
Subject: More problems with singular value decomposition

Posted by [Javier Sanchez Gonzal](#) on Thu, 01 Jul 1999 07:00:00 GMT

[View Forum Message](#) <> [Reply to Message](#)

Hi all

I continue having problems with singular value decomposition. Now, I know how to calculate singular value of a complex matrix (A lot of thanks, Mr. Hanson) but I have a different problem.

When I calculate the singular value of a square matrix with svdc procedure, this routine return me a vector and two matrix. One of this matrix has to be the transposed conjugated of the other.

Some times I obtain this result but some other times this result is wrong.

For example:

```
a=( 4803.65, 0.000000)( -997.981, -3071.47)(
-643.435, 467.483)
( -997.981, 3071.47)( 3208.75, 0.000000)(
-634.621, -1953.16)
( -643.435, -467.483)( -634.621, 1953.16)(
2355.54, 0.000000)
```

svdc, a, w,u, v

```
u=( -0.711864, 5.69912e-017)( 0.559709, 0.0649079)(
0.419240, 6.27647e-009)
( 0.192054, -0.591082)( 0.0947117, -0.206726)(
0.231666, -0.712995)
( 0.264619, 0.192257)( 0.584493, 0.537750)(
-0.414266, -0.300982)
```

```
v=( -0.711864, 5.58488e-017)( 0.559709, 0.0649079)(
0.419240, 7.21748e-009)
( 0.192054, -0.591082)( 0.0947117, -0.206726)(
0.231666, -0.712995)
( 0.264619, 0.192257)( 0.584493, 0.537750)(
-0.414266, -0.300982)
```

```
u##transpose(conj(v))=( 1.00000,-3.94511e-010)( 4.25556e-009,
1.63115e-008)(-5.13171e-009, 8.42458e-009)
( 3.58462e-009,-1.65295e-008)(
1.00000, 0.000000)(-5.16259e-009, 1.95586e-008)
```

```
(-5.41494e-009,-8.03475e-009)(-5.16259e-009,-1.95586e-008)(
1.00000, 0.000000)
```

but if you try the same with

```
a=  
( 2559.80, 0.000000)( -424.869, 1307.61)(  
67.0270, 48.6980)( -1008.82, 732.952)( -543.192,  
-1671.78)  
( -424.869, -1307.61)( 1043.65, 0.000000)(  
-124.315, 382.602)( 214.788, 156.052)( -580.926,  
422.068)  
( 67.0270, -48.6980)( -124.315, -382.602)(  
656.810, 0.000000)( -195.373, 601.295)( -313.805,  
-227.993)  
( -1008.82, -732.952)( 214.788, -156.052)(  
-195.373, -601.295)( 1143.00, 0.000000)( -357.158,  
1099.22)  
( -543.192, 1671.78)( -580.926, -422.068)(  
-313.805, 227.993)( -357.158, -1099.22)( 1374.57,  
0.000000)
```

you obtain

```
u##transpose(conj(v))=  
( 0.182996, 3.67139e-008)( -0.0236849, 0.790943)( 0.179207,  
-0.124324)( -0.176838, 0.215369)( 0.0978060, -0.453396)  
( -0.0236855, -0.790942)( 0.209307, 5.32995e-007)(  
0.177046, 0.263454)( -0.0648843, -0.229042)( 0.415134,  
-0.0166949)  
( 0.179206, 0.124324)( 0.177046, -0.263454)(  
0.472255, -6.81187e-007)( 0.00313089, 0.688385)( 0.344365,  
0.190206)  
( -0.176838, -0.215368)( -0.0648836, 0.229043)(  
0.00313194, -0.688385)( -0.174798, 6.61214e-008)(  
0.0446041, 0.599372)  
( 0.0978052, 0.453396)( 0.415135, 0.0166958)(  
0.344365, -0.190207)( 0.0446032, -0.599371)( 0.310240,  
3.54110e-008)
```

If somebody knows the reply , please let me know.

Thanks all

Javier Sanchez Gonzalez
