Traffic Signal Control for Urban Trunk Road Based on Wireless Sensor Network and Intelligent Algorithm

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Abstract- Based on the analysis for the present research on controlling urban trunk road, a intelligent control method for urban trunk road based on wireless sensor and fuzzy neural network was proposed. In this method, we took two layers of WSN structure. The first one was data collecting layer, which consisted of traffic information collecting nodes and sink nodes. Data collecting layer was responsible for collecting vehicle information at single crossing, transmitted to the second layer after data fusion. The second one was control layer, composed of traffic light controller nodes in which fuzzy neural controller was nested. Traffic light controller nodes were used to accept the traffic data detected by the first layer, and fuzzy neural controller determined the signal cycle at artery, and on-line adjusted the green ratio at all directions on crossroads to

accomplish traffic light control. Simulating results showed that the method is superior to the common fuzzy control, effectively reducing queue length, so as to reach the purpose of decreasing vehicle delay.

Index terms*: wireless sensor network, intelligent traffic, fuzzy neural network, queue length.*