
Subject: Curious Cluster Analysis Conundrum

Posted by [jack.connerney](#) on Wed, 17 Jul 2013 19:03:14 GMT

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I'm using

```
iwts = CLUST_WTS(ibza,N_CLUSTERS=2)
result = CLUSTER(ibza, iwts, n_clusters=2)
```

to perform a cluster analysis on a 2 by n rows array (first two components of variable "zeros", 20 rows), and, contrary to my expectation, I find that the cluster analysis gives different results when the same program is run on precisely the same data a second time - that is, the cluster is not recognized the first time the pro is run, it is recognized the second time the pro is run, and yet not recognized again the third and forth time the pro is run.

Shouldn't the result of the same computation be the same each time?

Here's the output from two successive runs of the pro - the cluster is recognized the second run (array printed with cluster designation in third column; the cluster we want to identify is marked "1" in the second run).

```
IDL> zcan2,FNAME='3D-021877F0E7-2013-007T11.07.47.sts',IB_DZ,OB_D Z,ZQ,
      LAG=2,/SECONDS,HODO=4,/ZC,/VERBOSE,/VVERBOSE,SPINS=2
```

```
set =  0   0   30 zeros = -1.965 -2.002 -0.774 zq=  0.61
set =  1  30   60 zeros = -1.997 -2.013 -0.764 zq=  0.65
set =  2  60   90 zeros = -1.947 -1.951 -0.625 zq=  0.55
set =  3  90  120 zeros = -1.991 -1.978 -0.641 zq=  0.68
set =  4 120  150 zeros = -1.918 -1.985 -0.484 zq=  2.32
set =  5 150  180 zeros = -1.998 -1.960 -0.224 zq=  0.72
set =  6 180  210 zeros = -2.002 -2.007 -0.040 zq=  1.39
set =  7 210  240 zeros = -1.970 -1.976 -0.385 zq=  2.24
set =  8 240  270 zeros = -1.992 -1.985 -0.236 zq=  1.84
set =  9 270  300 zeros = -2.033 -1.976 -0.484 zq=  0.65
set = 10 300  330 zeros = -1.971 -1.980  0.018 zq=  3.10
set = 11 330  360 zeros = -2.037 -1.932 -0.726 zq=  0.91
set = 12 360  390 zeros = -2.041 -1.949 -0.356 zq=  1.26
set = 13 390  420 zeros = -2.084 -1.890 -0.133 zq=  1.27
set = 14 420  450 zeros = -2.107 -1.894 -0.186 zq=  1.34
set = 15 450  480 zeros = -2.065 -1.905 -0.239 zq=  0.79
set = 16 480  510 zeros = -2.084 -1.877 -0.507 zq=  1.06
set = 17 510  540 zeros = -2.077 -1.878 -0.082 zq=  1.79
set = 18 540  570 zeros = -2.079 -1.884 -0.521 zq=  1.32
set = 19 570  599 zeros = -2.091 -1.899 -0.240 zq=  1.84
```

```
-1.965 -2.002   0
-1.997 -2.013   0
-1.947 -1.951   0
-1.991 -1.978   0
```

```

-1.918 -1.985 0
-1.998 -1.960 0
-2.002 -2.007 0
-1.970 -1.976 0
-1.992 -1.985 0
-2.033 -1.976 0
-1.971 -1.980 0
-2.037 -1.932 0
-2.041 -1.949 0
-2.084 -1.890 0
-2.107 -1.894 0
-2.065 -1.905 0
-2.084 -1.877 0
-2.077 -1.878 0
-2.079 -1.884 0
-2.091 -1.899 0

```

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```

```

-1.965 -2.002 0
-1.997 -2.013 0
-1.947 -1.951 0
-1.991 -1.978 0
-1.918 -1.985 0
-1.998 -1.960 0
-2.002 -2.007 0
-1.970 -1.976 0

```

-1.992	-1.985	0
-2.033	-1.976	0
-1.971	-1.980	0
-2.037	-1.932	1
-2.041	-1.949	0
-2.084	-1.890	1
-2.107	-1.894	1
-2.065	-1.905	1
-2.084	-1.877	1
-2.077	-1.878	1
-2.079	-1.884	1
-2.091	-1.899	1

IDL>

So, I'm thinking that CLUSTER uses some kind of random seed, and sometimes it works, sometimes not?
