TSCU test suite: 01

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This test runs Time Series Classification Utility (TSCU) in default settings on a small toy example.

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- Website: http://timewarping.org

- Sources: https://github.com/hkayabilisim/TSCU

Initialization

I prefer to clear and close everything to stay out of any nonsense.

```
clear all
close all
clc
```

Creating a toy example

Let's create 4 time series with two different classes: sine and cosine. We also deviced an artifical change within the same class time series by warping the time axis with w(t)=t^2.

```
Name   Function       Class   Set
----   --------       -----   --------
a      sin(2*pi*t)    1       Training
b      sin(2*pi*t*t)  1       Testing
c      cos(2*pi*t)    2       Training
d      cos(2*pi*t*t)  2       testing
```

tst and trn vectors contain both the time series and their class labels.

```
t = linspace(0,1,29);
a = sin(2*pi*t);
b = sin(2*pi*t.^2);
c = cos(2*pi*t);
d = cos(2*pi*t.^2);
trn = [ 1 a ; 2 c];
tst = [ 1 b ; 2 d];
```

Running TSCU

We run with default settings which means, no alignment is applied. You will see many info messages. The confusion matrix is one of the important output of TSCU. In this example you will see a misclassification resulting an overall classification accuracy of 0.5.

```
tscu(trn,tst);
```

Size of training set.....................: 2
Size of testing set......................: 2
Time series length.......................: 29
Classification method....................: K-NN
Alignment method.........................: NONE
Displaying input data....................: no
No cross validation is chosen............: 0
Displaying alignments....................: none
Dumping distance matrix..................: no
Class information........................: 1 [TRN: 1 TST: 1]
Class information........................: 2 [TRN: 1 TST: 1]
index of testing objects.................:   1   2
labels of testing objects (True).........:   1   2
labels of testing objects (Estimated)....:   1   1
closest training objects.................:   1   1
Overall Accuracy.........................: 0.500
Overall Error............................: 0.500
Producer Accuracy........................: 1.000   0.000
User Accuracy............................: 0.500   NaN
Kappa....................................: 0.000
Z-value..................................: 0.000
Confusion matrix.........................:
Confusion matrix

```
          1     2    UA    TO
     1    1     1 0.500     2
     2    0     0  NaN      0
    PA 1.000 0.000
    TO    1     1           2
```

Classification time (sec)................: 0.01
The end of TSCU..........................: FINISHED

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