Multi-step spectral gradient methods with modified weak secant relation for large scale unconstrained optimization

ABSTRCT

In this paper, we aim to propose some spectral gradient methods via variational technique under log-determinant norm. The spectral parameters satisfy the modified weak secant relations that inspired by the multistep approximation for solving large scale unconstrained optimization. An executable code is developed to test the efficiency of the proposed method with spectral gradient method using standard weak secant relation as constraint. Numerical results are presented which suggest a better performance has been achieved.

Keyword: Modified weak secant relation; Spectral gradient methods; Log-determinant norm; Large scale; Unconstrained optimization.