Subject: Re: Avoiding For Loops
Posted by Dick Jackson on Mon, 01 Aug 2005 21:35:40 GMT
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"sudipta" <ssarkar@forestone.com> wrote in message
news:1122923758.653063.102140@f14g2000cwb.googlegroups.com.. .

> Hello Everybody,
> My IDL problem is simple but is very crucial.
. [...]
> So i was wondering if there was a way
> to avoid the for loops and do the RMS computation in one single step?

Hi Sudipta,

Your guess that IDL should be able to do this is correct. Read on! I did a few iterations of your calculations, printing out the result, then did the whole works after that. You can save this next section in a .pro file, compile it and run it. Hope this helps.

=====

```
;; Make some sample data

data = RandomU(seed,10,14014,10,6)
lfData = RandomU(seed,6)

Print, 'Original Way:'
Print

;; I have reordered the loops with slowest-changing dimension in
;; the outer loop... in IDL, this is the last dimension.

numbands = 6

for k = 0, 1 do begin ;number of fractions (10)
  for j = 0, 1 do begin ;number of spectral combinations (14013)
    for i = 0,1 do begin  ;number of AI (10)
      tdata = reform(data(i,j,k,*),numbands,1)
      Print, total((tdata - lfdata)^2)
    end
    Print
  end
  Print
end

Print, 'Un-loopy way :-) :'
```

```
Print

t0 = SysTime(1)

;; Extend the 6 values across all other dimensions
lfData = Reform(lfData,1,1,1,6)
lfDataExt = Rebin(lfData,10,14014,10,6)

;; Calculate RMS in one step
rms = Total((data-lfDataExt)^2, 4)

timeTaken = SysTime(1)-t0
Print, 'Time taken:'+StrTrim(timeTaken, 2)+' seconds.'
Print

;; Print 2x2x2 section for comparison
Print, rms[0:1,0:1,0:1]

END
```

=====

Printout from above program:

Original Way:

```
     0.358912
      1.03072

     0.164605
     0.782057


     0.910758
     0.800281

     0.591216
      1.48899
```

Un-loopy way :-) :

Time taken:0.29700017 seconds.

```
     0.358912      1.03072
     0.164605     0.782057

     0.910758     0.800281
```

0.591216 1.48899

=====

Cheers,
--
-Dick

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