Research on the construction of "u-smart transportation system" under Artificial Intelligence technology

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Abstract. Artificial intelligence technology in the wisdom of the urban traffic development research plays an important role in urban traffic IOT technology through constructing the RFID tags, sensors, camera, GPS, intelligent recognizer based on sensing based on network information platform, complete traffic IOT information perception and gathering, analysis layer will real-time information into artificial intelligence algorithms library, sample library, information processing and comparison, the urban traffic information data visualization, and get the optimal treatment scheme, feedback to the practical application of terminal, to achieve the full link operation of artificial intelligence. As the subject, "people" always interact closely with "things" and "the state of things" and "intelligent interconnection". In the process of information interaction, the urban traffic information interconnection system under the artificial intelligence technology constitutes the core hub of smart city traffic, and it becomes possible to build an intelligent city "u-intelligent transportation system".

1. Introduction
The urban traffic problem is always a difficult problem to the development of the city universality, informatics in the city has become the focus of the research on urban core disciplines, on the basis of the construction of intelligent traffic is build wisdom city "artery" process, with the Internet of things, cloud computing, space information technology, big data platform, artificial intelligence, ETC become the key technology of intelligent city. Artificial intelligence technology provides innovative ideas of intelligence, precision, all-day monitoring and mitigation of urban traffic problems at the technical level [1], and discussing the construction of artificial intelligence and smart city is of great significance for enriching and developing the interdisciplinary subject of urban informatics.

2. Development of artificial intelligence extended urban transportation Internet of things technology
As an information-based network system connecting objects and objects, objects and people, artificial intelligence can convey the data characteristics of objects and object state to people in the first time in urban traffic, realize the interactive function of information between objects and people, and extend the application scope of transportation Internet of things technology.
2.1. Intelligent Internet of things technology builds information foundation for urban traffic data visualization.

The foundation of the intelligent Internet of things is the information status data reflected by the things themselves. When such data passes through the operation and mathematics of the database, there is no data feedback and collection, and the data visualization has no basis. The promotion and application of the intelligent navigation system APP can reflect whether the front route is congested at any time and the time of congestion. In addition, each user (person) can also report the road conditions when passing the road section through the feedback of the APP, and realize the "human-object-human" data interaction again [2]. The intelligent APP background can also simulate the road condition and carry out the road condition calculation based on the previously calculated mathematical basis. Meanwhile, according to the background processor, it can achieve the land line re-planning and real-time visual visualization of data through GPS and track calculation. In this process, the huge database of various collection operations of objects in the Internet of things becomes the basis of data visualization.

2.2. Artificial intelligence truly realizes the information interaction of "object - person - object". The purpose of visualization is to achieve information interaction, achieve information transmission and then achieve human supervision and control of objects. Under the intelligent IOT technology, the core of visual design is the interaction of information. [3] “IOT” breaks the limitations of time and space, and realizes the real-time and comprehensive information interaction of "IOT -- human". For example, the GPS global positioning system installed on the bus enables the bus system to fully track the bus network in the city. It can also reasonably adjust the number of buses according to the number, spacing and time difference of buses to realize energy saving and emission reduction. At the same time, the bus's own electricity, power and failure situation can also be grasped through corresponding sensors, so as to reduce the breakdown of the bus and complete omni-directional supervision of the bus.

2.3. Artificial intelligence technology promotes the generation of intelligent roads.

At present, the construction of intelligent road is mainly based on the pavement probe, laser photography, RFID label technology and GPS measurement and control technology to supervise and control the status information of urban roads and road vehicles. Seoul, South Korea, in the early years put forward the concept of road wisdom, in the road design with more technology, will affect technology such as RFID, sensor, infrared fusion to road construction, such as figure 1 sidewalk intelligent monitoring system, on the one hand, through the bearing road detection system to detect pedestrians pass by, automatic transmitting to the street light control system.

Figure. 1 Virtual intelligent pedestrian path under “IOT” technology.
On the other hand, the voice on both sides of the sidewalk automatically plays relevant information to remind pedestrians and drivers to pay attention to road conditions, so as to achieve the purpose of caring for human nature on the road. [4] At the same time, the intelligent statistical system to intelligent analysis on both sides of the road traffic situation, record trajectory number, display board intersection, traffic signal lights at the top of the search system according to the traffic analysis, intelligent traffic lights time regulation, such as north and south to have small car traffic, and when things come to course, adjust the corresponding traffic light time, went first to improve traffic flow, maximum efficiency to reduce congestion. For road congestion has formed the information processing center for decision analysis, on the basis of intelligent traffic network, and the next intersection traffic information arrangement comparison, using the data comparison analysis, optimal route choice, to implement traffic dense shunt, direct ease of a single, multiple, some intersections and road traffic pressure.

3. Artificial intelligence technology supports the construction of "u-smart transportation system"

The "u" in u-smart transportation system stands for "ubiquitous", meaning "ubiquitous". "Intelligent transportation system" to build the ubiquitous Internet of things intelligent digital transportation system, intelligent traffic all elements can produce information as well as becoming one of the main body of information interaction, such as real-time road load conditions, road travel intelligence information, intelligent traffic lights, intelligent recommendation system, pedestrian traffic accident monitoring and early warning, and so on. On the framework of "u-smart transportation system", the reverse construction mode of "from application to technology" should be the main research method to solve the practical problems of road traffic.

![Figure 2. Framework structure of "u-smart transportation system".](image-url)

As shown in figure 2, "u-smart transportation system" is composed of transportation infrastructure layer, traffic information transmission layer, traffic information processing layer and traffic information intelligence layer. Each level of traffic information system is infiltrated and supported by the Internet of things technology, and the Internet of things technology is implemented.
into specific functions. Modern significance of the application of the Internet of things technology level should increase the "intelligent interactive layer", namely "of content +" (H2T +), when the road traffic “IOT” information into the application layer, one is the class information to make decisions according to the specific situation, regulation, practice, to implement the state information change of people and things again and complete the whole process of artificial intelligence technology. [5] Therefore, the basic features of "u-smart transportation system" are circular, developing and dynamic (dynamic based on traffic information state itself) on the basis of intelligent Internet of things technology, and the intelligent layer is added to realize high efficiency, precision and real-time of traffic road information processing. In promoting the construction of u-smart transportation system, the following three points should be noted:

First, strengthen the research and infrastructure investment of urban road intelligent Internet of things technology. City "intelligent transportation system" is derived from the basis of based on can convey, the interactions of various kinds of information, in the traffic system, road vehicles and pedestrians, state information compound need huge information data base, it also requires the road infrastructure of the Internet of things technology increase investment in the corresponding hardware and software infrastructure. Under the background of smart city construction, urban road “IOT” technology should be guaranteed by means of government financial support, planning and layout, regulation and taxation. Plan urban traffic facilities as a whole, realize three-dimensional, multi-dimensional traffic road elements analysis and construction. In the early part of the city road planning, the intelligent road system should be diversified in order to establish the principle, the road into various elements of the Internet of things, in addition to the basic network structure, the light indicator, more should put the people and traffic, on the basis of the organic combination of the elements of two large implementation for real-time traffic, traffic humanization, intelligent impression of people. For example, building green and low-carbon friendly cities for walking and cycling; longitudinal analysis of pedestrian layer and driving layer, and carbon emission treatment and monitoring of motor vehicle layer.

Second, expand the information service data platform of the transportation Internet of things technology with artificial intelligence as the core, and drive the development of "u-smart transportation system" by application. The application of big data technology and its gradual entry into modern and contemporary social economy, politics, culture and many other fields, the practical purpose of "u-smart transportation system" is to realize the alleviation of traffic problems and apply it to actual traffic. The promotion of applied “IOT” technology is the cornerstone to promote the progress of the industry. Such as intelligent car networking, intelligent parking system, intelligent ship networking, intelligent road cleaning system, intelligent bicycle, intelligent travel planning APP and many other fields. "u-smart transportation system" is based on the traffic on the basis of intelligent data analysis, integration, processing, interactive system, the application level in addition to simple traffic elements, also in the rate of traffic mode of low carbon environmental protection development, green travel, urban ecological symbiosis city test plate has a considerable potential for development and development value.

Third, develop artificial intelligence technology and actively promote the "u-smart transportation system" pilot. Similar theories of "u-smart transportation system" were proposed relatively early. The level of theoretical research in relevant fields based on big data in China is higher than that in practice. [6] The reason is that core technical support and hardware basic resources are relatively weak. Implementation of "intelligent transportation system" pilot cities to become a key step for the development of transportation, wisdom city, in "u-smart transportation system", smart roads, mobile Internet technology, traffic information interactive processing system has become a “IOT” of core technology, while seeking theoretical breakthrough, should be more balanced, actively planning, have the courage to explore and practice "intelligent transportation system" actual pilot, based on pilot effect for scheduling, perfection and development of intelligent transportation “IOT” systems, to practice orientation, goal oriented, problem oriented promote perfection of "u-smart transportation system" development.
4. Conclusion

Under the background of big data, artificial intelligence technology to the extension and development of Internet technology has made rapid progress makes the research of urban traffic intelligence, strengthen the development of intelligent transportation “IOT” systems and support, actively explore the breakthrough wisdom urban transport network information system of the developmental disorder, promote the intelligent traffic network information system of practical application into an effective measure to alleviate the urban traffic problem. The era of in urban intelligent traffic network, traffic elements with man's information exchange is no longer the main purpose of the intelligent traffic “IOT” system, realizes the transportation and information interaction between people is the foundation purpose, let all kinds of traffic factors have humanity, wisdom, development characteristics, to apply the artificial intelligence technology to the "intelligent transportation system" of urban intelligent traffic problem needs to be further studied and direction.

Acknowledgments

The completion of this thesis is inseparable from the guidance of teachers, College of Data Science, City University of Macau.

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