

智能车辆弧线跟踪控制算法

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收稿日期 2005-9-27 修回日期 2006-3-2 网络版发布日期 2006-9-5 接受日期

摘要 建立了车辆预瞄运动学模型, 通过最优控制选取切换超平面, 采用滑模变结构控制实现了智能车辆弧线跟踪中弧线曲率小变化时的导航控制。根据模糊控制快速跟踪弧线曲率大变化时的导航路径, 结合车辆转向系统当前状态和最快动态响应能力建立了智能车辆弧线跟踪时的变结构控制输出集。仿真分析和实验验证了该融合控制算法在智能车辆弧线跟踪过程中的平稳性和可靠性。

关键词 [自动控制技术](#) [预瞄运动学](#) [滑模变结构控制](#) [模糊控制](#) [状态特征空间](#) [智能车辆](#)

分类号 [TP242.62](#)

Curve trace tracking control algorithm of intelligent vehicle

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Abstract A preview kinematics model of the vehicle was established, a switching hyperplane was designed by the optimal control theory, and adopting the sliding variable structure controller, a navigation control of the curve trace tracking of the intelligent vehicle was realized when the change of the curve trace curvature is little. When the change of the curve trace curvature is much, the navigation path is tracked quickly and steadily according to the output of a fuzzy controller. Combined with the present state and the quickest dynamic response capability of the vehicle steering system, a variable structure control output set of the intelligent vehicle curve trace tracking was built. The simulation and experiment verified the steadiness and robustness of the suggested fusion control algorithm in the intelligent vehicle curve trace tracking process.

Key words [automatic control technology](#) [preview kinematics](#) [sliding variable structure control](#) [fuzzy control](#) [characteristic space of state](#) [intelligent vehicle](#)

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