

Lateral Control of Electric Vehicle Based on Fuzzy Logic Control

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Abstract : Aiming at the high nonlinearities and unmatched uncertainties of the intelligent electric vehicles' dynamic system, this paper presents a lateral motion control algorithm for intelligent electric vehicles with four in-wheel motors. A fuzzy logic procedure is presented and formulated to realize lateral control in lane change. The vehicle dynamics model and a desired target tracking model were established in this paper. A fuzzy logic controller was designed for integrated active front steering (AFS) and direct yaw moment control (DYC) in order to improve vehicle handling performance and stability, and a fuzzy controller for the automatic steering problem. The simulation results demonstrate the strong robustness and excellent tracking performance of the control algorithm that is proposed.

Keywords : fuzzy logic, lateral control, AFS, DYC, electric car technology, longitudinal control, lateral motion

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