Subject: Re: Gaussian Enhancement on Image Histogram
Posted by Jeff N. on Mon, 19 Sep 2005 18:01:07 GMT
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Why not just use the ENVI routine that does this? You want to use
STRETCH_DOIT and set METHOD=3.

Jeff

raval.chintan@gmail.com wrote:
> Hi,
>
> I want to apply Gaussian Enhancement (not filter) on image histogram
> in IDL , as envi does. but i do not know the exact method. Can any body
> help me in that?
>
> Thanks in Advance.
>
> Chintan

Subject: Re: Gaussian Enhancement on Image Histogram
Posted by Jeff N. on Mon, 19 Sep 2005 19:22:23 GMT
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Why not use the ENVI routine that does this? You can call STRETCH_DOIT
and set METHOD=3.

Jeff

Subject: Re: Gaussian Enhancement on Image Histogram
Posted by raval.chintan on Tue, 20 Sep 2005 06:14:27 GMT
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Hi Jeff,

Thanks for replying. I am writing my code which is independent of
ENVI, means i do not want to call the envi routines. I have some
thoughts for doint this thing in IDL but some how i am not able to find
the exact path for doing this. In this i have to make my look up table
according to the Gaussian Probability Distribution Function (PDF) after
applying the Gaussian enhancement on histogram or (Cumulative
Histogram). Here When ever i am applying the Enhancement i also have to
give maximum and minimum limit of intensity from the histogram.

I do not know if this is the correct way to do or not?

Chintan Raval

Subject: Re: Gaussian Enhancement on Image Histogram
Posted by David Fanning on Tue, 20 Sep 2005 06:27:23 GMT
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raval.chintan@gmail.com writes:

> Thanks for replying. I am writing my code which is independent of
> ENVI, means i do not want to call the envi routines. I have some
> thoughts for doint this thing in IDL but some how i am not able to find
> the exact path for doing this. In this i have to make my look up table
> according to the Gaussian Probability Distribution Function (PDF) after
> applying the Gaussian enhancement on histogram or (Cumulative
> Histogram). Here When ever i am applying the Enhancement i also have to
> give maximum and minimum limit of intensity from the histogram.
>
> I do not know if this is the correct way to do or not?

I don't know the correct way either, but I would guess this
is similar to the Histogram Matching algorithm I detail in
this article:

   http://www.dfanning.com/ip_tips/histomatch.html

At least it is a place to start.

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/

Subject: Re: Gaussian Enhancement on Image Histogram
Posted by raval.chintan on Tue, 20 Sep 2005 14:30:22 GMT
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Hi,

I got the answer on google, but for this i have to implement Gaussian

Normal Distribution function in one dimension IDL..
The eqation is given in the following web site,

http://mathworld.wolfram.com/GaussianFunction.html
Now if you change the range of the Standard Deviation from the text box the Graph is being changed according to the eqation. Is there any direct function call in IDL for this eqation or i have to implement it ?

Again Thanks in Advance.

Chintan Raval

Subject: Re: Gaussian Enhancement on Image Histogram
Posted by David Streutker on Tue, 20 Sep 2005 15:50:01 GMT
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Can't you use the HIST_EQUAL function? The FCN keyword appears to allow a user-defined distribution function.

Subject: Re: Gaussian Enhancement on Image Histogram
Posted by raval.chintan on Tue, 20 Sep 2005 16:30:41 GMT
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Hi David,

Thank you for your suggestion. One can definitely use FCN but in order to obtain a monotonically increasing FCN I need to
1) Map the Histogram for 0- 255 levels to 3 sigma of Gaussian PDF
2) Obtain the cumulative histogram for this mapping (This will yield monotonically increasing function)

If you refer IDL documentation the GaussInt function computes the PDF for mean value of 0 and variance of 1(i.e standard deviation of 1). My problem is to compute the Gaussian PDF with 3 sigma (standard deviation) for a given value of x with mean at 127.

I would appriciate if you can point out how I can achieve this. It would be nice if you can provide some example code.

J.D I thought this would interest you? looking forward for your comments on this

Chintan Raval

Subject: Re: Gaussian Enhancement on Image Histogram
Posted by David Fanning on Tue, 20 Sep 2005 16:41:06 GMT
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Chintan Raval writes:

> Thank you for your suggestion. One can definitely use FCN but in order
> to obtain a monotonically increasing FCN I need to
> 1) Map the Histogram for 0- 255 levels to 3 sigma of Gaussian PDF
> 2) Obtain the cumulative histogram for this mapping (This will yield
> monotonically increasing function)
>
> If you refer IDL documentation the GaussInt function computes the PDF
> for mean value of 0 and variance of 1(i.e standard deviation of 1). My
> problem is to compute the Gaussian PDF with 3 sigma (standard
> deviation) for a given value of x with mean at 127.
>
> I would appriciate if you can point out how I can achieve this. It
> would be nice if you can provide some example code.

Oh, dear. I was hoping *you* were going to supply the example code. :-(

I'd go over to Craig's site and poke around for Gauss1. That
will allow you to build the Gaussian you are looking for.

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/

Subject: Re: Gaussian Enhancement on Image Histogram
Posted by David Streutker on Tue, 20 Sep 2005 17:10:47 GMT
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How about this:

```
x = findgen(256) / 255 - 0.5
x = 6*x

fcn = gaussint(x)
```

Subject: Re: Gaussian Enhancement on Image Histogram
Posted by raval.chintan on Wed, 21 Sep 2005 05:58:57 GMT
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David,

Thank you for reply, Here the problem is with Gaussint function , the eqation that is given in the documentation that says that this Gaussian function is calculated for the Mean = 0 and Sandard Deviation = 1 (Because the Variance = 1), now i want to plot the curve for different standard deviation. How is it possible? (if you check with envi ,Gaussian enhancement, Interactive Streching , It will allow you to change the Standard deviation , in option menu , and according to that the curve will change,.)

Chintan

Subject: Re: Gaussian Enhancement on Image Histogram
Posted by raval.chintan on Wed, 21 Sep 2005 11:04:26 GMT
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David Fanning wrote:
> Chintan Raval writes:
>
>> Thank you for your suggestion. One can definitely use FCN but in order
>> to obtain a monotonically increasing FCN I need to
>> 1) Map the Histogram for 0- 255 levels to 3 sigma of Gaussian PDF
>> 2) Obtain the cumulative histogram for this mapping (This will yield
>> monotonically increasing function)
>>
>> If you refer IDL documentation the GaussInt function computes the PDF
>> for mean value of 0 and variance of 1(i.e standard deviation of 1). My
>> problem is to compute the Gaussian PDF with 3 sigma (standard
>> deviation) for a given value of x with mean at 127.
>>
>> I would appriciate if you can point out how I can achieve this. It
>> would be nice if you can provide some example code.
>
> Oh, dear. I was hoping *you* were going to supply the example code. :-(
>
> I'd go over to Craig's site and poke around for Gauss1. That
> will allow you to build the Gaussian you are looking for.

Thank You David, I have find it on Craig's Web site , Now it is working fine.

>
> Cheers,
>
> David
>
> --
> David Fanning, Ph.D.
> Fanning Software Consulting, Inc.
> Coyote's Guide to IDL Programming: http://www.dfanning.com/

Regards
Chintan

Subject: Re: Gaussian Enhancement on Image Histogram
Posted by James Kuyper on Wed, 21 Sep 2005 14:35:52 GMT
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raval.chintan@gmail.com wrote:
> David,
>
> Thank you for reply, Here the problem is with Gaussint function , the
> eqation that is given in the documentation that says that this Gaussian
> function is calculated for the Mean = 0 and Sandard Deviation = 1 (
> Because the Variance = 1), now i want to plot the curve for different
> standard deviation. How is it possible? (if you check with envi
> ,Gaussian enhancement, Interactive Streching , It will allow you to
> change the Standard deviation , in option menu , and according to that
> the curve will change,.)

For a gaussian curve with mean value of m and a standard deviation of
s, the integral from 0 to x is s*GAUSSINT((x-m)/s).
