Subject: Re: Least square fitting
Posted by Bringfried Stecklum on Wed, 21 May 2008 07:47:53 GMT
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Marshall Perrin wrote:
> MichaelT <michael.theusner@googlemail.com> wrote:
>> Hi all,
>>
>> I have a problem with a rather complicated function depending on four
>> parameters which I try to find using least square fitting and I don't
>> know exactly how to do it.
>>
>> The basic problem is the following:
>> I have an astronomical image of a star field and try to relate the sky
>> coordinates (right ascension, declination) of the stars to the pixel
>> coordinates (x, y).
>
> So if you truly wish to know how to properly solve this particular
> mathematical problem, I will leave that to other wiser experts to
> answer.
>
> If, however, what you really want is just to know the astrometric
> solution for your data, you may be interested to know about
> Astrometry.net, a research project by David Hogg at NYU and
> collaborators which intends to solve this particular problem once and
> for all, for everyone. You feed their web service arbitrary
> astronomical images, and it hands back the astrometric solution. I've
> not tried it for images as wide-field as you have, but I suspect it
> will work just fine. See http://astrometry.net/ for more info.
>
> - Marshall

I agree with Marshall. Astrometry.net offers a good service and the code works well if the FOV is not too small (i.e. there are enough stars to match). However, it does not take (yet) advantage of the WCS info provided by the FITS header. For your purpose the TERAPIX procedures SCAMP and SWARP can be used. The former establishes the astrometry (including field distortion) while the latter does the image transformation, i.e. creates a non-distorted output mosaic. You might want to have a look at the TERAPIX website for more information.

Regards,

Bringfried