

Intelligent ship motion control using output recurrent cerebellar model
articulation controller

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Abstract

This paper presents an output-recurrent-cerebellar-model-articulation-controller (ORCMAC)-based control system for ship motion control. In the proposed control system, an ORCMAC is the main tracking controller used to mimic an ideal control law and a compensation controller is designed to compensate for the difference between the ideal control law and ORCMAC. The on-line adaptive laws of the control system are derived based on the Lyapunov stability theorem, so that the stability of the system can be guaranteed. Finally, the proposed control method is applied for ship heading control. Simulation results show that the proposed control system can achieve satisfactory tracking performances.

Keyword : Adaptive control, neural network, cerebellar model articulation controller, Lyapunov stability theorem, ship motion control.