# W1005 – Fall 2014
# Final Project

## Project Description:

1. Your final project consists of two parts: 1-2 page write-up (pdf format) describing your problem, and your code (implementation).
2. Please see instructions and due dates on the course website.
3. You may choose to work on any problem you wish. It can be an original problem, or a well known one. You can find some suggestions below.
4. The amount of work you should do on your project (the implementation part) depends on whether you are working individually or in a group. In general, the your grade is based on several factors:
    - Is the problem/concept interesting/original?
    - How complete/effective/clean is the implementation?
    - Have you successfully used functionality which was not discussed in class?
5. The write-up should include three sections:
    a. Problem summary: a detailed description of your problem.
    b. Solution approach: your approach for solving the problem.
    c. MATLAB functionality: a list of functions/structures/aspects of MATLAB you intend to use. It is sufficient to mention only the major/interesting components.
6. If you problem requires any input files/data or creates data/plots/figures, you should include these in your submission along with your code.
7. You may use code from outside sources (see link on the website) as long as you acknowledge this clearly in your write-up.
8. Make sure to document your code properly.

## Project Ideas:

This is a short list of ideas you could consider for your project:

1. *Data analysis:* choose a source of data. Process the data into the appropriate format for your task. Analyze the data, or apply your choice of algorithms to it. Output your conclusions (visualization, plots, stats). For this option, you'd have to supply the data (whether its toy or real data).

2. *Formulating an original optimization problem:* consider a problem in which the "user" desires multiple "resources" but has a limited "budget" to spend on them. This is a typical setting of an optimization problem. Your write-up should consist of a clear formulation and perhaps some pseudo-code (see lecture slides). You code should implement and solve the optimization problem. You could illustrate the solution using plots, and discuss different cases depending on your input.

3. *Design/adapt an original/well known algorithm:* for a particular task or type of data, using off-the-shelf algorithms may not be viable. Therefore, you could propose a modification to an existing algorithm, implement it and demonstrate the success/failure of the solution compared to the standard approach (even good ideas might not work!).