论文与报告

宏观交通流模型参数的迭代学习辨识方法

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摘要
利用宏观交通流行为的重复性特性, 将快速路宏观交通流模型转换为包含此模型的一般离散时间非线性系统模型, 然后针对此一般离散时间非线性系统模型设计了基于迭代学习的宏观交通流模型参数辨识算法. 严格的理论推导证明了这种参数辨识方案的收敛性和鲁棒性. 仿真结果验证了该算法的有效性.

关键词　宏观交通流模型　迭代学习控制　参数辨识　重复性

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Iterative Learning Identification Method for the Macroscopic Traffic Flow Model

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Abstract
By transforming the macroscopic traffic flow model into a more general discrete-time nonlinear system model, an iterative learning identification method is developed to estimate the parameters of the more general discrete-time nonlinear system, so the macroscopic traffic flow parameters as well, based on the repeatability of the macroscopic traffic flow behavior in a freeway. With rigorous analysis, it is shown that the proposed learning identification scheme can guarantee the convergence and robustness. A number of simulation results are provided to demonstrate the efficacy of the proposed approach.

Key words　Macroscopic traffic flow model　iterative learning　parameter identification　repeatability

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