Subject: Re: Problems on the Savitzky-Golay smoothing filter
Posted by Jean H. on Wed, 20 May 2009 12:03:00 GMT
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mengran wrote:
> Hi,everybody,
> I have got a annoying problem about the implementing the
> Savitzky-Golay filter to smooth the time series RS data in the IDL.
> Actually, I know the function of the Savitzky-Golay filter in IDL is
> SAVGOL.But the question is the result I got is either a horizon line
> or the same as the original line(In other words, the filter seems not
> to work at all), when I changed the parameters of the SAVGOL function.
> (when the DEGREE = NL + NR(PARA OF THE SAVGOL FUNCTION), THE RESULT
> IS THE SAME AS THE ORIGINAL, OTHERWISE, THE RUSULT IS A HORISON LINE)
> My pro is as follows. The class1 to class9 from txt files are
> the samples of the time series RS data.
> Is there sth wrong with my code ? Or the RS data that I used
> is not appropriate for the Savitzky-Golay filter, and I take a wrong
> method to smooth data ? I need your suggestions, thanks a lot !

> savgolFilter = SAVGOL(2, 2, 0,4)

Hi Mengran,

so, print, savgolFilter --> 0.000000-8.04663e-007
1.00000-8.04663e-007 0.000000

meaning that the outer points have no effect, the central point has a weight of 1 and the 2 middle points have a weight fairly close to zero... so, from this, we can already suspect the smooth curve to be similar to the original one.

Now, in convol, it is said that the kernel is "converted to the proper type", in function of your input. So, if you are plotting integers, the kernel is first converted to long... so the weights become 0,0,1,0,0 ... and convol returns the same values as in the input!

Moreover, when you play with the degree, you get the following filters:
```
IDL> print, SAVGOL(2, 2, 0,3)
   -0.0857143     0.342857     0.485714     0.342857   -0.0857143
IDL> print, SAVGOL(2, 2, 0,2)
   -0.0857143     0.342857     0.485714     0.342857   -0.0857143
```

..once rounded, they are all zero... giving a nice horizontal line at zero!

Therefore, I would bet it is a problem with the input type... try to convert it to float or double before applying the filter

Jean