Abstract

In this paper, an evolutionary algorithm-Invasive Weed Optimization (IWO) based power system stabilizer (PSS) is proposed for multi-machine power system. IWO is a derivative-free real parameter optimization technique that mimics the ecological behavior of colonizing weeds. Owing to its superior performance in comparison with many other existing meta-heuristics, it has used to search for optimal settings of PSS parameters. Eigen-value based objective function is considered to enhance system damping of electromechanical mode. The performance of proposed IWO-based PSS is tested and demonstrated under different loading conditions and disturbances for a four machine example power system. The Eigen value analysis and non-linear simulation results prove the effectiveness of the proposed IWO-based PSS design. The robustness of the design method is confirmed by testing the IWO based PSS performance under varying load conditions.

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Index Terms

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