Subject: Re: problems with FFT cross spectra and other floating point operations
Posted by hatay on Thu, 17 Dec 1992 17:33:44 GMT
View Forum Message <> Reply to Message

In article <1992Dec17.030946.4899@news.media.mit.edu> steve@media.mit.edu (Steve Mann) writes:

.
.
.
>
> I also noticed that when I subtract the DC from an image, and then do
> an FFT, the element af(0,0) is not always zero. In fact, as the image
> gets bigger, I get values further and further from zero. For a 256 by 265
> image, the DC spike in the Fourier domain is so high that I can't see
> anything else in shade_surf,abs(af) or tvscl,abs(af).
>
> I wrote this little script which shows the accumulation of excess DC:
> ---------- ----------
> ; when I set N=91 or less, I get zero as expected.
> ; when I set N=92 or more, I get a non-zero DC value in fft.
>
> N = 100; size of square array
> q=findgen(N)#findgen(N); create some arbitrary square array
> ;Subtract the DC component
> w=float(q)-norm(q,/one)/float((size(q))(1))/float((size(q))(2))
> wf = fft(w,1); Fourier transform of w
> print,wf(0,0); The DC component should be zero now.
> ;I dont know why it is not zero.

I was under the impression that the FFT routines in IDL and WAVE
are basically one-dimensional-complex FFT routines. Please, forward me
info if this is wrong.

I have played with one-d arrays of size 100-500 on IDL. here is the script:

```
IdlMaster>  N=100
IdlMaster>  q = findgen(N)
IdlMaster>  w = q-total(q)/float(N)
IdlMaster>  wf=fft(w,1)
IdlMaster>  print,wf(0,0)
(      0.00000,      0.00000)
IdlMaster>  print,total(w),total(q)
      0.00000      4950.00

IdlMaster>  N=500
IdlMaster>  q = findgen(N)
IdlMaster>  w = q-total(q)/float(N)
```

```
IdlMaster>  wf=fft(w,1)
IdlMaster>  print,wf(0,0)
(      0.00000,      0.00000)
IdlMaster>  print,total(w),total(q)
      0.00000      124750.
```

--
Ferhat F. Hatay || Disclamer: ||||||||||||||||
Aerospace Engineering Sciences || I speak for myself unless ||
University of Colorado, Boulder || otherwise indicated. ||
e-mail: hatay@spot.colorado.edu ||||||||||||||||||||||||||||||

Subject: Re: problems with FFT cross spectra and other floating point operations
Posted by hatay on Thu, 17 Dec 1992 17:46:22 GMT
View Forum Message <> Reply to Message

In article <1992Dec17.030946.4899@news.media.mit.edu> steve@media.mit.edu (Steve Mann) writes:

.
.
.
>
> I also noticed that when I subtract the DC from an image, and then do
> an FFT, the element af(0,0) is not always zero. In fact, as the image
> gets bigger, I get values further and further from zero. For a 256 by 265
> image, the DC spike in the Fourier domain is so high that I can't see
> anything else in shade_surf,abs(af) or tvscl,abs(af).
>
> I wrote this little script which shows the accumulation of excess DC:
> ---------- ----------
> ; when I set N=91 or less, I get zero as expected.
> ; when I set N=92 or more, I get a non-zero DC value in fft.
>
> N = 100; size of square array
> q=findgen(N)#findgen(N); create some arbitrary square array
> ;Subtract the DC component
> w=float(q)-norm(q,/one)/float((size(q))(1))/float((size(q))(2))
> wf = fft(w,1); Fourier transform of w
> print,wf(0,0); The DC component should be zero now.
> ;I dont know why it is not zero.

I was under the impression that the FFT routines in IDL and WAVE
are basically one-dimensional-complex FFT routines. Please, forward me
info if this is wrong.

I have played with one-d arrays of size 100-500 on IDL. here is the script:

```
IdlMaster>  N=100
IdlMaster>  q = findgen(N)
IdlMaster>  w = q-total(q)/float(N)
IdlMaster>  wf=fft(w,1)
IdlMaster>  print,wf(0,0)
(      0.00000,      0.00000)
IdlMaster>  print,total(w),total(q)
      0.00000      4950.00

IdlMaster>  N=500
IdlMaster>  q = findgen(N)
IdlMaster>  w = q-total(q)/float(N)
IdlMaster>  wf=fft(w,1)
IdlMaster>  print,wf(0,0)
(      0.00000,      0.00000)
IdlMaster>  print,total(w),total(q)
      0.00000      124750.
```

--
Ferhat F. Hatay || Disclamer: ||||||||||||||||
Aerospace Engineering Sciences || I speak for myself unless ||
University of Colorado, Boulder || otherwise indicated. ||
e-mail: hatay@spot.colorado.edu ||||||||||||||||||||||||||||||