

# 异构车联网中基于 Markov 决策的最优网络选择

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**摘要:** 在基于 V2V 和 V2X 的异构车联网系统中, 车辆需要在各网络之间选择最优网络, 针对网络选择技术普遍不能满足网络和车辆状态的随机无记忆性以及网络选择后状态的转移性, 提出了基于 VMDP 的最优决策算法. 该算法建立了 VMDP 状态空间以及状态转移概率矩阵, 并且利用 VIA 求得最优网络选择策略. 与其他算法进行性能对比, 仿真结果表明该算法不仅能有效地实现车辆的最优网络选择, 而且在通信链路质量和切换次数等性能上优于对比算法 10%~30%, 有效地提高了车辆通信性能.

**关键词:** V2X; 网络选择; VMDP; 状态转移; VIA

## An MDP-Based Optimal Network Selection Algorithm

### for Heterogeneous IoV

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**Abstract:** In the V2V and V2X-based heterogeneous vehicular networking system, the vehicles need to select the optimal network, between each network. For network selection techniques generally can't meet the random and memoryless states of the networks and vehicles, and can't predict the states transition, network optimal decision algorithm based on VMDP is proposed. The algorithm established the VMDP state space and state transition probability matrix, and used VIA to get the optimal network selection strategy. Through the performance comparison with other algorithms, the simulation results show that the algorithm can not only effectively achieve the vehicle optimal network selection, but also achieve an improvement of 10% ~ 30% on the communication link quality and vehicular switching times. The proposed algorithm can effectively improve the performance of vehicle communication.

**Key words:** V2X; network selection; VMDP; state transition; VIA

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