

Design of an Augmented Automatic Choosing Control with Constrained Input by Lyapunov Functions Using Gradient Optimization Automatic Choosing Functions

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Abstract : In this paper a nonlinear feedback control called augmented automatic choosing control (AACC) for a class of nonlinear systems with constrained input is presented. When designing the control, a constant term which arises from linearization of a given nonlinear system is treated as a coefficient of a stable zero dynamics. Parameters of the control are suboptimally selected by maximizing the stable region in the sense of Lyapunov with the aid of a genetic algorithm. This approach is applied to a field excitation control problem of power system to demonstrate the splendiddness of the AACC. Simulation results show that the new controller can improve performance remarkably well.

Keywords : augmented automatic choosing control, nonlinear control, genetic algorithm, zero dynamics

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