

### **Homework: Community Detection Using Spectral Graph Theory**

1. Check the Assignment Schedule for the DUE date.
2. For each exercise, submit the script, the output of running this script, and the answers to the questions (if applicable).
3. Submit a single html file via Moodle (instructions below).

**Programming Environment:** Code your script using Python. You will likely want to use the [scikit-learn package](#) as well as [numpy](#). Scikit-learn will give you access to various data mining functions, such as [KMeans](#). Numpy is a generic package for scientific computing, which may be useful for dealing with matrices, for example.

### **Project Details:**

For this project, we will use IPython notebooks. IPython notebooks can be thought of as a more advanced interactive shell where you can intermix regular text, code snippets, and the results from that code. This makes it a really powerful tool for interactively exploring the data, trying different data mining techniques, and taking notes.

To run an IPython notebook, run the following command:

```
$ ipython notebook
```

A new window should be opened in your browser. From here you can open an existing IPython notebook or create your own notebook. Open the IPython notebook included with this project (the .ipynb file), there will be instructions there.

Once you have finished all your code and have answered all your questions, you will need to convert your notebook to an html file for submission. To do this run the following command:

```
$ ipython nbconvert h4.ipynb --to html
```