

Comparison Between Genetic Algorithms and Particle Swarm Optimization Optimized Proportional Integral Derivative and PSS for Single Machine Infinite System

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Abstract : Abstract: Among the many different modern heuristic optimization methods, genetic algorithms (GA) and the particle swarm optimization (PSO) technique have been attracting a lot of interest. The GA has gained popularity in academia and business mostly because to its simplicity, ability to solve highly nonlinear mixed integer optimization problems that are typical of complex engineering systems, and intuitiveness. The mechanics of the PSO methodology, a relatively recent heuristic search tool, are modeled after the swarming or cooperative behavior of biological groups. It is suitable to compare the performance of the two techniques since they both aim to solve a particular objective function but make use of distinct computing methods. In this article, PSO and GA optimization approaches are used for the parameter tuning of the power system stabilizer and Proportional integral derivative regulator. Load angle and rotor speed variations in the single machine infinite bus bar system is used to measure the performance of the suggested solution.

Keywords : SMIB, genetic algorithm, PSO, transient stability, power system stabilizer, PID

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