

A Quasi-Newton Method with Wolfe Line Searches for Multiobjective Optimization

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We propose a BFGS method with Wolfe line searches for unconstrained multiobjective optimization problems. The algorithm is well defined even for general nonconvex problems. Global convergence and R-linear convergence to a Pareto optimal point are established for strongly convex problems. In the local convergence analysis, if the objective functions are locally strongly convex with Lipschitz continuous Hessians, the rate of convergence is Q-superlinear. In this respect, our method exactly mimics the classical BFGS method for single-criterion optimization.

References

- [1] PRUDENTE, L. F.; SOUZA, D. R. , *A Quasi-Newton Method with Wolfe Line Searches for Multiobjective Optimization.* , J. Optim. Theory Appl.