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Subject: Re: Problems on the Savitzky-Golay smoothing filter

Posted by [wita](#) on Wed, 20 May 2009 15:01:40 GMT

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On May 20, 12:59 pm, mengran <mengra...@gmail.com> 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 RUSLT 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 !  
>  
> PRO Savgol\_example  
>  
> ;RESTORE, 'C:\WorkSpace\Default\myPlotTemplate.sav'  
> rootPath = 'C:\WorkSpace\Default\class'  
>  
> n = 1 & filename = strarr(9)  
> for i = 0, 8 do begin  
>  
> filename[i] = strjoin([rootPath, strtrim(n, 2),'.txt'])  
> n++  
>  
> endfor  
> for i = 0,8 do begin  
>  
> plotTemplate = ASCII\_TEMPLATE(filename[1])  
> y1 = READ\_ASCII(filename[1], TEMPLATE = plotTemplate, COUNT =  
> \$ count,NUM\_RECORDS = 46 )  
> x = indgen(46)  
> iPlot,x,y1.FIELD1, NAME = 'Original Curve', \$  
> COLOR=[255, 0, 0], SYM\_INDEX = 4, yrangle = [0,+8000], VIEW\_TITLE =  
> strmid(filename[1], 21, 6)  
> void = ITGETCURRENT(TOOL=oTool)  
> void = oTool->DoAction('Operations/Insert/Legend')  
>  
> ; savgol  
> savgolFilter = SAVGOL(2, 2, 0,4)  
> iPlot,x,CONVOL(y1.FIELD1, savgolFilter), /OVERPLOT, \$  
> COLOR=[0, 0, 255], THICK=2, \$

```
> NAME='Savitzky-Golay'  
> void = oTool->DoAction('Operations/Insert/LegendItem')  
> ;SAVE, plotTemplate, FILENAME='C:\WorkSpace\Default  
> \myPlotTemplate.sav'  
>  
> endfor  
>  
> END
```

Hi Mengran,

I have an implementation of the Savitsky-Golay filter in IDL/ENVI based on this paper:

Jin Chen, Per. Jonsson, Masayuki Tamura, Zhihui Gu, Bunkei Matsushita, Lars Eklundh. 2004.  
A simple method for reconstructing a high-quality NDVI time-series data set based on the Savitzky–Golay filter. *Remote Sensing of Environment* 91: 332–344

If you are interested I can send you the code.

Allard

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