A Fuzzy Basis Function Network For Generator Excitation Control

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Summary

A fuzzy basis function network (FBFN) based power system stabilizer (PSS) is presented in this paper. The proposed FBFN based PSS provides a natural framework for combining numerical and linguistic information in a uniform fashion. The proposed FBFN is trained over a wide range of operating conditions in order to re-tune the PSS parameters in real-time based on generator loading conditions. The orthogonal least squares learning algorithm is developed for designing an adequate and parsimonious FBFN model. Time domain simulations of a synchronous machine equipped with the proposed stabilizer subject to major disturbances are investigated. The performance of the proposed FBFN based PSS is compared with that of a conventional power system stabilizer. The results show the robustness of the proposed FBFN PSS and its ability to enhance system damping over a wide range of operating conditions and system parameter variations