Subject: Is there function about how to compute joint probability distribution?
Posted by Xiuying Wang on Sun, 11 Nov 2001 23:14:03 GMT
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Hi,
I am doing research work now and I need to use joint probability distribution and marginal probability distribution. I wonder whether you can tell me how to do that in the shortest time, please?
Many thanks!

Best wishes,
Xiu Ying

Subject: Re: Is there function about how to compute joint probability distribution?
Posted by bente on Tue, 13 Nov 2001 09:44:40 GMT
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Xiuying Wang <xiuying@cs.usyd.edu.au> wrote in message news:<3BEF063B.46048EA1@cs.usyd.edu.au>...
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> distribution and marginal probability distribution. I wonder whether you
> can tell me how to do that in the shortest time, please?
> Many thanks!
>
> Best wishes,
> Xiu Ying

Hi,
Iï¿½m using Mutual Information on 3D-Arrays, so there I need the JointProbability between the Intensities of both arrays.
Iï¿½ve done this with the Hist_2D Function.

Hist_2D gives the two dimensional density function ob both arrays. In words, it gives the number of corresponding Pixels which have certain intensities in eihter array (e.g. low intensity in A and high intensity in B,...)

To get the joint probability I simply divided by the Total of the histogram.

Here the part of my program for the mutual information
; mi, mutual information

```
 if imeasure eq 4 then begin

 hist = hist_2d( a, b )
```

```
 hist = rotate(hist,7)
 hist = float(hist)

 pxy = hist / total(hist)
 px = fltarr(256)
 py = fltarr(256)

 for j = 0, 255 do begin
  px(j) = total(pxy(j,*))
  py(j) = total(pxy(*,j))
 endfor
 col = replicate(1.0,256)
 px_mat = px # col
 py_mat = py # col
 py_mat = rotate(py_mat,1)
 pxxyy = px_mat * py_mat
 pxyn = pxy * 0.0
 index = where( pxxyy gt 0.0 and pxy gt 0.0, icount2)
 ;if (icount2 gt 0) then $
 pxyn[index] = pxy[index] * alog( pxy[index] / pxxyy[index]) /
alog(2.0)
 mi = total(pxyn)

 endif
```

I donï¿½t know exactly how your problem looks like, but maybe this can help.

Kay

Subject: Re: Is there function about how to compute joint probability distribution?
Posted by msam04 on Sun, 13 Jan 2013 18:00:06 GMT
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On Tuesday, November 13, 2001 4:44:41 AM UTC-5, Kay wrote:
> Xiuying Wang <xiuying@cs.usyd.edu.au> wrote in message
news:<3BEF063B.46048EA1@cs.usyd.edu.au>...
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>> Many thanks!
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>> Best wishes,
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> Hi,

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> hist = rotate(hist,7)
> hist = float(hist)
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> pxy = hist / total(hist)
> px = fltarr(256)
> py = fltarr(256)
>
> for j = 0, 255 do begin
> px(j) = total(pxy(j,*))
> py(j) = total(pxy(*,j))
> endfor
> col = replicate(1.0,256)
> px_mat = px # col
> py_mat = py # col
> py_mat = rotate(py_mat,1)
> pxxyy = px_mat * py_mat
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> ;if (icount2 gt 0) then $
> pxyn[index] = pxy[index] * alog(pxy[index] / pxxyy[index]) /
> alog(2.0)
> mi = total(pxyn)
>
> endif
>
> I don´t know exactly how your problem looks like, but maybe this can
> help.
>
> Kay

Hi Kay,

Is there a reason for you to do the rotations? Wouldn't you get the mutual information without doing, first the rotation of hist and later the rotation of py_mat?

Thanks,
msam
