Subject: How to avoid the FOR loop when using TM_TEST?
Posted by wanglin1981 on Fri, 24 Aug 2007 13:43:15 GMT
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I need to test the significance for each spatial point between two
data sets (names are A(ix,iy,it1) and B(ix,iy,it2), ix and iy are
spatial point, and it1 and it2 are temporal point) using the TM_TEST
function. As the TM_TEST is not valid for two-dimentional matrix, I
had to use the FOR loop as follows, which cost a lot of time.

```
for j=0,iy-1 do begin
for i=0,ix-1 do begin
temp1=tm_test(A(i,j,*),B(i,j,*))
sighl(i,j)=temp1(1)
endfor
endfor
```

Is it possible to avoid the FOR loops?

Thanks!

Subject: Re: How to avoid the FOR loop when using TM_TEST?
Posted by David Fanning on Sat, 25 Aug 2007 04:46:01 GMT
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Lin writes:

> I'm not a native English speaker and I cannot quite understand
> what you mean in the reply. But I can sense that maybe you thought
> me as a bad learner.

Sorry, Lin. Humor is the hardest thing to translate
correctly. We welcome everyone here, and if my answer
seemed disrespectful, I apologize.

Your input function does not take vectors or arrays.
Therefore, if you want to call it many times, you will
have to do it in a loop or find another input function
(or, possibly, you can change the one you have). But
as you have presented the problem, there is no better solution
than the one you found.

Cheers,

David

--

David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

---

Subject: Re: How to avoid the FOR loop when using TM_TEST?
Posted by wanglin1981 on Sat, 25 Aug 2007 07:43:00 GMT
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David,

Thank you for your reply. Luck the number of loops is not huge.

Regards,

Lin

> Sorry, Lin. Humor is the hardest thing to translate
> correctly. We welcome everyone here, and if my answer
> seemed disrespectful, I apologize.
>
> Your input function does not take vectors or arrays.
> Therefore, if you want to call it many times, you will
> have to do it in a loop or find another input function
> (or, possibly, you can change the one you have). But
> as you have presented the problem, there is no better solution
> than the one you found.
>
> Cheers,
>
> David
>
> --
> David Fanning, Ph.D.
> Fanning Software Consulting, Inc.
> Coyote's Guide to IDL Programming:http://www.dfanning.com/
> Sepore ma de ni thui. ("Perhaps thou speakest truth.")

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Subject: Re: How to avoid the FOR loop when using TM_TEST?
Posted by Allan Whiteford on Sat, 25 Aug 2007 16:26:49 GMT
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wanglin1981@gmail.com wrote:
> I need to test the significance for each spatial point between two
> data sets (names are A(ix,iy,it1) and B(ix,iy,it2), ix and iy are

> spatial point, and it1 and it2 are temporal point) using the TM_TEST
> function. As the TM_TEST is not valid for two-dimentional matrix, I
> had to use the FOR loop as follows, which cost a lot of time.
>
> for j=0,iy-1 do begin
> for i=0,ix-1 do begin
> temp1=tm_test(A(i,j,*),B(i,j,*))
> sighl(i,j)=temp1(1)
> endfor
> endfor
>
> Is it possible to avoid the FOR loops?
>
> Thanks!
>

Lin,

Welcome to the group :).

For the code you have, you can get a significant speed up if you replace it all (including the loops) with:

```
na=(size(a,/dim))[2]
nb=(size(b,/dim))[2]
meanx=total(a,3) / na
meany=total(b,3) / nb
df = 1.0*(na+nb-2)
t = (meanx-meany)/sqrt((((total((a-rebin(meanx,ix,iy,na))^2,3) + $
total((b-rebin(meany,ix,iy,nb))^2,3) )/df) * (1.0/na + 1.0/nb)))
sighl = ibeta(0.5*df,0.5,df/(df+t^2))
```

give or take some line breaks which I'm sure have been broken posting it across a newsgroup.

This will give you s sighl array identical to the one you get with your present code.

However, unless the speed is a real issue then your present solution is much easier to read and maintain. Note also that this doesn't give any of the other options which tm_test takes.

Good question; keep them coming.

Thanks,

Allan

Subject: Re: How to avoid the FOR loop when using TM_TEST?
Posted by wanglin1981 on Mon, 27 Aug 2007 14:07:22 GMT
View Forum Message <> Reply to Message

On Aug 26, 12:26 am, Allan Whiteford <allan-remove-th...@-and-
this.phys-dot-strath.ac.uk> wrote:
> wanglin1...@gmail.com wrote:
>> I need to test the significance for each spatial point between two
>> data sets (names are A(ix,iy,it1) and B(ix,iy,it2), ix and iy are
>> spatial point, and it1 and it2 are temporal point) using the TM_TEST
>> function. As the TM_TEST is not valid for two-dimentional matrix, I
>> had to use the FOR loop as follows, which cost a lot of time.
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>> sighl(i,j)=temp1(1)
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>> endfor
>
>> Is it possible to avoid the FOR loops?
>
>> Thanks!
>
> Lin,
>
> Welcome to the group :).
>
> For the code you have, you can get a significant speed up if you replace
> it all (including the loops) with:
>
> na=(size(a,/dim))[2]
> nb=(size(b,/dim))[2]
> meanx=total(a,3) / na
> meany=total(b,3) / nb
> df = 1.0*(na+nb-2)
> t = (meanx-meany)/sqrt((((total((a-rebin(meanx,ix,iy,na))^2,3) + $
> total((b-rebin(meany,ix,iy,nb))^2,3) )/df) * (1.0/na + 1.0/nb)))
> sighl = ibeta(0.5*df,0.5,df/(df+t^2))
>
> give or take some line breaks which I'm sure have been broken posting it
> across a newsgroup.
>
> This will give you s sighl array identical to the one you get with your
> present code.
>
> However, unless the speed is a real issue then your present solution is
> much easier to read and maintain. Note also that this doesn't give any
> of the other options which tm_test takes.

>
> Good question; keep them coming.
>
> Thanks,
>
> Allan- Hide quoted text -
>
> - Show quoted text -

Allan,

Thank you very much. After using the code you provided, the speed is significantly improved, and I got the exact same result as that using TM_TEST. Your method is illuminating for me when I meet with similar problems.

Also, I really appreciate your encouragement. Learning IDL is a journal full of challenge and interest. I enjoy this journey very much and will keep moving on.

Regards,

Lin

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