

NAME

histobe – histogram match to beta distribution

SYNOPSIS

histobe [-z] [-a *alpha*] [-b *beta*] [-g *numgrey*] [-I]
[-e [*nr nc [sr sc]*] | -M *mask_file* [*mask_value*]] [-l *lut_file*]

DESCRIPTION

histobe matches the histograms of a HIPS byte sequence of frames to that of a Beta distribution. The Beta distribution is very versatile and a good approximation to many distributions defined on a closed interval. The parameters *alpha* and *beta* (both >0.0 and <20.0, default to 4.0) are given by options -a and -b. *alpha>beta* gives a distribution skewed towards higher values, *alpha<beta* gives a distribution skewed towards lower values. *alpha=beta* gives a distribution symmetric around the mean; *alpha=beta=1* gives histogram equalization; *alpha=beta=4* gives a good approximation to a Gaussian. *alpha=beta=2* gives a good trade-off between the preservation of detail in the tails offered by a Gaussian stretch and the powerful visual impression of the histogram equalization. The parameter *numgrey* the number of output grey levels (<=256, defaults to 256) is given by option -g.

OPTIONS

- z zero valued pixels are not included in the stretches and the remaining pixels are stretched from 1 to *numgrey-1*.
- a *alpha*
in the Beta distribution (defaults to 4.0).
- b *beta* in the Beta distribution (defaults to 4.0).
- g *numgrey*
is the number of grey levels (defaults to 256).
- I stretch intensity rather than individual frames (3-frame sequence only).
- e [*nr nc [sr sc]*]
extract rectangular area for histogram match only; *nr*, *nc*, *sr* and *sc* are number of rows and columns, and starting row and column respectively (default is a centered rectangle half the size of the original image).
- M *mask_file* [*mask_value*]
histogram match is performed only where *mask_file* (a byte HIPS image) has the value *mask_value* (defaults to all values greater than 0).
- l *lut_file*
look-up table is written to *lut_file*. Look-up tables for multi-frame images are written to *lut_file* one after the other. (As of now *xshow* only reads the first of these consecutive look-up tables.)

EXAMPLE

When stretching an intensity-hue-saturation (IHS) image one often wants to stretch I to something that looks like a Gaussian distribution, H to a flat distribution (equalization) and S to a distribution that grows linearly from 0. This can be achieved in the following fashion:

```
histobe -a 4 -b 4 < I > Is
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histobe -a 1 -b 1 < H > Hs
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histobe -a 2 -b 1 < S > Ss
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SEE ALSO

histo(1), dispdist(1), entropy(1), framevar(1), histoeq(1), fhist(1)

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