Artificial Immune System based PID Tuning for DC Servo Speed Control

International Journal of Computer Applications
Foundation of Computer Science (FCS), NY, USA

Volume 155

Number 2

Year of Publication: 2016

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10.5120/ijca2016912265

Abstract

In this paper, the application of the Artificial Immune System (AIS) algorithm for optimization problems is presented, DC Servo Motor (DCSM) speed control was taken as a case study. The PID controller was tuned using AIS algorithm by minimizing the Integral Time Absolute Error (ITAE). The results were compared with the results of the Ziegler-Nichols tuning method and it was obvious that the AIS gives better results. The AIS algorithm showed it has the ability to find the global optimum solution and it gave a response better than the response of the traditional tuning methods in terms of rise time, settling time, steady state error and overshoot.

References


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Index Terms

Computer Science
Circuits and Systems

Keywords

PID Controllers, Artificial Immune System (AIS), Ziegler Nichols (ZN), PID Optimization, DC Servo Motor (DCSM)