COMPARISONS BETWEEN NEWTON AND QUASI-NEWTON METHOD IN SOLVING UNCONSTRAINED OPTIMIZATION PROBLEMS

NAZNIN FAIQA BINTI KHIRUL FOZI
HANIS SOFIA BINTI MOHD RODI

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DECLARATION BY CANDIDATE

We certify that this report and the project to which it refers is the product of our own work and that any idea or quotation from the work of other people, published or otherwise are fully acknowledged in accordance with the standard referring practices of the discipline.

HANIS SOFIA BINTI MOHD RODI

2016299256

11 JULY 2019

NAZNIN FAIQA BINTI KHIRUL FOZI

2016299226

11 JULY 2019

ABSTRACT

Newton and Quasi-Newton methods are widely used in solving unconstrained optimization problems. The solution to optimization problems are known as local optimum solutions and global minimum solutions. For Newton method, if the initial points are far from the solution points, it may fail to converge. As an alternative, two Quasi-Newton methods which are Davidon-Fletcher-Powell (DFP) and Broyden-Fletcher-Goldfarb-Shanno (BFGS) methods were developed to overcome this problem. In this research, a comparison was made between Newton and Quasi-Newton method to determine the best method in solving unconstrained optimization problems. These methods were tested using six test functions with different initial points and their performance were compared based on the number of iterations, CPU time, and accuracy. This research also discussed about the convergence rate, global convergence and local convergence of the three methods. From numerical results, it has been shown that BFGS method is better compared to the other methods.

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