SIE estimation using the CTW algorithm

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The latest version of the algorithm can be found at: www.dendrite.org/~mikilon/Code
For more info about SIE and the CTW algorithm see:
London, M, Schreibman, A, Hausser, M, Larkum, ME and Segev, I (2002) *The information efficacy of a synapse*. Nat. Neurosci. 5(4):332-40.
[PDF 1MB] [Appendix 350K]

This package contains a bunch of Java programs to compute entropies and mutual information between spike trains. The easiest way to start is using matlab, however one can use the code directly via a shell interface. As the package is written in Java it is platform independent and can ran on Mac OS X (tested), Windows XP (tested) and probably on any machine that has Java installed (not tested).

Quick start (matlab):
1. Download the package and store it in a folder of your choice. I assume here that this is: `/Users/mickey/matlab/CTW/`
2. Setting matlab to recognize the java code and the matlab functions.
   Matlab has a virtually transparent interface with Java classes. This makes it possible to use the Java code as if it is a native matlab code. There is however one necessary step. Matlab should know where the classes are, so we need to modify the classpath. In matlab type:
   edit([matlabroot '\toolbox\local\classpath.txt'])

3. Add three lines at the bottom of the file (replacing the prefix: /Users/mickey/ matlab/CTW/Java with the true location on your system):
   ```
   /Users/mickey/CTW/Java/mpjava/src
   /Users/mickey/CTW/Java
   /Users/mickey/CTW/Java/Helpers
   and save it.
   ```
4. Restart matlab (This is unfortunately necessary for matlab to reread the classpath.txt file, but from now on you can forget about it, that is until you install a new version of matlab)
5. Add the folder
   ```
   /Users/mickey/CTW/matlab
   ```
   to your matlab path (use from matlab desktop File->Set path).
6. Test it: in matlab write:
   ```
   >> s = [5 23 28 41 50 63 73 77 82 85 88 89 99 103 118 127 130 142
   149 155];
   >> entropy_ctw(s,0,160,2,10)
   ```

```
    ans = 423.6299
```

Check out the the other functions using:
```
>>help  mutual_information_ctw
for example you can test it by:
>> s1 = s+rand(size(s));
>> [mi,h,ch,chshuffle] = mutual_information_ctw(s,s1,0,150,2,15,0)
```

and similarly
```
>> help conditional_entropy_ctw
```

Non matlab use:
The java classes can be used directly from the shell or from shell script. For that the $CLASSPATH system environment variable should be set to include the three folders mentioned above (the Java folder of the package, the mpjava/src and the Helpers). Note that mac, and unix are using different syntax to define CLASSPATH than windows.

Check out the file
```
running_from_shell_example.csh
```
for an example and more details.