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Retraction

Retracted: Research of Schema Evolution and Implementation Scheme Optimization in AI-Enabled Embedded Systems

Wireless Communications and Mobile Computing

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This article has been retracted by Hindawi, as publisher, following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of systematic manipulation of the publication and peer-review process. We cannot, therefore, vouch for the reliability or integrity of this article.

Please note that this notice is intended solely to alert readers that the peer-review process of this article has been compromised.

Wiley and Hindawi regret that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

[1] X. Zhang, Y. Zhang, F. Zhang, and X. Yang, "Research of Schema Evolution and Implementation Scheme Optimization in AI-Enabled Embedded Systems," *Wireless Communications and Mobile Computing*, vol. 2021, Article ID 3591427, 10 pages, 2021.

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Research Article

Research of Schema Evolution and Implementation Scheme Optimization in AI-Enabled Embedded Systems

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The demand of embedded artificial intelligence system for powerful computing power and diversified application scenarios will inevitably bring some new problems. This paper builds the system dynamics model of embedded system based on artificial intelligence (AI). By analyzing the causal relationship between the elements of the system dynamics model, the state equation is established, and the parameters are estimated and tested. At the same time, the influence of the model simulation experiment on the relevant factors is evaluated. The simulation results show that the proposed model is effective and efficient.

1. Introduction

With the rapid development of big data and deep neural network technology, artificial intelligence has made great breakthroughs in voice analysis, computer vision, and natural language processing and has been applied to smart city, smart home, and industrial manufacturing, which is gradually changing the operation mode of society and people's way of life. The demand of embedded artificial intelligence system for powerful computing power and diversified application scenarios will inevitably bring some new problems. From the perspective of the current urban development trend, urban development and expansion have sped up, and internal space resources have been maximized basically [1, 2]. Worse still, personalized transportation develops quickly, making the traffic conditions more and more complicated and traffic congestion more and more serious. In this context, the concept of intelligent transportation system (ITS) comes into being. In this age, artificial intelligence presents an application-driven trend of stepped-up breakthrough, and it is now deeply affecting the transportation management mode throughout the world [3]. As mainly reflected in its level of intelligence, the perception intelligence is becoming increasingly mature, and the cognitive intelligence continues to make breakthrough. The combination of big data and deep learning is the mainstream intelligent computing paradigm, and it has played a big role in the field of transportation. As a whole, the development of urban traffic control has basically gone through timing control, inductive control, adaptive control, and intelligent control [4]. As detection technology, communication technology, automatic control technology, and AI-related technology develop rapidly, urban traffic signal control system is also becoming more and more intelligent. With the new techniques such as AI, big data, and cloud computing being promoted and applied, ITS will become an effective mean to relieve and even resolve traffic congestion [5]. ITS can also be considered applying advanced science and technology into traffic-related fields and strengthening the correlation among vehicles, roads, and users so as to constitute a comprehensive traffic management system. With the help of big data and AI, we can manage and control the existing transportation networks in an effective, intelligent, and coordinated manner, and by integrating advanced AI with practical issues in city traffic, we can better solve the control and optimization problems in city transport [6, 7].

The special contributions of this paper include the following:

(i) This paper has introduced the principles and theories involved in ITS optimization scheme and made in-depth analysis and research of the development of traffic governance model from every viewpoint

(ii) This paper has summarized and concluded the generalized pattern of urban traffic governance and its evolution rule with a view to ITS and explored the congestion management mode and its evolution direction under ITS

(iii) This paper has used system dynamics model and made analysis from such aspects as traffic supply, traffic demand, and information technology. Besides, it has also analyzed the user behaviors of traffic participants in the microlevel with big data, made in-depth analysis of travel intensity, trip purpose, spatial and temporal distribution of travel, trip distance, and evolution of traffic structure, and identified the key influence factors in traffic, laying a foundation for the concrete analysis of traffic governance pattern

(iv) This paper has proposed an optimization scheme from planning and construction, innovation, and information technology. It has found the role AI technology plays in promoting the balance between traffic supply and traffic demand

The remainder of this paper is organized as follows. Section 2 discusses related works, and demand characteristics of ITS and its evolution are outlined in Section 3. ITS influence factors based on system dynamics model are presented in Section 4.1, Section 4.2 shows the experimental simulation results and analysis, and Section 5 concludes the paper with a summary and proposed directions for future research.

2. Related Work

Nowadays, urban modernization has encountered severe challenges from aggravated energy consumption, environmental pollution, traffic congestion, and public safety caused by continuously increased urban population, expandedly developed automobile industry, and unceasingly increased car ownership [8]. AI is to achieve in the computer such intelligent behaviors that surpass human perception, cognition, decision-making, and action; in short, AI means that a machine can do the things to be done by human intelligence. A smart city contains ITS, which is merely a part of smart city system, but ITS plays an indispensable part in the economic development of the city [9]. On the other hand, the construction level of the smart city which is closely related to the development level of ITS has in return boosted the development of ITS [10]. The rapid urbanization has been inevitably restricted by such problems as shortage of land and energy resources, and traffic problem is one of the most important problems which need to be solved by urban management. Urban traffic congestion has already become a major bottleneck that restricts the urban development and affects the quality of everyday life in today's society [11]. In the realistic plight that the number of automobiles has exceeded the carrying capacity of urban road networks, the common traffic jam generated in urbanization cannot be eradicated; instead, to relieve or alleviate the current traffic congestion, importance can be attached to effectively handling the traffic jam caused by emergencies [12]. ITS is a hotspot of the cross-disciplinary research involving computer, automatic control, and traffic engineering, and it has effectively combined advanced AI technology, automatic control technology, computing technology, information and communication technology, and electronic sensor technology together and then applied it into the entire ground traffic management system so as to build a real-time, accurate, and highly efficient comprehensive transportation management system which can be brought into play in a large scope and in an all-round manner [13, 14].

In ITS, man-machine fusion has become an important direction, and AI is now developing towards more fusion and interaction with conventional transportation; as a result, a new form of ITS rises [15]. In the 1950s and 1960s, AI technology had made preliminary development. Its expert system, artificial neural network, fuzzy logic, genetic algorithm, and other advanced technology have been applied in traffic engineering successively, greatly promoting ITS development [16]. Ever since the 1980s, the road traffic control technology of every country was developing from conventional control to information and intelligent control with the great help of information technology [17]. Then, ITS emerged. In the 1990s, Europe and America had come up with the concept of ITS. US Department of Transportation and ITS America had put forward the "*10-year Development Plan for Intelligent Transportation Systems in the United States*," and in this *Plan*, it is pointed out that the ITS in the US shall be a system to be planned and constructed as a whole, not by every region independently [18]. At present, US ITS includes 6 modules: traffic management, e-payment operation, public transport management and operation, emergency treatment, vehicle control and management, and safety management system [19]. Early this century, Japan has set up many monitors and radars on roads so that it can monitor road conditions and collect information at any time; meanwhile, it has also actively promoted ETC (electronic toll collection) on highways, which improved the utilization of toll roads. By virtue of these techniques, the Japanese government wants to build a world-leading ITS [20]. Europe has studied ITS a long time ago, especially in vehicle safety and environmental protection. Germany mainly conducts intelligent management over its spacious road networks, strengthens the construction of traffic information collection and release facilities, and widely applies GPS (global position system) and intelligent transportation guidance technology [21]. Australia has studied and promoted the Sydney Coordinated Adaptive Traffic System (SCATS), in which plenty of sensors and video surveillance devices are put on highway pavement and traffic thoroughfares, with an aim to collect the traffic flow information and road operation status, use the data processing technology systematically, and get adapted to traffic changes [22]. With the popularization and application of big data, 5 g communication technology, Internet of Things, cloud computing, artificial intelligence, and other new technologies in various countries, intelligent traffic management system will

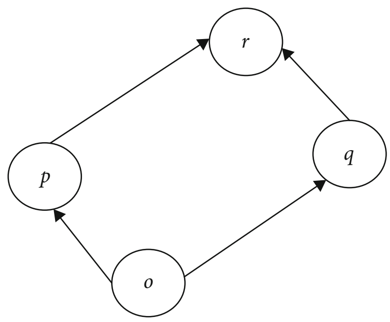

FIGURE 1: Four-section network.

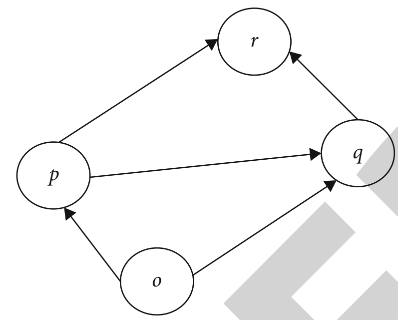

FIGURE 2: Five-section network.

become an effective mean to alleviate or even solve traffic congestion, which can be called "new fuel to promote urban mobility."

3. Demand Characteristics of ITS and Its Evolution

3.1. Supply and Distribution of ITS. The core of urban road supply is to enhance the traffic capacity of traffic networks, which is usually done by expanding the existing roads or building new roads. Before taking this method, a thorough understanding of traffic demands within the city must be obtained in order to satisfy the travel demands of urban residents and maximize urban traffic networks. In the relationship between the density of urban road networks and the traffic flows, when the density exceeds the critical value, the steady state is the complete impedance of zero flow. Without a thorough grasp of traffic demands in advance, traffic congestion may aggravate only by expanding the existing roads or building new roads to strengthen the capacity of traffic networks [23].

In traffic network $G(N, L)$, it is defined that N is the set of network nodes, and L is the set of road sections. Assume that there are n_W elements in set W of O/D pairs. Mark the set of all paths connecting O/D as P and the set of paths connecting O/D to w as P_w. Define c_a as the travel time on section a, C_p as the travel time on path p, f_a as the traffic flow on section a, x_p as the traffic flow on path p, and d_w as the traffic demand from O/D to w.

Assume that the impedance of road section a is related not only to the flow of this section but also to that of other sections. To facilitate the calculation, other sections only include the sections that are adjacent to a and on the same path as a and they are marked as

$$c_a = c_a(f_a, f_1, f_2, \cdots, f_\Lambda), \quad \forall a \in L, \tag{1}$$

where $\{1, 2, \cdots, \Lambda\}$ is the set of sections which are adjacent to a and on the same path as a. The relationship between the path and the flow of the section is as follows:

$$f_a = \sum_{p \in P} x_p \delta_{ap}, \quad \forall a \in L. \tag{2}$$

If section a is on path p, $\delta_{ap} = 1$; if not, $\delta_{ap} = 0$. The path impedance calculated by Equation (1) and Equation (2) is as follows:

$$C_p = \sum_{a \in K} c_a(x_1, x_2, \cdots, x_\Gamma)\delta_{ap}, \quad \forall p \in P. \tag{3}$$

Conservation of traffic flow:

$$d_w = \sum_{p \in P_w} x_p, \quad \forall w \in W. \tag{4}$$

Nonnegative constraints:

$$x_a \geq 0, \quad \forall a \in L. \tag{5}$$

Figure 1 is the four-section network. For a four-section network which includes one starting point o and one ending point r, Q is the constant of traffic demand.

The time of the section is related to the flows of all adjacent sections. At this point, the time of section can be presented as follows:

$$\begin{aligned} t_{op} &= \beta_1\left(\gamma f_{op} + f_{pr}\right), t_{qr} = \beta_1\left(\gamma f_{qr} + f_{oq}\right), \\ t_{oq} &= \alpha_1 + \beta_2\left(\gamma f_{oq} + f_{qr}\right), t_{pr} = \alpha_1 + \beta_2\left(\gamma f_{pr} + f_{op}\right), \end{aligned} \tag{6}$$

in which, t_{ij} represents the travel time between section ij, α is the time of free flow, β is the delay parameter, f is the traffic flow, and γ is the measurement factor to distinguish the impact of flows at different sections. So, the travel time of two paths from the starting point o to the ending point r can be shown as follows:

$$t_1 = t_{op} + t_{pr}, t_2 = t_{oq} + t_{qr}. \tag{7}$$

The path flow meets:

$$\begin{aligned} f_{op} &= f_{pr} = f_1, f_{oq} = f_{qr} = f_2, \\ Q &= f_1 + f_2. \end{aligned} \tag{8}$$

As the network has symmetry, the travel time t_1 of paths in the networks and the total impedance of T^4 the network under UE state are as follows:

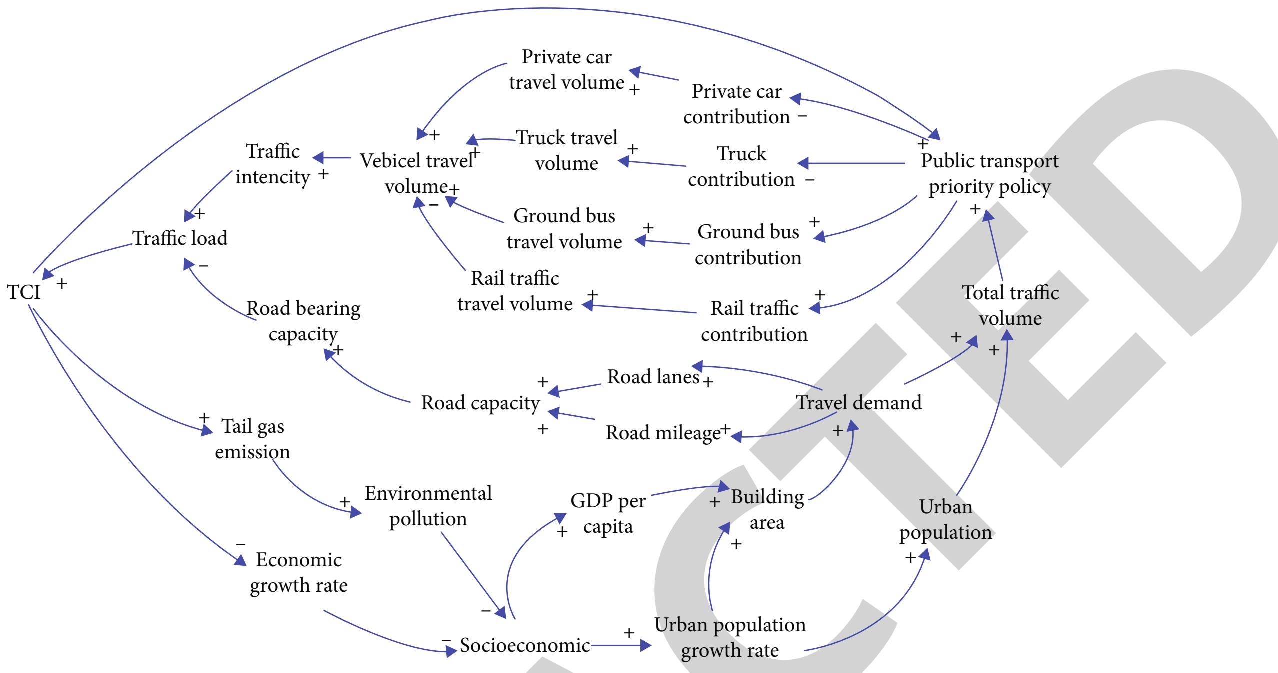

Figure 3: Cause-and-effect circuit diagram of megacity ITS.

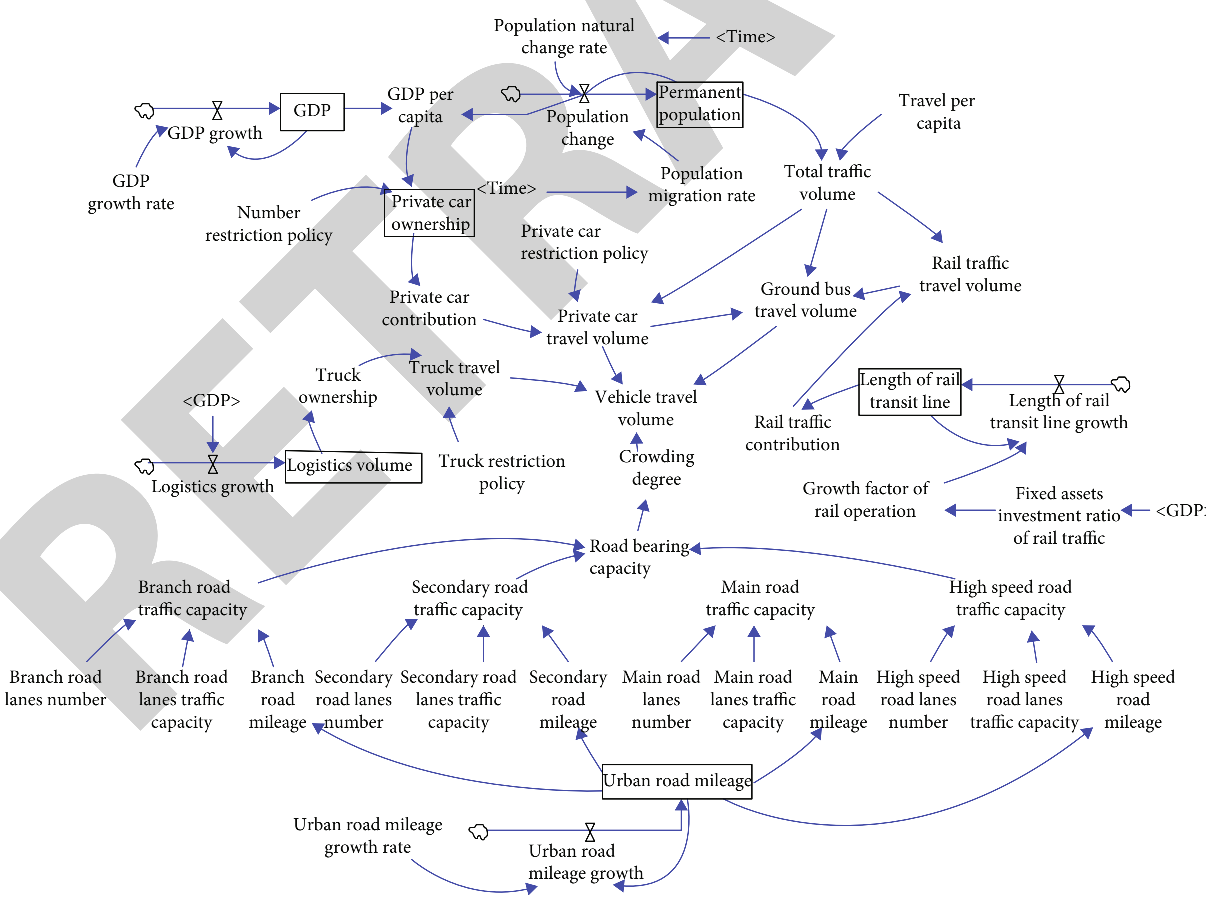

Figure 4: Stock flow chart.

Table 1: Description of model-related parameters.

Parameter or initial value	Value	Unit
Urban road mileage	5000.00	km
Urban road mileage growth rate	0.50	dmnl
High-speed road lanes traffic capacity	3000.00	Pcu/h
High-speed road lanes number	6.00	Lane(s)
Main road lanes traffic capacity	2800.00	Pcu/h
Main road lanes number	5.00	Lane(s)
Secondary road lanes traffic capacity	2600.00	Pcu/h
Secondary road lanes number	4.00	Lane(s)
Branch road lanes traffic capacity	2400.00	Pcu/h
Branch road lanes number	3.00	Lane(s)
Travel per capita	5.00	Times/day
Length of rail transit line	300.00	km
GDP growth rate	0.067	dmnl
Private car ownership	6210 thousand	Vehicle
Logistics volume	12,190 million	Ton

$$t_1 = t_2 = \frac{(\gamma+1)(\beta_1+\beta_2)Q}{2} + \alpha_1,$$
$$T^4 = \frac{(\gamma+1)(\beta_1+\beta_2)Q^2}{2} + \alpha_1 Q. \tag{9}$$

Figure 2 is the five-section network. When a four-section network becomes a five-section network, the function of section impedance has become

$$t_{op} = \beta_1\left(\gamma f_{op} + f_{pr} + f_{pq}\right),$$
$$t_{qr} = \beta_1\left(\gamma f_{qr} + f_{oq} + f_{pq}\right),$$
$$t_{oq} = \alpha_1 + \beta_2\left(\gamma f_{oq} + f_{pr}\right),$$

Table 2: Analysis results of stock flow chart.

Parameter	Simulation value	True value	Error
Permanent	2000.00	2153.60	0.0713
GDP	33577.05	35371.30	0.0507
Urban road mileage	7553.92	8000.00	0.0558
Logistics volume	4747.15	5000.00	0.0506

$$t_{pr} = \alpha_1 + \beta_2\left(\gamma f_{pr} + f_{op}\right),$$
$$t_{pq} = \alpha_2 + \beta_2\left(\gamma f_{pq} + f_{op} + f_{pr}\right). \tag{10}$$

The impedance of the new section and the relationship of the current traffic flows are as follows:

$$t_3 = t_{op} + t_{pq} + t_{qr},$$
$$f_{op} = f_1 + f_3, f_{pr} = f_1, f_{oq} = f_2,$$
$$f_{qr} = f_2 + f_3, f_{pq} = f_3, Q = f_1 + f_2 + f_3. \tag{11}$$

Make $t_1 = t_2 = t_3$ and show the flows of the paths in the five-section network under UE state:

$$f_1 = f_2 = \frac{(\gamma+1)(\beta_1+\beta_2)Q - (\alpha_1-\alpha_2)}{(\gamma+1)\beta_1 + (3\gamma+1)\beta_2},$$
$$f_3 = Q - 2f_1 = \frac{(-(\gamma+1)\beta_1 + (\gamma-1)\beta_2)Q + (\alpha_1-\alpha_2)}{(\gamma+1)\beta_1 + (3\gamma+1)\beta_2}. \tag{12}$$

The path time is represented as follows:

$$t_1 = t_2 = t_3 = \frac{\left(\gamma(\gamma+3)\beta_2^2 + 3\gamma(\gamma+1)\beta_1\beta_2\right)Q + ((\gamma+1)\beta_1 + (1-\gamma)\beta_2)(\alpha_1-\alpha_2)}{(\gamma+1)\beta_1 + (3\gamma+1)\beta_2} + \alpha_1. \tag{13}$$

When path 1 and path 2 have no traffic flow, $f_1 = f_2 = 0$, $f_3 = Q$ and $Q \le ((\alpha_1-\alpha_2)/((\gamma+1)(\beta_1+\beta_2)))$. When the third path also has no traffic flow, namely, $f_3 = 0$, $Q \ge ((2(\alpha_1 - \alpha_2))/((\gamma+1)\beta_1 - (\gamma-1)\beta_2))$, and both f_1 and f_2 are $Q/2$. So, in order to make these three paths have traffic flows, the traffic demand Q need to be within the scope of $(((\alpha_1-\alpha_2)/((\gamma+1)(\beta_1+\beta_2))), ((2(\alpha_1-\alpha_2))/((\gamma+1)\beta_1 - (\gamma-1)\beta_2)))$.

Represent the total impedance of the five-section network with T^5 and $T^5 = f_1 t_1 + f_2 t_2 + f_3 t_3$.

$$T^5 = (2\gamma\beta_1 + 2\beta_1 + 2\beta_2 + \gamma\beta_2)Q^2 + \alpha_2 Q,$$
$$\text{if } Q \le \frac{\alpha_1-\alpha_2}{(\gamma+1)(\beta_1+\beta_2)},$$

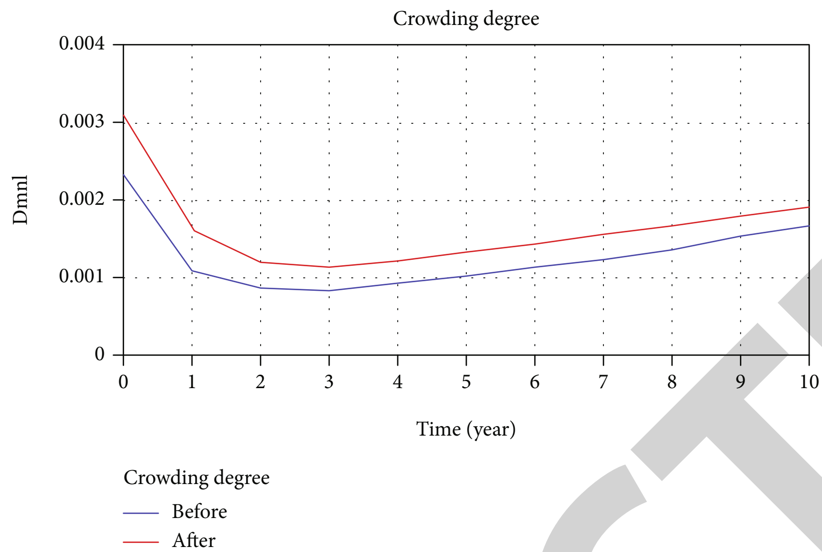

Figure 5: Crowding degree in different logistics volumes.

$$T^5 = Q\left[\frac{\left(\gamma(\gamma+3)\beta_2^2 + 3\gamma(\gamma+1)\beta_1\beta_2\right)Q + \left((\gamma+1)\beta_1 + (1-\gamma)\beta_2\right)(\alpha_1-\alpha_2)}{(\gamma+1)\beta_1 + (3\gamma+1)\beta_2} + \alpha_1\right],$$
$$\text{if } \frac{\alpha_1-\alpha_2}{(\gamma+1)(\beta_1+\beta_2)} < Q < \frac{2(\alpha_1-\alpha_2)}{(\gamma+1)\beta_1-(\gamma-1)\beta_2},$$
$$T^5 = \frac{(\gamma+1)(\beta_1+\beta_2)Q^2}{2} + \alpha_1 Q,$$
$$\text{if } Q \geq \frac{2(\alpha_1-\alpha_2)}{(\gamma+1)\beta_1-(\gamma-1)\beta_2}. \quad (14)$$

Make $T^5 > T^4$, and

$$Q \in \left(\frac{2(\alpha_1-\alpha_2)}{3(\gamma+1)\beta_1+(\gamma+3)\beta_2}, \frac{2(\alpha_1-\alpha_2)}{(\gamma+1)\beta_1-(\gamma-1)\beta_2}\right). \quad (15)$$

In other words, when the traffic demand Q is within the above range, to increase traffic supply will aggravate traffic jam [24, 25].

3.2. Evolution of Demand Characteristics. The supply of urban roads mentioned above belongs to government decision, and urban traffic demand is personal decision. Users play the role of pursuing the best personal interest in urban transportation (UE distribution). From a standpoint of game theory, many users will affect the capacity of traffic networks while pursuing the best personal interest, so the government needs to participate in the allocation of traffic resources and make decisions to optimize road resources in the macrolevel.

In UE distribution, the aim of every traveler is to minimize their travel time. $C_p(x*)$ represents the path impedance under UE state, the minimum path impedance is λ_w, and $x*$ is the traffic flow of the path. Then,

$$C_p(x^*) = \lambda_w, \quad \text{if } x_p^* > 0,$$
$$C_p(x^*) = \lambda_w, \quad \text{if } x_p^* = 0. \quad (16)$$

SO distribution is aimed at minimizing the total impedance of the system. $\widehat{C}_p(\cdot)$is the path impedance under SO state; μ_w is the path impedance of the minimal border, and SO distribution can be shown as

$$\widehat{C}_p(x^*) = \mu_w, \quad \text{if } x_p^* > 0,$$
$$\widehat{C}_p(x^*) = \mu_w, \quad \text{if } x_p^* = 0. \quad (17)$$

If traffic informationization is still in its infancy, traffic participants cannot share real-time information due to the fundamental attributes of transportation and neither can traffic users know about the travel demands of others; so, there exists a dynamic game of incomplete information between traffic actors, and they can only choose their travel modals and paths based on experience [26]. With the construction of smart city, ITS has developed unceasingly: traffic users can know the relevant travel information before they travel, and the dynamic game of incomplete information has been converted into the dynamic game of complete information, which will greatly reduce the travel cost and improve the traffic efficiency. Under this circumstance, the governance of traffic congestion has been developed from Traffic Demand Modal (TDM) to ITS.

4. Key Influence Factors of ITS and Analysis of Simulation Experiment

4.1. ITS Influence Factors Based on System Dynamics Model. Given the complexity and nonlinearity of urban transportation, this paper has studied the urban traffic congestion and its influence factors with system dynamics and with three parts: internal traffic factors, external traffic factors, and factors of traffic subject taking into consideration; it has built the system dynamic model for ITS. In this study, it will integrate many important elements including urban development, economic development, urban road supply, urban road

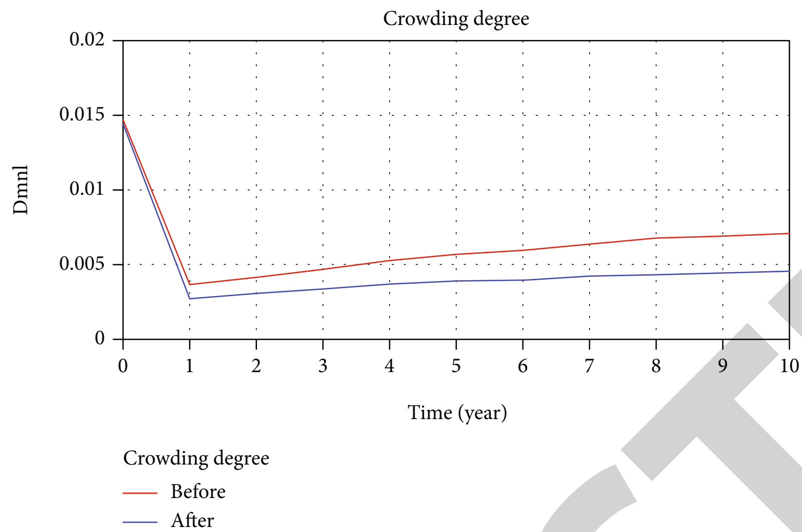

Figure 6: Crowding degree in different restriction policy.

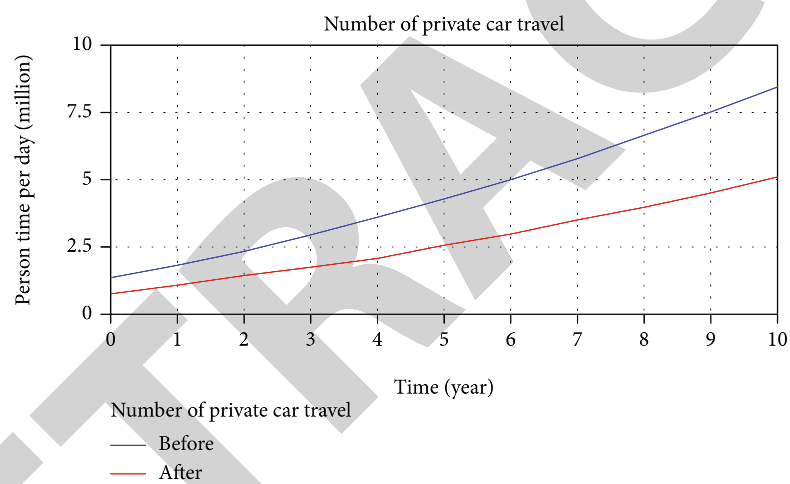

Figure 7: Private car trips under different traffic restriction policies.

demand, urban traffic operation elements, and environment elements; analyze the relationship between these elements; and study the impact different elements play on the whole system and the mutual impact between the elements by constructing the state equation and variable equation among different elements. Figure 3 is the cause-and-effect circuit diagram of megacity ITS. In Figure 3, the plus means the positive causal link, and the minus means the negative causal link. Figure 4 is the stock flow chart. Table 1 is the description of model-related parameters. Table 2 shows the analysis results of stock flow chart.

4.2. Simulation Experimental Results and Analysis. Integrating materials and data, the model in this paper has determined the relevant factors that affect urban traffic capacity. The first is the urban traffic state, including ground travel volume, transit travel volume, truck travel volume, and private car travel volume, and such factors as number restriction policy, traffic restriction policy, road bearing capacity, and scale will have certain impact on traffic intensity. Next is traffic demand, including the traffic mode split rate of ground bus, private car, and rail traffic. These factors will directly affect the vehicle travel volume. Traffic supply, including the bearing capacity and traffic capacity of different types of roads, directly affects the maximum bearing capacity of different levels of roads and plays an important role on urban traffic capacity. Figure 5 shows the crowding degree in different logistics volumes.

As shown in Figure 5, with the rapid development of life and the continuous living needs of people, trunk travel volume has taken up a bigger and bigger ratio among the urban traffic participants. Through model simulation, it can be seen that as the total cargo volume increases continuously, the urban crowding degree will also increase; so, to carry out the corresponding truck restriction measures will effectively improve urban traffic conditions.

In order to reduce the increasing number of private cars and buses, the number of vehicles will be reduced in

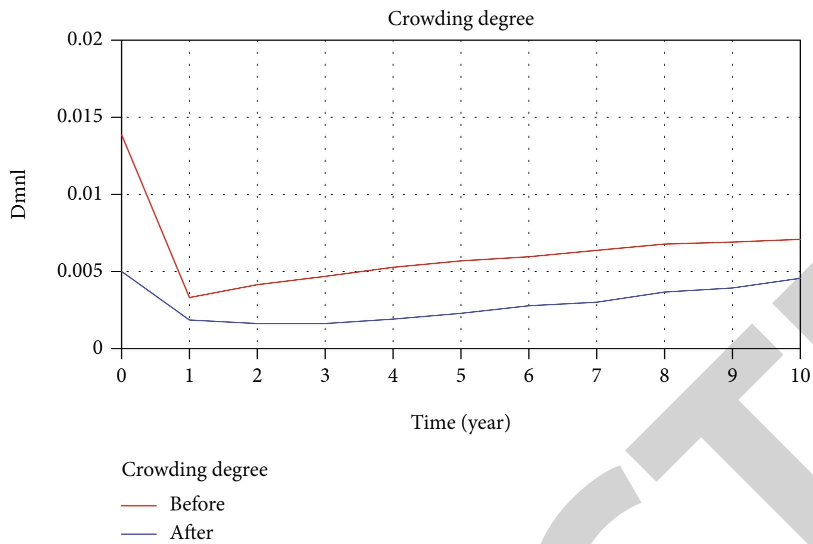

Figure 8: Congestion degree of rail transit lines with different lengths.

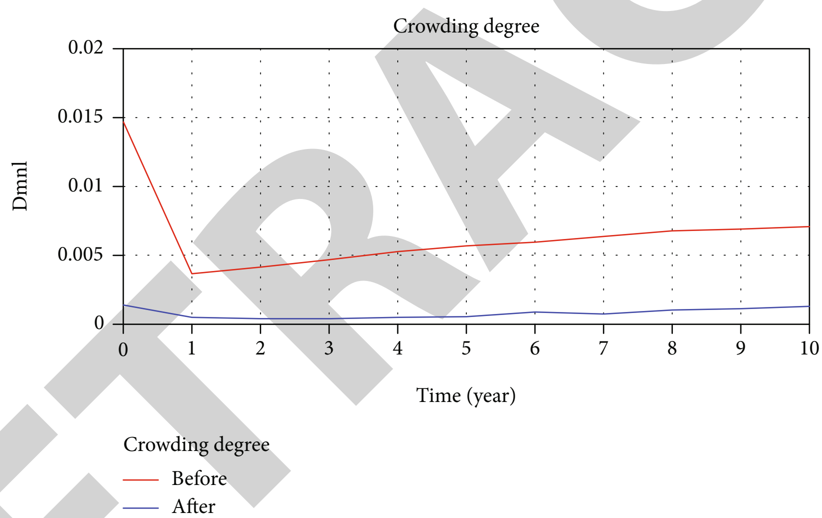

Figure 9: Congestion degree under different road capacities.

proportion after the implementation of the traffic restriction policy, so as to alleviate the total amount of urban traffic and reduce the degree of urban traffic congestion to a certain extent. It is clearly evident from Figure 6 that the proposed model simulation in the short term after the vehicle restriction policy is carried out, the number of vehicles decreases slightly, and in the long term, the vehicle volume increases compared with the decrease degree before restriction, and the crowding degree will gradually decrease over the increase of time. Therefore, the implementation of the number limit policy can significantly alleviate the urban traffic situation, and the effect will improve with the passage of time. Figure 7 shows the private car trips under different traffic restriction policies.

As shown in Figure 7, with regard to the traffic congestion caused by private car travel which takes up the largest part in urban traffic, the impact of restriction policy on private car travel can be seen with the model. Through model simulation, it is obvious that after the restriction measures are taken, the private car travel drops greatly and the fall gradually increases over the time when the policy is implemented. Figure 8 shows the congestion degree of rail transit lines with different lengths.

As shown in Figure 8, the development of urban mass transit can effectively improve urban traffic capacity. From the model simulation, it can be seen that rail transit in Wulan city plays an important role in easing traffic congestion. With the increase of rail transit mileage, the traffic structure changes greatly. The sharing rate is improved, and the coverage is expanded. More passengers choose rail transit, which significantly improves the congestion. Figure 9 shows the congestion degree under different road capacities.

The road volume, mileage, and traffic capacity will directly affect the road traffic capacity. The simulation results show that with the improvement of road carrying capacity, traffic congestion can be alleviated quickly in a short time and maintain this degree in a long time. Therefore, improving road capacity is the most fundamental and important way to improve urban traffic.

Through the above experimental results, it can be observed that the blind increase of traffic supply cannot solve traffic congestion fundamentally. In ITS construction, informationization technology can be utilized to collect real-time road traffic volume, road traffic load, travel demand generators, and other traffic data, to forecast the potential congestion points and guide the vehicle flow and give alarm, to achieve the traffic congestion governance pattern of emergency response, and to help the government to implement more rational and effective traffic control policies. The government needs to optimize public transport services. As the speed of urban expansion is far faster than the development of urban public transport, the development of public transport is mostly focused on the development of rail transit [27]. Rail transit construction takes a long time, and the line is fixed, which cannot meet the diversified travel needs of urban residents in the context of multicenter. Besides, conventional buses are not very appealing to residents due to the many stops, high crowding degree, and fixed lines. Therefore, to promote the development of public transportation shall be based on smart city.

With urban development, many new roads are built, and many traffic forks are set which is one of the biggest traffic congestion generators. To solve this problem, real-time traffic conditions of several adjacent forks shall be shown in each fork under the construction of smart cities so as to guide residents to avoid the roads with high traffic load, alleviate congestion pressure, and improve the utilization of other roads. On the other hand, adaptive control traffic light can be used to control the traffic flow in the fork. The relevant research of the impact of the traffic light played on road flow is very mature, and automatic control system can monitor road flows, calculate various vehicle-related data, and give autoalarm.

5. Conclusion

As science and technology develop consistently, such information technology as mobile Internet, the Internet of Things, big data analysis, and cloud computing are also becoming increasingly mature, and the information management solution which is applied in human society and life is improving constantly. In the future, these high-tech information technologies will be used to solve road traffic problems, which is also the future direction of smart city and its development. ITS has inherited the strengths of green and sustainable transport, and it has also made some innovations. Comparatively speaking, to greatly develop ITS can rapidly and effectively alleviate urban transportation problems with the minimum economic input. This paper, through the study of the internal and external factors of urban traffic, has summarized the key influence factors, made study from the urban development, urban economic level, external and internal urban resources, and traffic supply-and-demand level, constructed the model with system dynamics, and analyzed the relationship between urban traffic factors, so as to provide the theoretical bases and implementation path to ITS development and provide a relatively complete ITS implementation and optimization scheme.

Data Availability

The raw/processed data required to reproduce these findings cannot be shared at this time as the data also form part of an ongoing study.

Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this paper.

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