DESIGN OF SIGNAL FUZZY CONTROLLER OF SINGLE INTERSECTION IN INTELLIGENCE TRANSPORTATION SYSTEM

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ABSTRACT. According to the distribution of traffic flows in a single intersection in intelligent transportation system, and the vehicle length of the controlled phase and the neighboring phase, this paper proposes a signal fuzzy control algorithm and the designing scheme of a controller. It modifies the fuzzy rules in real-time and decides the allocation of green time, forms an effective, accurate and safe transportation system. The simulation shows that the proposed fuzzy control algorithm is better than the timed control and fuzzy control. It can alleviate the traffic conditions effectively.

Keywords: Intelligent transportation system, Fuzzy control, Single intersection

1. Introduction. Along with modernization developments of cities, intelligent transportation systems have received much attention in the field of transportation recently. Because of the demand of serious transportation and the pressure of environmental protection day by day, we use information technology, communication, computer technology, and control technology to develop the traditional transportation, enhance the efficiency of usage and the security of system resources, reduce the consumption of resources, and environmental pollution.

In view of the complexity of city transportation systems and the inherent flaw of traditional transportation control strategies, these factors cause the city transportation control to be faced with the mechanism transformation and new challenges. So developing the intelligent transportation system of a modern metropolis has received much attention from the research domain. Many scholars use fuzzy control to control the signal of intersections [1-5]. Although fuzzy control can obtain a satisfactory result of language description in complex system, the choice of the fuzzy rules is generally based on an operators’ behavior model or experts’ experience. These are more subjective and cannot obtain the best results [6-8]. Moreover, its quantification factors are also invariable and lack learning capability. These factors cannot be controlled effectively in complex intersections. However, the adaptive fuzzy system [9-11] has the fuzzy logic system of a study algorithm. Through studying, it uses real-time data information to adjust the controller parameters,