NUMERICAL SOLUTION OF UNCONSTRAINED OPTIMIZATION PROBLEMS USING THREE-TERM APPROACH OF RMIL CONJUGATE GRADIENT METHOD

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DECLARATION BY CANDIDATE

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

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ABSTRACT

Conjugate Gradient (CG) method have an important role in solving large scale of unconstrained optimization. In this study, four different three term of RMIL CG method are tested. The three term that used are RMIL2012 method, TTRMIL method, 3TNRMIL method and Method 4 proposed by Norddin et al. in 2018 with different value of γ. Twelve test functions with different dimensions and initial points is used in this study. The test functions are Extended Himmelblau function, Shallow function, Quadratic QF1 function, Dixon and Price function, Diagonal 4 function, Zettl function, Three Hump Camel function, Six Hump Camel function, Booth function, Matyas function, McCormick function and Trecanni function. The performance of the method is verified through comparison with RMIL2012 and Method 4 and comparison between three term of RMIL CG method in every case. For the first case, the value of β , s and μ that used in the line search are $\beta = 0.5$ $s = 1$ and $\mu = 0.0001$. For case 2 (a) and case 2 (b), different value of β from case 1 is used which is $\beta = 0.1$ and $\beta = 0.9$ while the value s and μ used is the same value as in case 1. For the last case which are case 3 (a) and case 3 (b), different value of s is used in this study which is $s = 0.1$ and $s = 100$ while the value of μ and β used is the same value as in case 1. The result has been obtained comprising the fulfilment of efficiency analysis based on the number of iterations and CPU time. Based on the result, the modified three term of RMIL methods performed the best compared to the classical CG method.

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