Subject: fitting mixed gaussians
Posted by btt on Tue, 17 May 2005 18:22:56 GMT
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Hello,

I would like to employ a "mixed gaussian" fitting routine that fits not just one peak in a distribution but rather fits any number of peaks. According to my old Gonzales and Woods Image Processing book this technique is used in Bayesian classifier - in the two class problem the saddle of the two fitted curves is used as the point around which the classes are separated. I just to segment simple grayscale images with it usiing the histogram as the data to model.

Using GAUSSFIT or MPFIT it's very easy to fit one (the tallest) peak shown in the example (see code example below.) But how the heck to fit the second peak? I have scoured the internet and find much written about it - but it is all in Greek. Really. Yikes.

Is it possible to make the curve fitting routines I have on hand to fit two gaussian models?

Thanks,
Ben

******START HERE

```
PRO example_mixedgaussfit

n = 256.
x = Findgen(n)/(n-1)*(n-1)
y = 0.4*RANDOMN(seed, n)

; the coefficients are amplitude, center and width
a = [0.3, n/4., n/20. ]
b = [0.05, n-n/4., n/10.]

z1 = (x - a[1])/a[2]
z2 = (x - b[1])/b[2]

; start with random noise.
y = 0.02*RANDOMN(seed, n) > 0.0

;now add in the 'model' peaks
 ;the first gaussian  the second gaussian
y = y + a[0]*exp(-z1^2/2)  + b[0]*exp(-z2^2/2)

;rescale to 0-1 as if probability
```

```
y = y/MAX(y)

;use the built in gaussfit
;note that the highest peak is fit
r = gaussfit(x,y, c, nTERMS = 3)
plot, x, y, title = 'Mixed Gaussians'
oplot, x,r, thick = 3

XYOUTS, x[a[1]], y[a[1]]/4 , 'peak a', align = 0.5
XYOUTS, x[b[1]], y[b[1]]/4 , 'peak b', align = 0.5

END

******END HERE
```