Subject: Re: Approximate convolution - for loop problem
Posted by andrews32940 on Tue, 23 Dec 2008 19:46:11 GMT
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This doesn't get rid of the FOR loop but it should be faster with
minimal memory overhead:

```
  a = [1.,2.,3.,4.]
  Print, 'Start a = ', a
  na = N_Elements(a)
  const1 = 0.5
  coef = Make_Array(na, /DOUBLE, VALUE=const1)
  coef[0] = 1.0D ; First index is a special case
  scale = Reverse(Product(coef, /CUMULATIVE))
  for ii = na-1L, 0L, -1L DO a[ii] = Total(a[0:ii]*scale[na-1-
ii:na-1])
  Print, 'End a = ', a

Start a =       1.00000      2.00000      3.00000      4.00000
End a =       1.00000      2.50000      4.25000      6.12500
```

On Dec 21, 3:01 pm, Sam <samuel.le...@gmail.com> wrote:
> Hi David, unfortunately shift() does not do the business for me, as
> these two examples below show. So I'm still a bit stumped here.
>
> ; Array operation I'm trying to execute.
> a=[1.,2.,3.,4.]
> for ii=1,3 do a[ii] += 0.5*a[ii-1]
> print,a
> 1.00000   2.50000   4.25000   6.12500
>
> ; Attempt to perform this operation with shift()
> a=[1.,2.,3.,4.]
> a += 0.5*shift(a,-1)
> print,a
> 2.00000   3.50000   5.00000   4.50000
>
> On Dec 21, 7:03 pm, David Fanning <n...@dfanning.com> wrote:
>
>
>
>> samuel.le...@gmail.com writes:
>>> Hello everyone, I'm trying to execute a 1-d convolution of an array,
>>> signal.
>
>>> Using an analytic approximation, obtaining the convolved bolometer
>>> signal, bolo_signal, at time step ii, is given by the following:
>

>>> nsamp=n_elements(signal)
>>> const1 = exp(-tsamp/taubolo)
>>> const2 = 1.-const1
>
>>> bolo_signal = const2*signal
>>> for ii= 1L,nsamp-1L do begin
>>>   bolo_signal[ii] += const1*bolo_signal[ii-1]
>>> endfor
>
>>> where tsamp and taubolo are scalars. Is there any way to avoid the for
>>> loop in this case? The hope is to speed up the execution.
>
>> I think this gives you the same results:
>
>>   bolo_signal += const1 * shift(bolo_signal,-1)
>
>> 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.")- Hide quoted text -
>
> - Show quoted text -
