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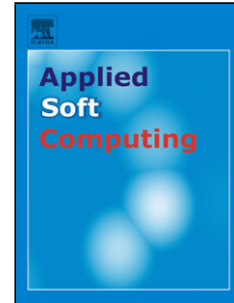
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Author: Mostafa Modiri-Delshad Nasrudin Abd Rahim

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Multi-objective Backtracking Search Algorithm for Economic Emission Dispatch Problem

Mostafa Modiri-Delshad ^{a,c*}, Nasrudin Abd Rahim ^{a,b}

^a UM Power Energy Dedicated Advanced Center (UMPEDAC),
Level 4, Wisma R&D University of Malaya, Jalan Pantai Baharu, 59990 Kuala Lumpur, Malaysia

^b Renewable Energy Research Group, King Abdulaziz University, Jeddah 21589, Saudi Arabia

^c Department of Electrical Engineering, Faculty of Engineering, University of Malaya,
50603 Kuala Lumpur, Malaysia

* Corresponding author: Tel.: +60 3 22463246; Fax: +60 3 22463257

E-mail addresses: modiri.d@ieee.org, nasrudin@um.edu.my

ABSTRACT—This paper presents the application of backtracking search algorithm (BSA) for solving an economic/emission dispatch (EED) problem as a multi-objective optimization problem. BSA is a newly developed evolutionary algorithm with one control parameter to solve numerical optimization problems. It utilizes crossover and mutation operators to advance optimization towards the optimal. The multi-objective BSA developed and presented in this paper uses an elitist external archive to store non-dominated solutions known as pareto front. The problem of EED is also solved by weighted sum method, which combines both objectives of the problem into a single objective. Three test systems are the case studies verifying the effectiveness of BSA. The results are compared with those of other methods in literatures and confirm the high performance of BSA.

Keywords— environmental concerns, economic dispatch, non-convex, transmission loss, backtracking search algorithm (BSA).

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