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.
power engineering, 2nd edition.
- X. Zhang, Y. Wang, G. Cui, Y. Niu, J. Xu, Application of a novel IWO to the design of

**Index Terms**

Computer Science

Power Systems

**Keywords**

PSS design  Invasive Weed Optimization  Dynamic stability