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A new method for large-scale unconstrained optimization

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Abstract

Conjugate gradient methods are probably the most famous iterative methods for solving large scale optimization problems in scientific and engineering computation, characterized by the simplicity of their iteration and their low memory requirements. It is well known that the search direction plays a main role in the line search method. In this paper, we propose a new search direction with the Wolfe line search technique for solving unconstrained optimization problems. Under the above line searches and some assumptions, the global convergence properties of the given methods are discussed. Numerical results and comparisons with other CG methods are given.

Keywords: Unconstrained optimization, Conjugate gradient method, strong Wolfe line search, Global convergence.

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