Subject: Re: Radon forward projection problem
Posted by Wox on Thu, 24 Apr 2008 11:14:57 GMT
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On Wed, 23 Apr 2008 12:53:05 -0400, mmiller3@iupui.edu (Michael A. Miller) wrote:

>>>> >> "Wox" == Wox <nomail@hotmail.com> writes:
>
>> The algorithm I was talking about (OSEM, although I think
>> it's really called MLEM, I'm not sure) goes like this
>> (BP=backprojection, FP=forward projection):
>
> Be careful that you are sure of what you are implementing. OSEM
> and MLEM differ - especially in computational speed. The
> citations that I've got for the algorithms are:
>
>   "Accelerated Image Reconstruction Using Ordered Subsets of
>   Projection Data," IEEE Trans Med Img, 13, 601-609, 1994.
>
>   "Maximum likelihood reconstruction for emission tomography,"
>   IEEE Trans Med Img, MI-2, 113-122, 1982
>
>
> Mike

I have been reading those articles, but I couldn't understand the difference. I would really appreciate a professional opinion on this.
As far as I understand, for each iteration in MLEM:
v'=v * BP(s0/FP(v))/BP(s1)

s0: experimental sinogram
s1: sinogram with all 1's
v: tomogram of previous iteration (this is a uniform image with 1's for the first iteration)
v': the tomogram calculated for this iteration
BP: backprojection
FP: forward projection

Now what is OSEM doing?

Btw, is it correct that SIRT is doing this:
v'=v - b*BP(s0-FP(v))
where b a relaxation factor.