

Eigen vector calculation

Source: <http://sci.tech-archive.net/Archive/sci.math/2006-06/msg03523.html>

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 - *Date:* 29 Jun 2006 06:01:52 -0700
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Hi

I have one problem regarding Eigen vector calculation. I want to split up the covariance matrix by SVD (Singular Value Decomposition)

Let say X – Data Matrix having dimension $m * n$
 m – observations and n – no of variables
if $m < n$ (Observations are less than variables (unknowns))
we carry following step to calculate eigen vector calculation (to get the uncorrelate direction that describe the data)
1) covariance = $(X * X') / (m-1)$ (X-data matrix)
2) $[U E V] = \text{svd}(\text{covariance})$
3) $V = X' * V$; (These 3 stpes are used to calculate loading vectors – in pca.m from pls-toolbox)

Now, I want to apply Generalized Singular Value Decomposition, can you show me the

Generalized Singular Value Decomposition :

$X = A * D * B$
such that $A' * \text{inv}(Gr) * A = I$ (Identity matrix)
 $B' * \text{inv}(Gr) * B = I$ (Identity matrix)
D : is eigen value matrix

Thanking you

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