

Robust Fuzzy PID Stabilizer: Modified Shuffled Frog Leaping Algorithm

Authors : Oveis Abedinia, Noradin Ghadimi, Nasser Mikaeilvand, Roza Poursoleiman, Asghar Poorfaraj

Abstract : In this paper a robust Fuzzy Proportional Integral Differential (PID) controller is applied to multi-machine power system based on Modified Shuffled Frog Leaping (MSFL) algorithm. This newly proposed controller is more efficient because it copes with oscillations and different operating points. In this strategy the gains of the PID controller is optimized using the proposed technique. The nonlinear problem is formulated as an optimization problem for wide ranges of operating conditions using the MSFL algorithm. The simulation results demonstrate the effectiveness, good robustness and validity of the proposed method through some performance indices such as ITAE and FD under wide ranges operating conditions in comparison with TS and GSA techniques. The single-machine infinite bus system and New England 10-unit 39-bus standard power system are employed to illustrate the performance of the proposed method.

Keywords : fuzzy PID, MSFL, multi-machine, low frequency oscillation

Conference Title : ICECECE 2014 : International Conference on Electrical, Computer, Electronics and Communication Engineering

Conference Location : Paris, France

Conference Dates : September 22-23, 2014