

MS4327 Optimisation Project 2018

March 26, 2018

You are asked to write Matlab code to perform the following tasks: (use the robust linesearch code to be found at <http://jkcray.maths.ul.ie/ms4327/m-files/LineSearch/>).

1. Implement each of the of the following algorithms :
 - the SDM
 - Newton’s method
 - the BFGS algorithm.
 - the inverse BFGS algorithm.
 - the DFP algorithm.
 - the inverse DFP algorithm.
2. Write a top-level script that calls each of your selected six algorithms.
3. Now run your code for $n = 10$ and gather data with multiple runs of your code that allows you to draw conclusions re the relative performance of the six algorithms.
4. Use the `perf.m` Matlab m-file at <http://jkcray.maths.ul.ie/ms4327/perf.m> and documented at <http://jkcray.maths.ul.ie/ms4327/DolanMor.pdf> to produce “performance plots” which allow your six competing methods to be compared graphically.
5. See <http://jkcray.maths.ul.ie/ms4327/perf.png> for an example of the output that `perf.m` can produce.
6.
 - You should submit a single zip file containg your m-files together with a short report in pdf format (generated using \LaTeX) by midnight on Sunday 22 April (Week 12).
 - The report should include the graphics generated together with explanation of your code and analysis of the results.
 - A maximum of 30% of the marks for the module will be awarded for your completed project.
 - The clarity of your code and of your report will be taken into account.