Subject: Re: fft and least sqaues problem
Posted by rogass on Tue, 14 Aug 2012 14:13:01 GMT
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Am Dienstag, 14. August 2012 16:06:53 UTC+2 schrieb (unbekannt):
> Hi Folks,
>
>
>
> I try to estimate the subpixelshifts if an image is compared with its shifted represenetation, 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,/cubi c)
>
> 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
Typo!

Please replace:
im2=image_shift(im1,dx,dy)
with:
im2=image_shift(im1,dx,dy,interp_type='F')

Cheers
CR

Subject: Re: fft and least sqaues 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 subpixelshifts if an image is compared with its shifted represenetation, 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,/cubi c)
>

> 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:
corr=fim1*conj(fim1)/abs(fim1*fim2)
instead of:
corr=fim1*conj(fim2)/abs(fim1*fim2)
Try that...

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

Cheers,
Helder

Subject: Re: fft and least sqaues problem
Posted by rogass on Tue, 14 Aug 2012 18:22:11 GMT
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Finally, I found the mistake - sitting in front of this pc :)

Here is the code:

```
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,/cubi c)
fim1=fft(im1,-1)
fim2=fft(im2,-1)
corr=fim1*conj(fim2)/abs(fim1*fim2)
corr=shift(corr,s/2)
phase=atan(imaginary(corr)/real_part(corr))
wx=(findgen(s) mod s[0])
wy=(rebin(findgen(1,s[1]),s))
wx-=s[0]/2
wy-=s[1]/2
wx*=2.*!pi/s[0]
wy*=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 [*])
```

Thanks Helder!

Cheers

CR

Subject: Re: fft and least sqaues problem
Posted by Craig Markwardt on Tue, 14 Aug 2012 23:53:13 GMT
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On Tuesday, August 14, 2012 2:22:11 PM UTC-4, (unknown) wrote:
> Finally, I found the mistake - sitting in front of this pc :)

OK.
So summarize for us: what was wrong, and what did you change to fix it?

Craig

Subject: Re: fft and least sqaues problem
Posted by rogass on Thu, 16 Aug 2012 09:13:49 GMT
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Am Mittwoch, 15. August 2012 01:53:13 UTC+2 schrieb Craig Markwardt:
> On Tuesday, August 14, 2012 2:22:11 PM UTC-4, (unknown) wrote:
>
>> Finally, I found the mistake - sitting in front of this pc :)
>
>
>
> OK.
>
> So summarize for us: what was wrong, and what did you change to fix it?
>
>
>
> Craig

Hi,
the following was missing:

wx-=s[0]/2
wy-=s[1]/2

However, the solution is noise sensitive. Smoothing the data beforehand helps :)

Changing:
phase=atan(imaginary(corr)/real_part(corr))
to:
phase=atan(corr,/phase)

additionally reduces processing time. Thanks to Helder.

Cheers

CR

Subject: Re: fft and least sqaues problem
Posted by Craig Markwardt on Fri, 17 Aug 2012 04:58:12 GMT
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On Thursday, August 16, 2012 5:13:49 AM UTC-4, (unknown) wrote:

> Hi,
>
> the following was missing:

Cool, thanks!

Subject: Re: fft and least sqaues problem
Posted by rogass on Fri, 17 Aug 2012 14:40:21 GMT
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Am Freitag, 17. August 2012 06:58:12 UTC+2 schrieb Craig Markwardt:
> On Thursday, August 16, 2012 5:13:49 AM UTC-4, (unknown) wrote:
>
>> Hi,
>
>>
>
>> the following was missing:
>
>
>
>
>
> Cool, thanks!

Hi Craig,
do you have a routine to perform iteratively reweighted least squares?

Cheers

CR

Subject: Re: fft and least sqaues problem
Posted by Craig Markwardt on Fri, 17 Aug 2012 15:45:24 GMT
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On Friday, August 17, 2012 10:40:21 AM UTC-4, CR wrote:
...
> Hi Craig,
>
> do you have a routine to perform iteratively reweighted least squares?

You're kind of hijacking an existing conversation. The short answer is, no, nothing specific to IRLS, but there's nothing stopping you from doing the easy iterative part yourself.