عنوان مقاله:

Adaptive RISE control for chaotic oscillation in power system using wavelet neural network identifier

محل انتشار:

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خلاصه مقاله:

Chaotic behavior is an unfavorable phenomenon in power systems which can cause irrecoverable damages. Such dynamic in power systems is a great threat for stability, thus controlling of this dynamic behavior is great importance. Considering the chaotic dynamics and the unpredictable behavior of this phenomenon, implementing its exact mathematical model has some difficulties, thus controlling this phenomenon is difficult due to existence of un-modeled nonlinear terms or non-structural uncertainty. In this paper an adaptive-predictive control scheme is proposed which shows suitable ability in controlling dynamics without sufficient information by employing wavelet neural network as the identifier. The neural network employed in training process learns to estimate the output behavior of the system one step ahead and then to adjust the controller s coefficients using the proposed adaption rules. In order to control the chaos, a robust controller called RISE (robust integral of the sign of the error) feedback is used which benefits a robust pattern for controlling uncertain dynamics in its control scheme. Performance of this control scheme is compared with adaptive PID controller and the simulation results confirm the effectiveness of the proposed method.

کلمات کلیدی:

power system; wavelet neural network; RISE (robust integral of the sign of the error) feedback; Chaos

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