Subject: Re: singular value decompostion Posted by Dave Bazell on Thu, 01 Jul 1999 07:00:00 GMT

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H T Onishi wrote:

> This is not a complete answer but perhaps adds some insight. > > First of all I believe that your U from Matlab is in error. The .46 should > be -.46. > > Second, if you define x as below and then do svdc,x,w,u,v,/col and then > stuff w into the diagonal elements of a 4x4 array, say ww, and finally > compute u # ww # transpose(v), you will get x back. > x = u # ww # transpose(v) as it should. Unfortunately the # operator in IDL does the row/col reversal from "standard" matrix multiplication. However, if you compute transpose(v) ## w ## u then you will also get x back. Since ## computes the "standard" matrix multiply this means that > > u from Matlab = transpose(v) from IDL v from Matlab = transpose(u) from IDL > both of which are true for the non-singular vectors with the exception of > sign differences. I don't think that the sign differences are important > since these vectors will span the same subspaces of a 4 dimensional real > vector space. > > Finally, regarding the column vectors in U from Matlab which do not > correspond to the column vectors in transpose(V) from IDL, these vectors > span the two dimensional null space for this particular linear > transformation and they are therefore arbitrary within this null space as > long as they are normalized and orthogonal. Another way of putting this is > that the two null col vectors in U can be combined linearly to give the two > col vectors in transpose(V). Try this out. (This is how I decided that the > .46 should be -.46) > Howard Onishi

Thanks, that clarifies some points. You were correct, I copied down a .46 rather than a -.46.

I will run through your exercise to make sure I understand correctly.

Do you have any experience with Principal component analysis and how that can be done with SVD?	
Thanks again,	
Dave	