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INITIAL IMPROVEMENT OF THE HYBRID ACCELERATED GRADIENT DESCENT PROCESS

STEFAN PANIĆ, MILENA J. PETROVIĆ[✉] and MIROSLAVA MIHAJLOV CAREVIĆ

(Received 8 January 2018; accepted 21 May 2018)

Abstract

We improve the convergence properties of the iterative scheme for solving unconstrained optimisation problems introduced in Petrović *et al.* [‘Hybridization of accelerated gradient descent method’, *Numer. Algorithms* (2017), doi:10.1007/s11075-017-0460-4] by optimising the value of the initial step length parameter in the backtracking line search procedure. We prove the validity of the algorithm and illustrate its advantages by numerical experiments and comparisons.

2010 *Mathematics subject classification*: primary 65K05; secondary 90C30, 90C53.

Keywords and phrases: line search, gradient descent methods, Newton method, convergence rate.