基于ANFIS的高速公路车辆跟驰模型与仿真

Freeway Car-following Model and Simulation Based on Adaptive Neuro-

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中文摘要

　　为了更好地描述高速公路上驾驶员在车辆跟驰过程中表现出来的模糊、不确定性的行为特征，采用自适应模糊神经网络ANFIS对采集到的跟车数据进行降噪，消除外界因素的干扰，从而恢复数据的原始信息；根据信号处理方法，利用相关函数计算出驾驶员在跟驰过程和后车速度作为输入，以及后车加速度作为单输出的自适应模糊神经网络跟车模型. 最终，对该模型仿真训练，自适应生成驾驶员跟驰明，该网络模型能较客观地反映高速公路上的驾驶员跟驰行为.

英文摘要

　　In order to better describe the fuzzy and uncertain characteristics of drivers when following a leading car on system(ANFIS) was applied to the car-following model. Firstly, the real-time car-following data collected by the five-in order to eliminate the disturbance from the surrounding and recover the initial information of data. Meanwhile, the correlation function in term of signal processing method. Then, the car-following model based on ANFIS was developed w leading vehicle and following vehicle and speed of following vehicle as inputs and car-following acceleration as the adaptive rule of drivers' car-following behavior was simulated and trained to compare with General Motors based car on ANFIS proves to be able to reflect the driving behavior of real freeway situaton.