عنوان مقاله:

Adaptive and Cooperative Multi-Agent Fuzzy System Architecture for Traffic Light Control

محل انتشار:

دوازدهمین کنفرانس دانشجویی مهندسی برق ایران (سال: 1388)

تعداد صفحات اصل مقاله: 6

نویسندگان:

Fatemeh Daneshfar - *University of Kurdistan*

Fardin Akhlaghian - *University of Kurdistan*

Fathollah Mansoori - *Islamic Azad University of BuinZahra*

خلاصه مقاله:

The traffic congestion problem in urban areas is worsening since traditional traffic signal control systems cannot provide efficient traffic control. Therefore, dynamic traffic signal control in Intelligent Transportation System (ITS) recently has received increasing attention. This study devised an adaptive and cooperative multi-agent fuzzy system for a decentralized traffic signal control. To achieve this goal we have worked on a model, which has three levels of control. Every intersection is controlled by its own traffic situation, its neighboring intersections recommendations and a knowledge base, which provides the traffic pattern of each intersection. The proposed architecture comprises a knowledge base, prediction module and a traffic observer that provide data to real traffic data preparation module, then a decision-making layer takes decision to how long should the intersection green light be extended. The proposed architecture can achieve dynamic traffic signal control. We have also developed a NetLogobased traffic simulator to serve as the agents' world. Our approach is tested with traffic control of a large connected junction and the result obtained is promising; The average delay time can be reduced by 21.76% compared to the conventional fixed sequence traffic signal and 14.77% compared to the vehicle actuated traffic signal control strategy.

کلمات کلیدی:

MAS, Intelligent Transportation System, Fuzzy Control, Traffic Light Control