Fourier Transform and Python

Exercise 4 Describe the structure of a pattern classification system and give detailed information about each module.

Exercise 5 Familiarize yourself with NumPy in Python. If you are already familiar with MatLab, you can find a comparison of MatLab and NumPy commands on this website: `http://mathesaurus.sourceforge.net/matlab-numpy.html`. A tutorial is also available on this website `http://www.python-course.eu/numpy.php`.

What is the distinction between the data types `array` and `matrix`? Why is this important?

Exercise 6 Plot a sinus curve function with an amplitude of 1, frequency 2 Hz and a phase shift of $1\,\pi$ in the range $[0, 5]$.

Exercise 7 **Programming Task:** Download the fourier transform example from the exercise lesson (available on the exercise page).

Change the program to compute and plot the fourier transform of a square wave. You can create a square wave using the function `signal.square`. Take a look at the documentation page for this function (`http://docs.scipy.org/doc/scipy-0.15.1/reference/generated/scipy.signal.square.html`)