

异构车联网中基于模糊层次分析的垂直切换算法

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摘要: 异构车联网中车辆终端分布不均匀会导致切换失败率高及网络吞吐量下降, 针对此问题, 本文提出了一种基于模糊层次分析的垂直切换算法. 首先对候选网络进行筛选, 对网络筛选所依据的条件是切换时刻对于候选网络负载状态的预测, 然后利用模糊层次分析法(fuzzy analytic hierarchy process, FAHP)确定各属性权重, 并利用逼近理想解排序(technique for order preference by similarity to ideal solution, TOPSIS)算法进行判决, 选取最优网络进行切换. 仿真结果表明, 在不同车辆终端数量的场景下, 本文算法能够降低切换失败率, 减少切换时延, 提高系统的网络吞吐量.

关键词: 异构车联网; 垂直切换; 模糊层次分析法; 逼近理想解排序; 网络筛选

Vertical Handoff algorithm Based on FAHP for Heterogeneous Internet of Vehicles

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Abstract: In order to deal with the problem of heterogeneous distribution of vehicle terminals in heterogeneous IoV(Internet of Vehicles), which leads to the high switching failure rate and the decrease of network throughput, a vertical switching algorithm based on fuzzy analytic hierarchy process(FAHP) is proposed in this paper. Firstly, through predicting the switching time for the candidate network load state, the vertical switching algorithm to select adaptive network. And then use FAHP to determine the weight of each attribute. Finally, make use of technique for order preference by similarity to ideal solution (TOPSIS) algorithm to decide the optimal target network. The simulation results show that the proposed algorithm can reduce the switching failure rate, reduce the switching delay and improve the network throughput of the system under different vehicle terminal scenarios.

Key words: Heterogeneous IoV; Vertical handoff; Fuzzy Analytic Hierarchy Process; Technique for Order Preference by Similarity to ideal Solution; network filtering

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