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Authors:

Zhiyong Luo, Qi Guo, Jie Zhao, Shensheng Xu

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Abstract

This paper presents a new version of Teaching Learning-Based Optimization (TLBO) algorithm to find the optimal parameters of Proportional Integral Derivative (PID) controller. The proposed algorithm is an altered version of dynamic group strategy TLBO (DGS-TLBO) and is named as modified dynamic group based TLBO (MDG-TLBO) algorithm. The proposed algorithm is tested on 12 benchmark functions to verify its efficiency over other procedures. The results show that the MDG-TLBO algorithm offers better solution quality and has better convergence rate. Finally, the proposed algorithm is tested on a three-tank liquid-level control system for the optimization of PID gains. The simulation result indicate that the proposed algorithm is an effective method in tuning of PID controllers to obtain better performance measures the error values and the time domain specifications.

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Index Terms

Computer Science

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Keywords

Teaching-learning-based optimization, Liquid-level controller