Subject: simple deconvolution
Posted by rogass on Tue, 22 Feb 2011 15:00:57 GMT
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Hi folks,
I want to implement an image deconvolution into a larger package. The following code performs either the Iterative Wiener (by A.W. Stevenson) or the Richardson-Lucy deconvolution, but both go wrong for the recovery of both smoothed images and smoothed images plus noise . I'm a little bit confused about that. Maybe somebody could help me?
The implemented CONVOLVE comes from the Astrolib. I'm using IDL 8 and the code is not optimised as you can see :)

```
function cr_deconv,im,psf,method,small=small
        sz1 = size(im,/dimensions)
        sz2 = size(psf,/dimensions)
        small=~n_elements(small)?1e-5:small
if total(sz1 eq sz2) ne 0 then begin
        p=fltarr(sz1)
        p[(sz1[0]/2)-(sz2[0]/2) ,(sz1[1]/2)-(sz2[1]/2)]=psf
endif
        p/=total(psf)
        p[where(p lt small)]=small
if method eq 'iwiener' then begin
        psf_fft=fft(p)
        psf_fft[where(abs(psf_fft) lt small)]=small
        snr=mean(median(im,3))/stddev(im-median(im,3)) : snr
        pc=psf_fft*conj(p)
        pc[where(abs(pc) lt small)]=small
        filter=pc
        filter/=(filter+1./snr)
        filter[where(abs(filter) lt small)]=small
        res=abs(fft(filter*fft(im)/psf_fft,/inverse))
for i=0l,iter-1l do begin
        res+=abs(fft((fft(convolve(i eq 0?im:res,p)-im)/psf_fft)*$
        (pc/(pc+(1./snr))),/inverse))
        snr=mean(median(res,3))/stddev(res-median(res,3))
endfor
else begin
         corr_kernel=rot(p,180)
         for i=0l,iter-1l do $
         res=(i eq 0?im:res)*convolve(im/convolve(i eq 0?
im:res,p),corr_kernel)
endelse
return,res
end
```

Thanks in advance

CR