

Diagonal quasi-Newton method via variational principle under generalized Frobenius norm

ABSTRACT

In this work, we present a new class of diagonal quasi-Newton methods for solving large-scale unconstrained optimization problems. The methods are derived by means of variational principle under the generalized Frobenius norm. We show global convergence of our methods under the standard line search with Armijo condition. Numerical results are carried out in standard test problems and clearly indicate vast superiority over some classical conjugate gradient methods.

Keyword: Diagonal; Quasi-Newton updates; Variational principle; Weak secant equation; Inverse hessian approximation; Weighted frobenius norm