

The Application and Research of Intelligent Technology in Automobile Engine Production Line

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Abstract: In the rapid development of Internet technology in our country, most industries have gradually become a development model with high demand for Internet technology. Especially for the automobile engine production line, the extensive use of intelligent technology can not only improve the practical production efficiency, but also ensure the overall production quality. As a derivative technology of the development of modern Internet information, intelligent technology is very important for the construction of modern transportation system. However, automobile driving as one of the most key travel tools for social residents. Although our country pays great attention to the application of artificial intelligence in automobile driving, the development and research process is very slow. Therefore, based on the understanding of intelligent technology content, this paper deeply discusses how to apply intelligent technology in the automobile engine production line according to the changes of automobile engine production line in recent years, so as to contribute to the construction and development of information transportation in various parts of our country.

Keywords: Intelligent technology; Car; The engine; Production line; Informatization; Transportation construction

1. Introduction

As the heart of the engine, the engine performance directly determines the safety and life of the car. Therefore, the relevant manufacturers should strengthen the monitoring of the automatic production line of the engine to truly realize the requirements of traceability, high precision and high standard. The automatic production line of engine has certain sensitivity and reliability for each link control, only in this way can the stability and continuity of production be guaranteed. Combined with the work of the production line of automobile engine in recent years, it has the following characteristics: first, the machine of the automatic engine production line is cost-effective; Second, the automatic engine production line can assemble multiple processes and parts at the same time, which can replace multiple employees; Third, manual only need to supplement parts and materials, machinery can complete each process assembly in turn, and can autonomously feed; Fourth, the automatic engine production line will be equipped with product robots, precision detection, image recognition and other units according to the requirements of product assembly; Fifth, the operation level of engine automation production line is extremely high; Sixth, the advanced level can develop Soros, handling, assembly and other basic work; Seventh, the machine of automatic engine production line will be configured with various kinds of detection, alarm, technology and other basic functions; Eighth, the engine automation production line has durability and stability, the electrical system will use the original imported parts; Ninth, the high quality, stability and efficiency of the automatic engine production line can ensure that the assembly work has the characteristics of high intelligence. Nowadays, automobile engine production lines in China involve assembly line, assembly line, station equipment, online tools and so on. In the final assembly line and the sub-assembly line, at present, the flexible conveyor line is widely used to transport the workpiece, and the automatic device will be equipped on the line to improve the practical work efficiency. The flexible conveyor line is selected in two ways, on the one hand, refers to the friction roller table, on the other hand, refers to the start and stop type power roller table. The automatic equipment on the assembly line includes automatic turning machine, automatic number machine, tightening machine, other special equipment and equipment, which can further improve the working ability of the equipment line. In the process of automobile engine production,

the assembly line, as the display platform of the final state, final structure and final precision of the engine, plays an important role in ensuring the precision quality of the engine. In order to ensure the technical conditions of engine assembly and achieve high precision and efficiency, an engine equipment line must discuss the application direction of intelligent technology deeply in the automobile motor production line on the basis of integrating the design and manufacturing experience of Iranian automation equipment.[1.2.3]

Based on the artificial intelligence system structure diagram as shown in Figure 1 below, the application of intelligent technology in automobile engine production line has the following advantages: On the one hand, improve the efficiency of road load for the moment, for artificial intelligence application in automobile engine in our country is still in the testing phase, and scale is unable to carry out comprehensive application subject to research, on the basis of relevant theories, however, artificial intelligence technology in our country have already completed the applications of information perception stage of the test and control system. In the artificial intelligence model, the vehicles through the establishment of real-time database information awareness, screening, for the road traffic information detection and record, in relying on information perception system after completing a series of reactions, the main system of artificial intelligence layout will be to organize the information, to choose the optimal path instructions issued to the vehicle control system. In this way, the artificial intelligence can stagger the rush hour traffic through the information database during the driving process, thus effectively improving the efficiency of road load. On the other hand, reduce traffic accident damage. In the urban taxi qualification test, the driver can avoid the damage and loss caused by the road traffic accident reasonably through the reasonable deceleration and control direction. Because the traffic accident often has the emergency nature, this also means the accident time is short, especially the highway traffic accident often makes the driver difficult to avoid. Because the traditional manual driving makes the traffic accident information can not be conveyed quickly and accurately, many vehicles can not avoid it reasonably, especially the traffic accident on the one-way street, often because of the particularity of the one-way road, the domino-type traffic accident damage is extended. Through the timely and accurate information transmission function of the artificial intelligence system, the vehicle can not only effectively and autonomously avoid the occurrence of traffic accidents, but also avoid the further expansion of traffic accident damage on the road. Therefore, this article mainly studies the intelligent technology, the application direction and the future development trend in the automobile engine production line, in order to provide an effective basis for the technical innovation of the automobile industry.[4.5.6]

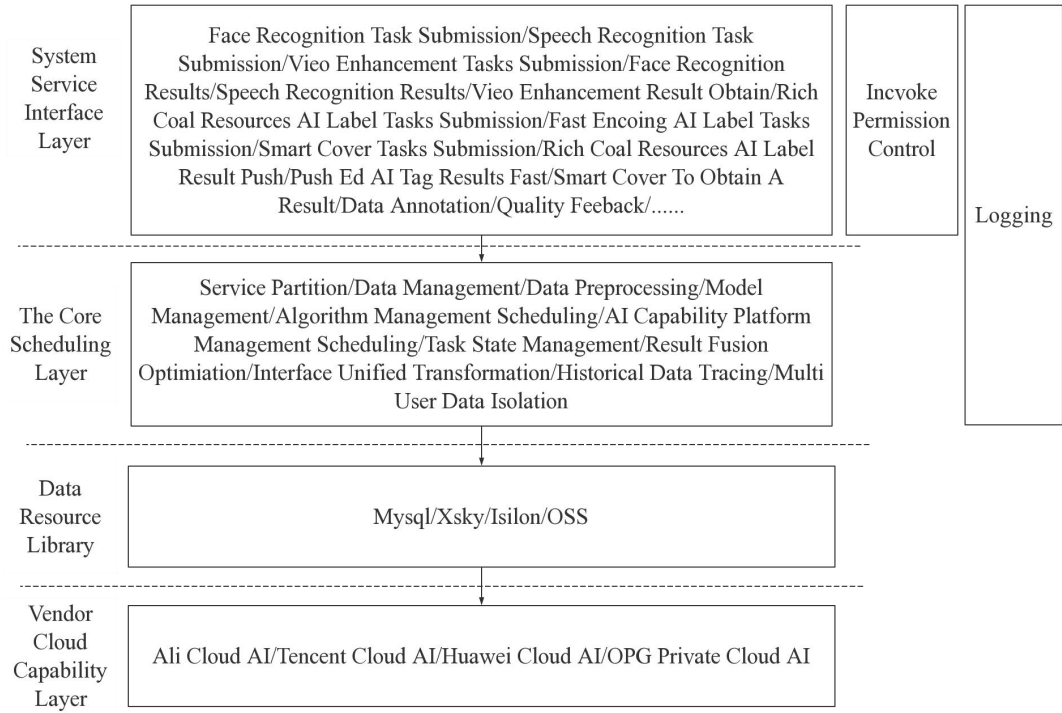


Figure 1 System structure diagram of artificial intelligence

2. Method

2.1 Automobile Integration

Automobile integrated automation is to regard IT technology as the basis for development, and constantly improve and effectively innovate in practice and exploration, which can truly achieve large-scale development of automobile production and contribute to the further promotion of unmanned factories. Nowadays, unmanned factory production must attach importance to integrated automation technology, and IT technology plays an important role in the automobile manufacturing industry. From the perspective of overall development, manufacturers can use integrated automation technology to store and measure various information about the car, such as the distance between the driver and the clutch, and the height of the car seat. Every technological breakthrough of airport automation is based on the development of the original integrated automation, the use of the latest science and technology, improve the engine production process, and scientifically adjust the overall production mode of automobiles. The structure of automotive integration technology is shown in Figure 2 below:[7.8.9]

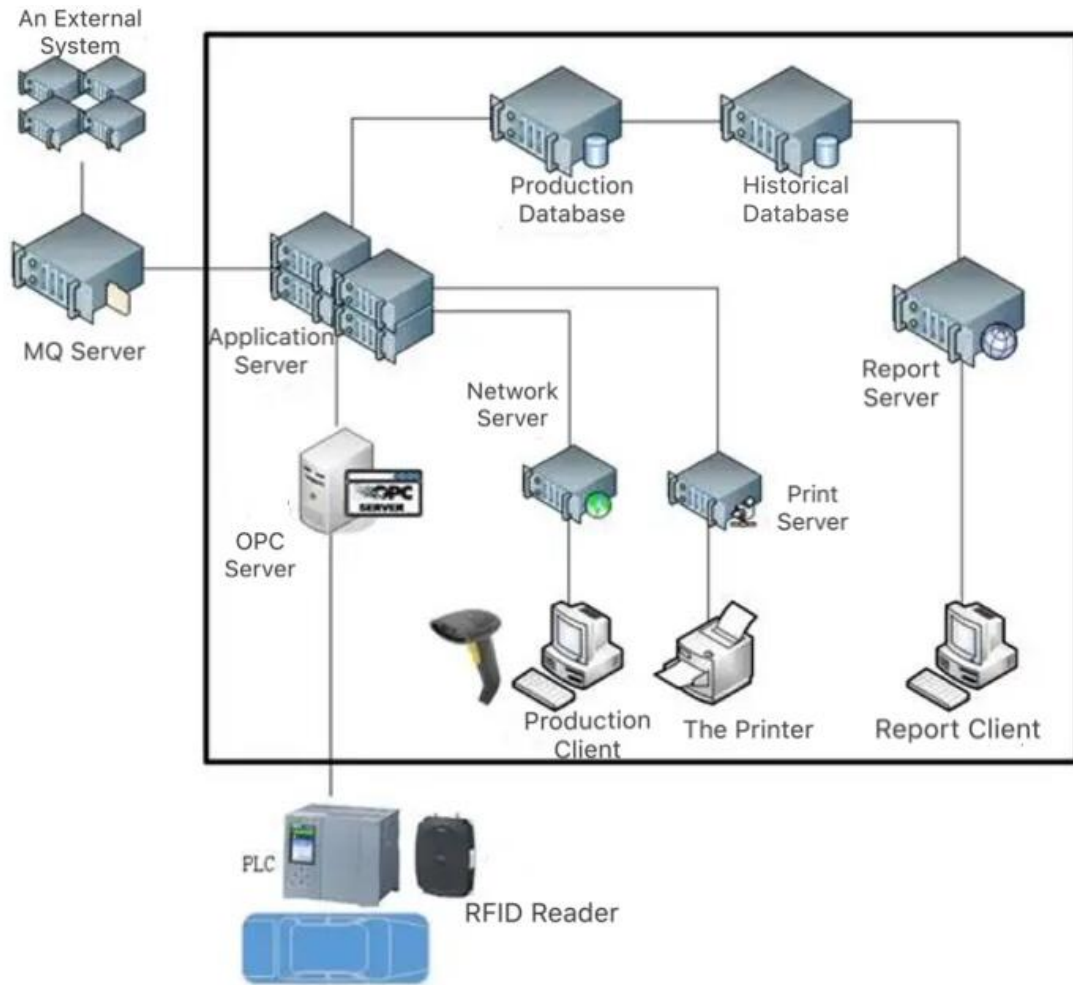


Figure 2 Structure diagram of automobile integration

2.2 Automobile Assembly

Mechanical automation technology can improve the efficiency and quality of automobile manufacturing to a certain extent, and the production and assembly of automobile structure is the key content of the overall manufacturing process, which needs to fully integrate the current advanced production technology and production instruments to replace the traditional manual installation and debugging operation. In the traditional sense of the car engine production line can choose the way of artificial assembly, frequently, improper operation and the low efficiency problem, and selects the intelligent technology for production operation, can adjust the car production assembly way, raising the level of automation in production assembly, as far as possible to avoid problems because of human error to produce quality and safety.

2.3 Vehicle Safety

As the most common way of travel in the development of human society, the safety factor has always been the main problem that people consider. For the safety automation system of automobile engine production line, at present, automobile manufacturers mainly set up and manage the system from the following aspects: First of all, during the production and assembly of the automobile engine, if there is an emergency, the system should alarm at the first time. After the management personnel and operators hear the alarm, they will rush to the scene to deal with the problem in time, so as to prevent the production line from uncontrollable safety accidents. Secondly, in order to prevent the automobile production line operators from being hurt by the press, the corresponding automatic safety alarm equipment will be set up. This alarm system can isolate the operators from the danger zone when the machine has problems, and ensure their personal safety. Finally, after the

completion of automobile manufacturing, the fuselage should be comprehensively inspected to prevent safety risks caused by operation errors. Safety automation technology provides the possibility for automobile safety production, and improves the efficiency and quality of automobile production, so that consumers and workers can be safe and assured. Among them, the rest of the intelligent technology of automobile safety management system is shown in Figure 3 below:[9.10]

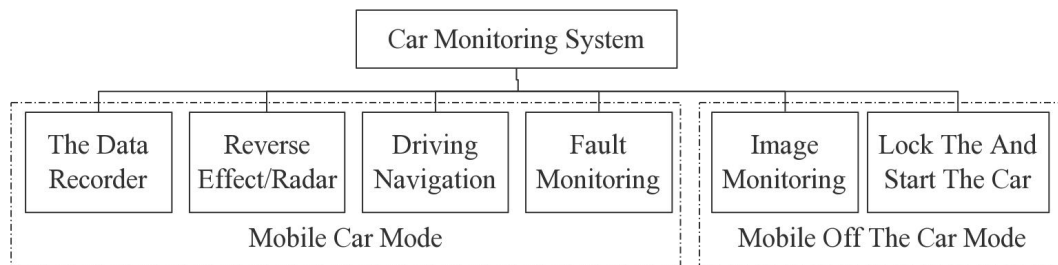


FIG. 3 Structure diagram of automobile safety management system based on intelligent technology

2.4 Car repair

In the automobile engine production line, before the application of intelligent technology, the whole operation is completed by human, in this mode, there is a matching problem in practice management. And the use of intelligent technology theory, not only can improve the production process, but also can continue to apply more new technology and new equipment, effectively prevent equipment inspection problems caused by human error. Building intelligent technology to realize automatic fault management, in the event of a problem can be timely notified to the technical personnel, the first time to rush to the scene for repair, prevent more serious safety accidents. The operation steps of car repair are shown in Figure 4 below:

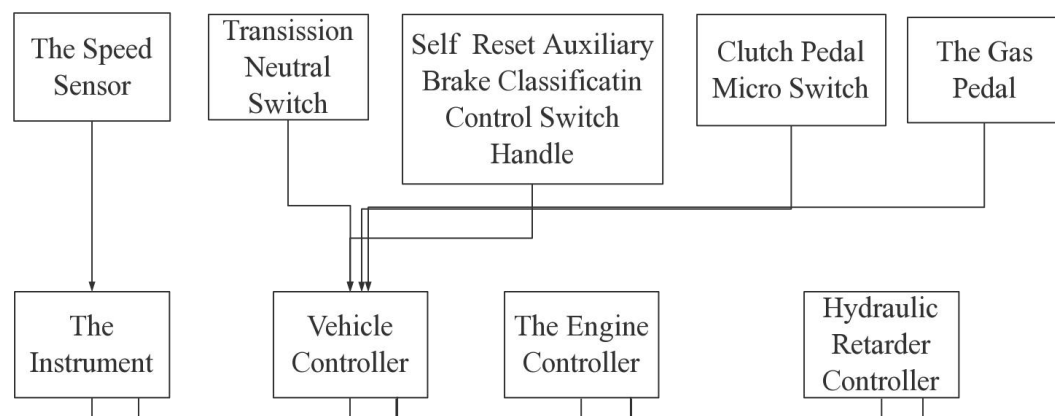


FIG. 4 Steps of car refitting based on intelligent technology

3. Result analysis

Combined with the above analysis, in the face of the requirements of automobile engine production line, the rational use of intelligent technology should start from the following two aspects: on the one hand, the construction and promotion of intelligent system with the Internet of vehicles as the core. According to the structure diagram of the Internet of vehicles shown in Figure 5 below, after the artificial intelligence system is integrated into the Internet of vehicles mode, the integrated development goal can be truly achieved, the comprehensive level of automobile engine production line can be improved, and the application quality of automobile engines can be monitored. On the other hand, GPS technology is used to realize automatic driving mode. In essence, GPS technology is the satellite according to the changes of longitude and latitude, using physical calculation of the acceleration and travel of the target, and using the map preview link of

the device, the data link is reflected in the same map image of the corresponding device on the vehicle, and the realization of GPS technology navigation needs to have a positioning module. Using four satellites to locate a point, the obtained longitude and latitude data will be transmitted to the relevant electronic equipment, after the relevant equipment to load the program display, can be visually provided to the driver. At the same time, the intelligent technology will regard the vehicle with the engine as the main body. After accurate calculation of the longitude and latitude of its data by the satellite, it will be transferred to the calculation module of the system for triangulation to participate in adjustment and settlement. Considering the influence of vehicle traffic environment and displacement process on the composition of satellite signal reception, in the case of unmanned driving mode, the artificial intelligence system can choose more effective GPS-RTK technology.

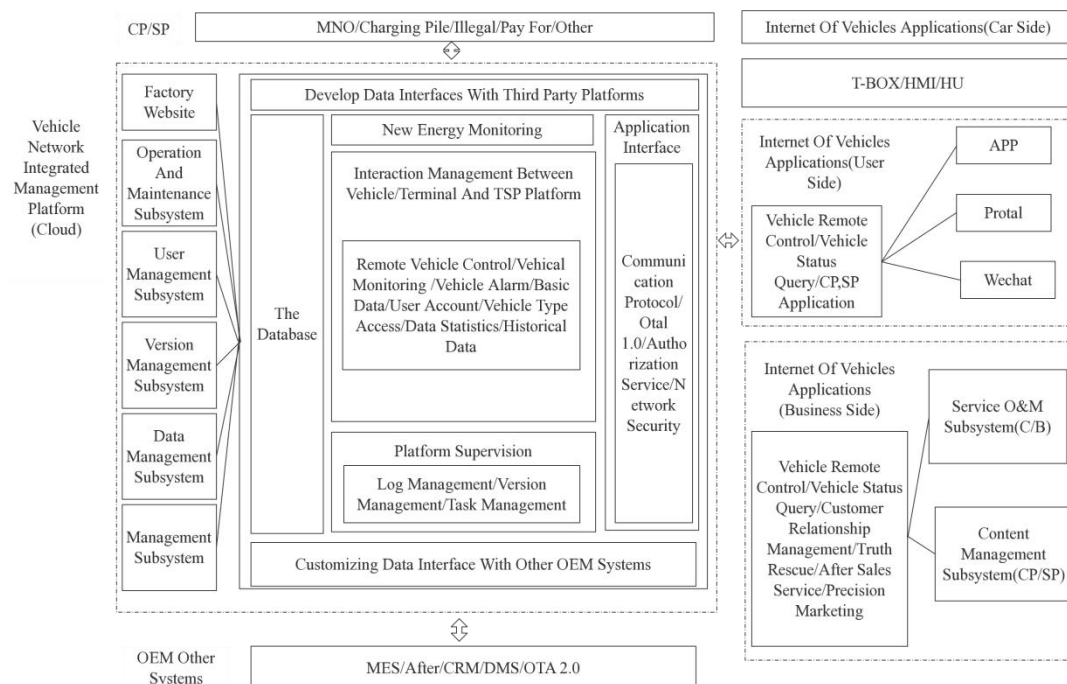


FIG. 5 Structure diagram of IOV

4. Conclusion

To sum up, according to the research and application of automobile engine technology in China in recent years, there are still many problems in the application of intelligent technology in the engine production line to achieve intelligent control. These problems lead to the failure of the current automobile engine production line to achieve the desired effect. , therefore, to research scholars to explore in practice in our country from the whole process of automobile engine production line, the main direction of deeply discusses the application of intelligent technology, in order to coordinate in science satellite technology and Internet, etc, on the basis of implementing the resources sharing of information, improve the level of our country automobile engine production line, to ensure the security of urban residents.

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