SMART TRANSPORTATION NETWORKS USING ARTIFICIAL INTELLIGENCE TECHNOLOGIES

Hind Ayad Majeed Alkakjea

Ministry of Education, Iraqi, Kirkuk

Scientific Supervisor – **Ali Ibrahim Lawah**

(Ph.D., Ministry of Construction, Housing, Municipalities and Public Works, Republic of Iraq)

Abstract: This report shows that the presence of artificial intelligence and the development that has taken place in the field of technology, such as smart cities and the use of the Internet of Things with intelligence, technologies have also become important matters. Traffic and safety in smart transportation is important in reducing congestion, regulating traffic in means of transportation, and controlling traffic signals by reducing deaths and regulating Traffic movement at the lowest costs and saving energy consumption, including traffic lights, through the presence of artificial intelligence at the lowest costs and losses and controlling it.

Key words: IOT, Artificial Intelligence, Smart transportation, Traffic safety.

Introduction

The use of software systems in artificial intelligence in infrastructure, public safety, transportation, and others in smart cities [1] where a practical scientific solution has been implemented through the impact of development in the Internet of Things, communication and cloud computing, as well as the use of sensors using networks to regulate traffic [2]. It provides a service to the citizen by improving transportation services. Enhancing traffic safety and improving transportation networks, including regulating traffic, monitoring vehicle movement, and detecting vehicle speeds.

Results and discussion

Artificial intelligence was used here to monitor vehicle movement and wireless traffic through smart signals and detecting traffic violations to reduce possible accidents, as speeds and signals violating the movement of vehicles were recorded in conjunction with drawing maps, determining the traffic location, and launching incentives for intersections and reducing the number of accidents fig 1.

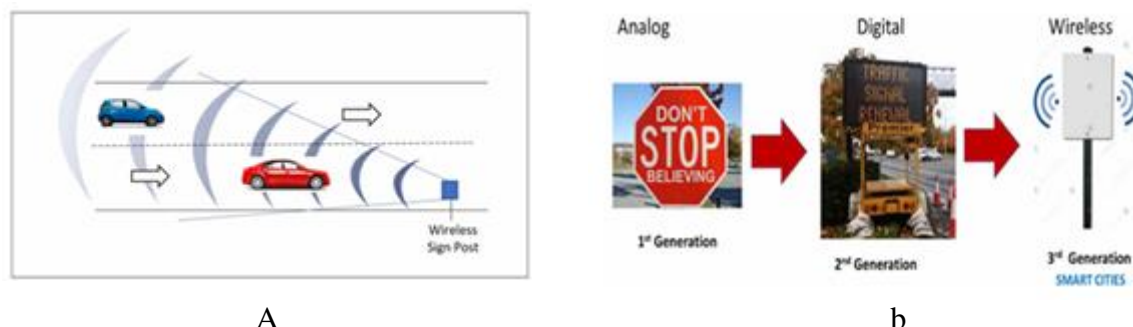A   b

Fig 1. Authors' view of traffic sign evolution from now to the future [3].

In response to the exponential expansion, the advantages of smart traffic signals include removing the burden on the driver, not being affected by weather conditions, automatic calculation of traffic, reduced cost, and the signals are also programmable and can be easily changed and faults repaired [3].

Conclusion

In conclusion, based on the above, governments have paid attention to developing and expanding modern technologies, including interest in smart transportation and reducing traffic congestion, with the need to protect citizen security and data, gain expertise, even if simple, at a lower cost and less time, and finally expand projects and organize traffic.

References

1. Tan, S. Y., & Taeihagh, A. (2020). Smart city governance in developing countries: A systematic literature review. sustainability, 12(3), 899.

2. Sharma, M., Joshi, S., Kannan, D., Govindan, K., Singh, R., & Purohit, H. C. (2020).

Internet of Things (IoT) adoption barriers of smart cities' waste management: An Indian context. Journal of Cleaner Production, 270, 122047.

3. Toh, C. K., Cano, J. C., Fernandez-Laguia, C., Manzoni, P., & Calafate, C. T. (2019). Wireless digital traffic signs of the future. Iet Networks, 8(1), 74-78.

SOFTWARE FOR SETTING UP A 3D MILLING MACHINE TO CUT DEFECTIVE SHEET MATERIALS WHILE RECORDING VIDEO

Ibrahim Mohammed AL-Ahdel, Ehab Muneer Qasem AL-Hemyari
Scientific Organization for Research and Innovation, Yemen
Scientific Supervisor – **Andrei Zapolski**
Ph.D., student of the Sukhoi State Technical University of Gomel, Gomel, Belarus

Abstract: The advancement of 3D milling machines has paved the way for precise and automated cutting of sheet materials. However, the process becomes more challenging when dealing with defective sheets that require careful alignment and precise cutting. This report introduces the concept of utilizing software to set up a 3D milling machine for cutting defective sheet materials while simultaneously recording video footage. By combining real-time video analysis and machine control, this innovative approach aims to enhance accuracy, efficiency, and quality control in manufacturing processes. The report discusses the key components of the software system, its potential benefits, and the challenges associated with its implementation.

Key words: 3D milling machine, Defective sheet materials, Video recording, Software, Quality control.

Introduction

The utilization of 3D milling machines has revolutionized manufacturing processes by enabling precise and efficient cutting of various materials. However, when dealing with defective sheet materials, such as those with irregular edges or damaged sections, achieving accurate cuts poses a significant challenge. This report proposes the use of software to set up a 3D milling machine specifically designed to address this challenge. The software combines real-time video analysis and machine control, allowing for precise cutting while recording video footage for quality control purposes.

Results and discussion

The software system for setting up a 3D milling machine to cut defective sheet materials while recording video consists of several key components [1-3]:

– Video Capture and Analysis: A high-resolution camera captures real-time video footage of the sheet material. Advanced computer vision algorithms analyze the video stream to identify defects, irregularities, or specified cutting areas.

– Machine Control: The software communicates with the 3D milling machine, providing instructions for precise movements and cutting paths based on the analyzed video data. It ensures that the machine adjusts its position and cutting parameters to compensate for irregularities in the sheet.

– Quality Control and Feedback: The recorded video footage serves as a quality control measure. It allows manufacturers to review and analyze the cutting process, identifying any issues or deviations from the desired outcome. Feedback from the video analysis can be used to improve future cutting operations and optimize the overall manufacturing process.

Integrating video recording and analysis capabilities into the 3D milling machine setup offers several benefits [2-3]:

– Enhanced Accuracy: Real-time video analysis enables precise identification and localization of defects or irregularities on the sheet material, ensuring accurate alignment and cutting.

– Efficiency and Time Savings: Automated video analysis eliminates the need for manual inspection and measurement, reducing setup time and improving overall efficiency.