5 smoothing would have maxval 50 and be filled with 26.

The convolution file will usually be a graymap, so that the same convolution gets applied to each color component. However, if you want to use a pixmap and do a different convolution to different colors, you can certainly do that.

At the edges of the convolved image, where the convolution matrix would extend over the edge of the image, **pnmconvol** just copies the input pixels directly to the output.

SEE ALSO

pnmsmooth(1), **pnm**(5)

AUTHORS

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