Subject: Re: help IDL with some equations implementation and optimized coding
Posted by lila hadji on Tue, 01 Jun 2010 16:50:13 GMT
View Forum Message <> Reply to Message

On 1 juin, 14:56, Jeremy Bailin <astroco...@gmail.com> wrote:
> On Jun 1, 1:30 am, lila hadji <lhad...@gmail.com> wrote:
>
>
>
>> Dear everybody,
>
>> I tried to implement the dictionary update step in the Method of
>> Optimal Directions, as explained in the paper (basically equations 8,
>> 9, 17, 18 and 25)
>
>> % "Method of optimal directions for frame design",
>> % K. Engan, S. O. Aase, and J. H. Husøy,
>> % in Proc. ICASSP, Phoenix, AZ, Mar. 1999, pp. 2443Ð2446.
>
>> First link of the page:
>
>> http://scholar.google.com/scholar?hl=fr&q=%22Method+of+o ptimal+direct...
>
>> The problem is that I didn't obtain good results - as it is expected
>> within the paper - with my implementation and I was wondering of
>> anyone can check out the code and the equations in the paper and help
>> me out why my code does not give the expected results and if there is
>> any improvements I can do on the code to get rid of the for-loop,
>> please?
>
>> Here is the version with the loop.
>
>> ;;#IDL Code#
>> $Main$
>
>> ;N=16 : size of each sample
>> ;m=64: number of samples
>> ;k=32:number of atoms in the dictionary to be learned
>
>> ;Y=randomn(seed,m,n) : samples
>> ;D=randomn(seed, k,n): dictionary to be learned
>> ;X=randomn(seed,m,k): sparse codes to construct in the domain D
>
>> B=dblarr(N,k,/nozero)
>> ones=dblarr(N,/nozero)
>> ones(*)=1
>
>> A=invert(transpose(x)#X,/double)

>> R=Y-D##X
>
>> for i=0,k-1 do begin
>> xi=X(*,i)
>> B(*,i)=total((ones##xi)*R,1)
>> end
>
>> delta=A##B
>> D=D+transpose(delta)
>> end
>
>> ;; #IDL Code#
>
>> Thank you very much for your help in advance.
>> Cheers
>> Lila
>
> I don't know about the first question, but as for the second you can
> replace lots of that code including the for loop with:
>
> B = matrix_multiply(R, X, /atranspose)
>
> -Jeremy.

Thank you very much, it's actually the same. I didn't see the matrices' multiplication in the first place. It actually works and is loop-free besides the outer loop that is necessary for the convergence.
Thank you very much for your help!
Cheers
Lila