

A Hybrid Neuro-Fuzzy Power System Stabilizer For Multimachine Powersystems

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Summary

A fuzzy basis function network (FBFN) based power system stabilizer (PSS) is presented in this paper to improve power system dynamic stability. 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 machine loading conditions. The orthogonal least squares (OLS) learning algorithm is developed for designing an adequate and parsimonious FBFN model. Time domain simulations of a single machine infinite bus system and a multimachine power system subject to major disturbances are investigated. The performance of the proposed FBFN PSS is compared with that of conventional (CPSS). The results show the capability of the proposed FBFN PSS to enhance the system damping of local modes of oscillations over a wide range of operating conditions. The decentralized nature of the proposed FBFN PSS makes it easy to install and tune

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