Abstract

Power system stabilizers (PSSs) are used to enhance the damping during low frequency oscillations. Artificial intelligence techniques provide one alternative for stability enhancement and speed deviation ($\Delta w$). In this paper we have applied Fuzzy based and Support Vector Machine (SVM) based approach to PSS for Single Machine Infinite Bus (SMIB) System. The proposed method using SVM techniques achieves better improvement than Fuzzy Based power system stabilizer with reference to Conventional PSS with same condition applied. In the present paper, Fuzzy based PSS Simulink model using triangular membership function (FPSS) and novel approach for on-line adaptive tuning of Support Vector Machine based Power System Stabilizer (SVMPSS) using sigmoid kernel function is presented. The simulation results of the proposed SVMPSS and FPSS are compared to those of conventional stabilizers in for a SMIB system. The results show the Robustness of the proposed SVMPSS and its ability to enhance system damping over a wide range of operating conditions and system parameter variations.
Fuzzy and SVM based Power System Stabilizer for Single Machine Infinite Bus System


Index Terms
Computer Science
Fuzzy Systems
Keywords

Power system stabilizer, SMIB System, Fuzzy logic, Support Vector Machine, Dynamic stability, SIMULINK