Subject: singular value decompostion
Posted by Dave Bazell on Thu, 01 Jul 1999 07:00:00 GMT
View Forum Message <> Reply to Message

I am trying to use the IDL routine SVDC to do principal component analysis. In order to understand SVD better I was doing an example I found online. However, the IDL SVD routine gives me different results than the online example.

x = [[1,2],[3,4],[5,6],[7,8]]

matlab, which uses linpac gives (to two decimal places):

[U,S,V] = svd(x) where X = U S transpose(V)

U = .15 .82 -.39 -.38
.35 .42 .24 .80
.55 .02 .70 .46
.74 -.38 -.54 .04

S = 14.3 0
0 .62

V = .64 -.77
.77 .64

IDL gives

svdc, x,w,u,v,/column

w = 14.2691 0.626828

u = -0.641423 -0.767187
-0.767187 0.641423
0.00000 0.00000
0.00000 0.00000

v = -0.152483 -0.349918 -0.547354 -0.744789
0.822647 0.421375 0.0201032 -0.381169
0.547723 -0.730297 -0.182574 0.365149
0.00000 0.408249 -0.816496 0.408248

clearly the eigenvalues are the same but the u and v matricies are exchanged. But what really bothers me is that some values are changed from positive to negative. And the IDL V does not have the same values as the MATLAB U.

What am I doing wrong? Even if I leave out the /column in the call to

svdc, I don't get the right answers.

The eigenvalues do not correspond to the eigenvalues returned by the IDL routine pcomp which calculates principal components. I thought PCA could be done using SVD but I don't see the correspondence.

Any help would be appreciated.

Thanks.

Dave
bazell@home.com
