
Artificial Intelligence in Food Industry

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ABSTRACT

Talking about issues facing the food sector doesn't usually bring up the topic of technology. But in the current environment, automation in the food business is essential to the production and distribution of food. The way that food is produced, distributed, and consumed has been completely transformed by the application of AI in the food sector. Artificial Intelligence (AI) technologies, such as computer vision, data analytics, and machine learning, are revolutionizing conventional agriculture methods, streamlining supply chain operations, and raising food safety standards.

INTRODUCTION

AI has revolutionized the food industry by providing innovative solutions to various challenges. One area where AI has made significant contributions is in supply chain management. With the increasing demand for food, it has become crucial to optimize the supply chain to ensure efficient and timely delivery of products. AI used to analyse vast amounts of data, including historical sales data, weather patterns, and transportation data, to predict demand and optimize inventory levels. This helps reduce waste and ensures that the right amount of food is available at the right time. AI-powered systems can also track and monitor the condition of perishable goods during transportation, ensuring that they are stored at the optimal temperature and humidity levels. Food sorting is another area where AI has had a significant impact. Traditional

methods of sorting food products can be time-consuming and prone to errors. AI-powered sorting systems use computer vision technology to quickly and accurately identify and sort products based on various parameters such as size, shape, color, and quality. This approach not only improves efficiency but also ensures consistent quality control. In production development, Artificial intelligence can analyse data from different sources, includes customer feedback, to identify trends and patterns. This information can then be used to develop new products or improve existing ones.

AI can also assist in optimizing production processes by identifying bottlenecks and suggesting improvements to increase efficiency. Food quality improvement is another area where AI has proven to be invaluable. AI-powered systems can analyse data from sensors and cameras to detect contaminants or defects in food products. This helps ensure that only high-quality products to reach the market, reducing the risk of foodborne illnesses and improving consumer trust. Proper industrial hygiene is crucial in the food industry to maintain food safety standards. AI-powered systems can monitor and analyse data from sensors to ensure that proper hygiene practices are followed in food processing facilities. This includes monitoring factors such as temperature, humidity, and cleanliness to prevent contamination and ensure compliance with regulations. Finally, AI has also been applied to food drying technology. Drying is an essential process in food preservation, and artificial intelligence (AI) algorithms can optimize drying parameters such as temperature, airflow, and drying time to ensure the best quality and shelf life of dried food products. This not only improves efficiency but also reduces energy consumption and waste.

CURRENT PROBLEMS IN FOOD INDUSTRY

Food loss and waste are significant global problem that have economic, social, and environmental implications. By addressing root causes and implementing sustainable solutions, we can conserve food resources, reduce greenhouse gas emissions, and ensure a more equitable distribution of food.

FOOD SCARCITY

The issue of food waste and food insecurity requires a comprehensive and collaborative approach. By implementing effective food redistribution systems, promoting sustainable farming practices, and raising awareness about the importance of reducing food waste, we can work towards a more equitable and sustainable food system. It is only through collective efforts that we can ensure that no one goes hungry while simultaneously conserving precious resources.

APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN FOOD INDUSTRY

SORTING FRESH PRODUCE

The integration of cameras, lasers, IR spectroscopy, machine learning, and artificial intelligence in the food processing industry has the potential to revolutionize the cataloguing and sorting of food. Companies such as TOMRA have already demonstrated the effectiveness of these technologies in boosting productivity and accuracy. By automating the sorting of fresh vegetables and reducing food waste, these advancements can contribute to addressing the

global issue of food insecurity and ensuring a more sustainable and responsible use of food resources.

PERSONAL HEALTH SANITATION

The use of AI-enabled cameras in food facilities has revolutionized the monitoring of worker compliance with safety regulations. By leveraging advanced software for object and facial recognition, these cameras ensure that employees maintain proper personal hygiene, promoting a culture of accountability and adherence to food safety protocols. With their high accuracy and real-time monitoring capabilities, these cameras provide an efficient and effective solution for ensuring food safety in the industry.



CLEANING FOOD PROCESSING EQUIPMENT

The use of AI-enabled cameras in the SOCIP system revolutionizes the cleaning process in food facilities. It ensures compliance with safety regulations, improves cleanliness and hygiene, reduces the risk of contamination, and saves valuable resources. With its high accuracy and real-time monitoring capabilities, this technology is a game changer for maintaining food safety standards and protecting public health.



DEVELOPMENT OF NEW PRODUCTS

The integration of AI technology in Coca-Cola's self-serving soft drink fountains has revolutionized the way beverages are created and consumed. By leveraging machine learning and prediction algorithms, Coca-Cola has been able to cater to the unique preferences of its customers, introduce new and exciting flavours, and optimize its operational processes. This innovative approach not only enhances the customer experience but also positions Coca-Cola as a leader in utilizing AI technology to drive innovation in the beverage industry.

DATA ANALYSIS IN THE FOOD INDUSTRY

Data science and AI have the potential to transform the food industry by improving customer satisfaction, developing fresh menus, and reinventing food delivery. By harnessing the power of machine learning and predictive algorithms, businesses can better understand customer preferences, create innovative menu options, and optimize delivery services, ultimately enhancing the overall dining experience for customers.

FRONT-END OR CONSUMER FACING APPLICATIONS OF ARTIFICIAL INTELLIGENCE

The implementation of front or consumer-facing applications of AI in the food industry has the potential to revolutionize the way food establishments operate and interact with customers. By leveraging recommendation engines, apps and chatbots; self-ordering AI-based kiosks; and robots, we can enhance customer satisfaction, streamline operations, and stay ahead in this competitive market. This grant



will provide the necessary funding to support the development and implementation of these AI technologies, ensuring a seamless and delightful dining experience for customers.



CHALLENGES IN THE ADOPTION OF ARTIFICIAL INTELLIGENCE TECHNOLOGY IN THE FOOD INDUSTRY

The adoption of AI technology in the food industry faces challenges such as high costs, cultural resistance, fear of job displacement, concerns about misuse, limited understanding of AI's potential, and a shortage of skilled professionals. Overcoming these obstacles will be crucial for businesses to fully embrace and benefit from the potential of AI in the food industry.

CONCLUSION

The use of data science and AI in the food industry holds immense potential for improving customer satisfaction, developing fresh menus, and reinventing food delivery. By leveraging the power of these technologies, food industry professionals can develop easier, more affordable, and quicker ways to supply goods, ultimately leading to a more efficient and sustainable food system.

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