Subject: finding star-like objects in images
Posted by Helder on Wed, 08 Nov 2017 10:12:04 GMT
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Hi,
I'm not an astronomer and I guess that this is something that astronomers have been confronted with quite often in their lives.
I have a detector where particle events generate intensity across some pixels (2-5 x 2-5) [*]. Typically their integral intensity is constant (lets say 100 +/- 20). These events show over a noisy bkg.
Apart from having a constant intensity, these events are similar to stars (that have a varying luminosity).

What approaches are typically used for detecting/locating such events?

Any IDL solution readily available out there?

Thanks for reading so far and for any suggestions.

Regards,
Helder

[*] - threshold methods would not work very well, because the total intensity of 100 may be distributed over 2x2 pixels (~25 per pixel) or 5x5 (~10 per pixel).

Subject: Re: finding star-like objects in images
Posted by Markus Schmassmann on Wed, 08 Nov 2017 10:25:39 GMT
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On 11/08/2017 11:12 AM, Helder wrote:
> I'm not an astronomer and I guess that this is something that
> astronomers have been confronted with quite often in their lives.
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> some pixels (2-5 x 2-5) [*]. Typically their integral intensity is
> constant (lets say 100 +/- 20). These events show over a noisy bkg.
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> events?
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> Any IDL solution readily available out there?
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> Thanks for reading so far and for any suggestions.
>
> [*] - threshold methods would not work very well, because the total
> intensity of 100 may be distributed over 2x2 pixels (~25 per pixel)

> or 5x5 (~10 per pixel).
Hi Helder,

just a guess, but have you tried

star=where(smooth(img,[5,5]) gt 100./5^2/2)

you will have to change the threshold value and maybe also how much
smoothing you apply, but it could work.

good luck, Markus

Subject: Re: finding star-like objects in images
Posted by Helder on Mon, 27 Nov 2017 11:29:24 GMT
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On Wednesday, 8 November 2017 15:24:00 UTC+1, wlandsman wrote:
> You could try find.pro based on a popular software package(DAOPHOT) used by astronomers
> https://idlastro.gsfc.nasa.gov/ftp/pro/idlphot/find.pro
> The image is convolved with a lowered Gaussian with the approximate FWHM of the stars.
>
> Note, though, that astronomers want to detect stars but not cosmic rays so there are sharpness and roundness criteria (with stars being less sharp and more round than cosmic rays).
>
> --Wayne
>
> On Wednesday, November 8, 2017 at 5:12:06 AM UTC-5, Helder wrote:
>> Hi,
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>> Regards,
>> Helder
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>> [*] - threshold methods would not work very well, because the total intensity of 100 may be distributed over 2x2 pixels (~25 per pixel) or 5x5 (~10 per pixel).

Dear Markus and Wayne,
thank you very much for your insight. It took me some time implement the above (as part of a bigger analysis) and I'm now very happy with it.
Regards,
Helder
