
Subject: fourier transform

Posted by [Pravesh](#) on Mon, 01 Aug 2005 15:16:17 GMT

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Hi ,

I am trying to convolute a huge gaussian kernel ([192,192]) with an image array ([512,512]). of course, if i had all the time on earth, i could use the convol routine.

can someone tell me how do i get it done faster by using fourier transform?

more specifically,

smoothimage = raw convol image

= something in terms of fourier transform

please don't mind my excellent math skills.

thanks,
pravesh

Subject: Re: Fourier Transform

Posted by [Kenneth P. Bowman](#) on Tue, 21 Dec 2010 19:51:11 GMT

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In article

<0976cc7b-4c34-4355-aa06-1cc52757cbe7@o14g2000yqe.googlegroups.com>,
Ammar Yusuf <amyusuf1@gmail.com> wrote:

> Hi, let's say I have 2 graphs (2 arrays with numbers). They both look
> different but are similar. I'm doing a FFT on one of the arrays and
> then zero out some of the coefficients and then do an inverse FFT on
> that array to try to get the 2nd array. When I plot the 2nd array and
> the inverse one I get something similar to it but not close enough.
> I've tried zeroing many coefficients but can't get anywhere. What
> would be the best way to do this? Thanks.

Do FFTs of both arrays and compare the coefficients. If you change the coefficients of the first FFT to match the coefficients of the second FFT and then inverse FFT, you will get something that is *very* similar to the second function. ;-)

But seriously, compare the coefficients from the FFTs. That will tell you the difference between the two functions in the spectral domain.

Ken Bowman

Subject: Re: Fourier Transform
Posted by [pgrigis](#) on Tue, 21 Dec 2010 19:55:26 GMT
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Given two random arrays A1 and A2, you almost surely cannot find a passband filter that converts one into the other.

Ciao,
Paolo

On Dec 21, 12:41 pm, Ammar Yusuf <amyus...@gmail.com> wrote:
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> different but are similar. I'm doing a FFT on one of the arrays and
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Subject: Re: Fourier Transform
Posted by [Ammar Yusuf](#) on Tue, 21 Dec 2010 22:27:40 GMT
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On Dec 21, 2:55 pm, Paolo <pgri...@gmail.com> wrote:
> Given two random arrays A1 and A2, you almost surely cannot find a
> passband filter that converts one into the other.
>
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> Paolo
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>> would be the best way to do this? Thanks.
>
>

They are not random. They come from some type of a model. One has something called waves and the other doesn't. Thanks.

Subject: Re: Fourier Transform

Posted by [R.G.Stockwell](#) on Thu, 23 Dec 2010 22:15:50 GMT

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"Ammar Yusuf" <amyusuf1@gmail.com> wrote in message
news:0976cc7b-4c34-4355-aa06-1cc52757cbe7@o14g2000yqe.google groups.com...

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> would be the best way to do this? Thanks.

offhand, simply zeroing out coefficients in an fft is a lousy way to filter
(quick and dirty, emphasis on dirty).

I don't have a clear idea of what your aim is, but here are a couple of
points. Are you trying to show
the same wave energy is present in both images? do a cross spectral
analysis $S1 * conj(S2)$.

given two images I1 and I2 and the two spectra S1 and S2,

look at the ratio of $abs(S2)/abs(S1)$. That will show you where the
difference are, but make
sure you treat the zero points (and small value points) of $abs(s1)$. I'd do
the division and
then mask out the points of $abs(S2)/abs(S1)$ where $abs(S1)$ is small.

note: when you ifft into the image domain, you will not have the correct
phase, so the waves
will likely shift in the image domain and there can be interference.

you could try something like

$I2_{new} = \text{inverse FFT} (S1 * abs(S2)/abs(S1))$

again, I have no idea what the goal is, so I can't really say anything more.

cheers,
bob
