


Chapter 11

Artificial Intelligence Applications in the Context of the Security Framework for the Logistics Industry

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ABSTRACT

Artificial intelligence (AI) has a wide range of applications in logistics and supply chain management. With the help of AI, businesses can improve their planning activities, optimize their routes, manage resources more efficiently, and enhance their delivery effectiveness. AI-powered autonomous delivery systems are also gaining popularity as they enable faster and more reliable delivery of goods without the need for human intervention. By leveraging AI, businesses can analyze large amounts of data and gain insights into customer behaviour, demand patterns, and other critical factors that impact their logistics operations. This information can be used to create more accurate demand forecasts, optimize inventory levels, and improve the overall efficiency of the supply chain. Moreover, AI can also help businesses reduce costs by identifying areas of waste and inefficiency in their logistics operations. For instance, AI-powered algorithms can optimize delivery routes to reduce fuel consumption and transportation costs.

DOI: 10.4018/978-1-6684-6361-1.ch011

1. INTRODUCTION

The concept can also refer to any computer that demonstrates characteristics of the human mind, such as learning and problem-solving. Artificial intelligence has undergone significant advancement, and the results are precise. AI is a versatile technology applied across sectors to improve decision-making, boost productivity, and do away with repetitive tasks Krykavskyy Y., Alexandre D., J. There are many uses for artificial intelligence nowadays. Because it can effectively address complex problems in various areas, including healthcare, entertainment, banking, and education, it is becoming increasingly important in the modern world. AI has sped up and improved the comfort of our daily by Dmitry I, Ajaikumar B. K., Rodela. Numerous multinational organisations devote resources to robotics and AI technology because they need quick and sophisticated logistics solutions. Automation in warehouses makes a lot of mundane chores easier. These forecasts allow you to modify your orders and arrange for the delivery of popular items to nearby warehouses as required.

AI can connect them to determine the most effective method for moving the inventory. It may enhance our service, save shipping expenses, and make significant financial savings when you estimate the demand for products and organise the logistics well in advance Ahmad, Lallie, Samtani. The use of computer vision technology in warehouse management enables the objects in the warehouse to be identified and organised more efficiently. In the future, the technology of this kind will eliminate human oversight in quality control, which will be a significant benefit. The logistics industry has put in much work to use cutting-edge intelligent information technology like RFID tags, blockchain technology, big data analysis, artificial intelligence (AI), and drones. This is so that the logistics process can be automated, visualized, and tracked, and smart decisions can be made by Razaque, Williams CM, Hiscox. Due to a globally comparable condition, the time of “smart logistics” makes logistics services more effective and efficient.

Leading logistics provider UPS recently increased its yearly investment in logistics technology to \$1 billion, concentrating particularly on unmanned aerial vehicle delivery. One of the largest e-commerce companies, Amazon, purchased Kiva Systems, a producer of robots, for \$7.75 billion to develop their own sophisticated logistics system. Major Chinese logistics companies’ top priority strategy for the Chinese market is to develop smart logistics solutions by Khan, Brohi, Pranggono, He. In addition to getting things to move around, governments are putting much effort into building an information infrastructure and a public information platform. The commodities flow survey was carried out by the US Bureau of Transportation Statistics, which used the information to plan the urban transportation corridor. To build the information platform and achieve logistics information, alliances have been formed with information firms like IBM. Germany’s federal government has formed a logistics association with major logistics firms, establishing a data-sharing platform for the country’s logistics zones by Weil, World Health Organization. The future logistics revolution’s inevitable trend of “smart logistics” is still in its infancy. The main obstacles to the development of smart logistics are the lack of a general operating framework, unstandardized function modules, a high degree of implementation cost, and immature technology. The academic community is also interested in these issues. Engineering, logistics, transportation, and management academics primarily concentrate on the research and development and implementation of underlying technologies by Ferreira, Carrapico, Wijayanto, Wiggen, J. Smart logistics includes business logic and operational frameworks, linked management systems, and particular optimization issues. To further satiate the demands of commercial and industrial development, every effort has been made to support the growth of smart logistics and boost operational efficiency.

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