Subject: Re: REGRESS and sky background
Posted by wlandsman on Tue, 06 Jul 2010 13:18:54 GMT
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On Jul 5, 8:06 pm, Gray <grayliketheco...@gmail.com> wrote:

> Here's my general algorithm; I actually use a different mean clipping
> routine, but astrolib's MEANCLIP gives the same (unwanted) results.
> Take a look and tell me what you think. Thanks!

Some possibly useful thoughts.

1. I don't understand this line

abc += [ab,c]

On each iteration you are removing outliers and redoing the regression. But you don't want to add the newly determined parameters to the old ones - I think you want a simple equality in the above statement.

2. REGRESS has a lot of keywords -- STATUS, SIGMA, CHISQ -- to help assess the quality of the solution. I would monitor these to see if

3. Henry Freudenreich wrote code for a similar problem -- check out robust_planefit.pro and supporting procedures in http://idlastro.gsfc.nasa.gov/ftp/contrib/freudenreich/

--Wayne

Subject: Re: REGRESS and sky background
Posted by Jeremy Bailin on Tue, 06 Jul 2010 13:19:09 GMT
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On Jul 5, 8:06 pm, Gray <grayliketheco...@gmail.com> wrote:
> Hi all,
>
> I'm baffled with how one of my programs is acting, and would love some
> insight, if there is any to be had.
>
> The routine is designed to fit the sky background image (in my case, a
> 128x128 subdivision of a larger astronomical image) to a plane (Ax+By
> +C) using REGRESS. My subdivisions are small enough that I think a
> plane is a pretty good approximation; the idea is to do a 3.5-sigma
> mean clip to remove sources, then regress the sky pixels to a plane
> and subtract the plane, and iterate until the fitted plane reaches 0.
> The problem is that it seems the slope of the background increases

> with increasing iterations, which it theoretically should not do.
>
> Here's my general algorithm; I actually use a different mean clipping
> routine, but astrolib's MEANCLIP gives the same (unwanted) results.
> Take a look and tell me what you think. Thanks!
>
> --Gray
>
> FUNCTION find_skybg, image, sigma
> img = image
> s = size(img,/dim)
> lx = rebin(indgen(s[0]),s[0],s[1]) ;x and y coordinates
> ly = rebin(indgen(1,s[1]),s[0],s[1]) ;to construct bg plane
> abc = fltarr(3)
> iter = 0
> repeat begin
> meanclip, img, m, subs=clips, clipsig=3.5 ;don't care about mean,
> just clips
> xy = array_indices(s,clips,/dim)
> ab = reform(regress(xy,img[clips],const=c))
> sigma = stddev(img[clips])
> abc += [ab,c]
> bg = ab[0]*lx+ab[1]*ly+c
> img -= bg
> iter++
> endrep until (iter ge 10 or total([ab,c]/abc le 0.02) eq 3)
> background = abc[0]*lx+abc[1]*ly+abc[2]
> return, background
> endfor

Not sure... I just tested it out on an image with stars and a
background gradient and it worked exactly as expected. What fraction
of the image is making it through the sigma clipping? I could see it
being unstable if that fraction is sufficiently small. Is that
fraction reasonably stable from iteration to iteration? Maybe there
are an unusual number of pixels right around 3.5sigma, whose inclusion
or exclusion makes a big change to the solution?

-Jeremy.

Subject: Re: REGRESS and sky background
Posted by Jeremy Bailin on Tue, 06 Jul 2010 14:51:25 GMT
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> 1. I don't understand this line
>
> abc += [ab,c]

>
> On each iteration you are removing outliers and redoing the
> regression. But you don't want to add the newly determined
> parameters to the old ones - I think you want a simple equality in the
> above statement.

No, that's correct. It works because the image gets the background determined at the previous iteration subtracted at each step... so the solution to get from the original coordinates to the new plane is the sum of the planes determined at each iteration.

-Jeremy.

Subject: Re: REGRESS and sky background
Posted by Gray on Tue, 06 Jul 2010 19:49:50 GMT
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On Jul 6, 9:19 am, Jeremy Bailin <astroco...@gmail.com> wrote:
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>
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>
> -Jeremy.

Most of the points, usually around 85%. I've tried varying the clip
sigma, and it doesn't seem to matter...

Subject: Re: REGRESS and sky background
Posted by Gray on Tue, 06 Jul 2010 19:50:34 GMT
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inhttp://idlastro.gsfc.nasa.gov/ftp/contrib/freudenreich/
>
> --Wayne

Robust_planefit looks like it may be exactly what I need, so I will
give it a try! Thanks :)
