

DEVELOPMENT AND APPLICATION OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING IN LOGISTICS

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The logistics industry is seeing increased interest in the development and implementation of artificial intelligence (AI) and machine learning (ML). These technologies are playing an increasingly important role in optimising processes, improving efficiency and reducing costs. Let's look at a few key aspects of this trend:

1. Demand forecasting and planning: Applying AI and MO to analyse demand data for goods and predict future needs allows companies to more accurately plan inventories, delivery routes and resource allocation;

2. Route and schedule optimisation: AI algorithms help optimise delivery routes by taking into account various factors such as traffic, weather conditions, fuel costs and time constraints. This helps to reduce travelling time and avoid delays;

3. Inventory and warehouse management: Using AI to analyse sales and delivery data can optimise stock levels in the warehouse and minimise storage costs;

4. Improving the efficiency of loading and unloading processes: The introduction of robots and AI-driven automation systems is helping to improve loading and unloading processes, reducing the time it takes to complete tasks and reducing the risk of errors;

5. Monitoring and detection of abnormal situations: AI-driven monitoring systems provide continuous tracking of logistics operations and automatic detection of potential problems such as cargo loss, damage or delays;

6. Delivery Cost Forecasting and Tariff Optimisation: AI algorithms analyse data on market trends and carrier tariffs to help companies forecast delivery costs and optimise tariffs;

These technologies continue to evolve rapidly, and their use in logistics will continue to grow, contributing to smarter. The world of logistics has identified broad areas of development impacting logistics operations and supply chains around the world. Here are some of them:

1. Digitalisation and automation: Advances in technologies such as the Internet of Things (IoT), artificial intelligence (AI) and machine learning (ML) are facilitating the digital transformation of logistics processes, resulting in increased efficiency and reduced costs;

2. Sustainability and environmental responsibility: There is a growing focus on environmental sustainability in logistics, including reducing carbon emissions, optimising routes to save fuel;

3. Multimodal transport networks: Developing infrastructure to integrate different modes of transport (road, rail, water, air) to provide efficient global transport networks;

6. Security and risk management: In light of global threats such as cyber-attacks, geopolitical conflicts and pandemics, the development of security and risk management strategies to ensure the continuity of logistics operations is of particular importance;

7. Demographic Change and Population Growth: Increasing populations and denser cities require the development of new delivery and freight management methods to ensure logistics efficiency in urban areas.

The issues that have been considered above can be seen as a reflection of the complexity and dynamics of modern logistics, which requires a constant focus on innovation, sustainability and global trends, especially nowadays in highly developing situation.

References

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