
Subject: Re: fft and least squares problem

Posted by [Helder Marchetto](#) on Tue, 14 Aug 2012 14:50:19 GMT

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On Tuesday, August 14, 2012 4:06:53 PM UTC+2, (unknown) wrote:

> Hi Folks,

>

>

>

> I try to estimate the subpixel shifts if an image is compared with its shifted representation, but something is going wrong. Maybe somebody can help me.

>

>

>

> s=size(im,./dim)*1.

>

> im1 =im

>

> dx=.25

>

> dy=.3

>

> im2=image_shift(im1,dx,dy);more precise then
interpolate(im,findgen(s[0])+dx,findgen(s[1])+dy,./grid,./cubic)

>

> fim1=fft(im1,-1)

>

> fim2=fft(im2,-1)

>

> corr=fim1*conj(fim1)/abs(fim1*fim2)

>

> corr=shift(corr,s/2)

>

> phase=atan(imaginary(corr)/real_part(corr))

>

> wx=(findgen(s) mod s[0])*2.*pi/s[0]

>

> wy=(rebin(findgen(1,s[1]),s))*2.*pi/s[1]

>

> r=5;fitting radius

>

> phase2=phase[s[0]/2 - r : s[0]/2 + r,s[1]/2 - r : s[1]/2 + r]

>

> wx2=wx[s[0]/2 - r : s[0]/2 + r,s[1]/2 - r : s[1]/2 + r]

>

> wy2=wy[s[0]/2 - r : s[0]/2 + r,s[1]/2 - r : s[1]/2 + r]

>

> print,la_least_squares(transpose([[wx2[*]],[wy2[*]]]),phase2 [*])

>
>
>
> The last line should give dx and dy but its erroneous. I don't really know why!
>
>
>
> Thanks in advance
>
>
>
> CR

Maybe it's a typo, but you defined the phase-correlation "corr" as:

$\text{corr} = \text{fim1} * \text{conj}(\text{fim1}) / \text{abs}(\text{fim1} * \text{fim2})$

instead of:

$\text{corr} = \text{fim1} * \text{conj}(\text{fim2}) / \text{abs}(\text{fim1} * \text{fim2})$

Try that...

Did you have a look at: http://en.wikipedia.org/wiki/Phase_correlation ?

Cheers,
Helder
