

Robotic Vision Market - Growth, Trends, Covid-19 Impact, and Forecasts (2023 - 2028)

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Report description:

The Robotic Vision Market is expected to register a CAGR of 9.86% during the forecast period. The market's growth is owing to the growing use of cognitive humanoid robots and the increasing deployment of machine vision systems in end-user segments like the Automotive Industry.

Key Highlights

Machine guidance systems use 2D and 3D machine vision systems to improve the accuracy and speed of assembly robots and automated material handling equipment, which plays a crucial role in the engine chassis marriage operations. Although the applications vary depending on the vehicle or model being produced, the general categories of applications are observed in robotics, dimensional gaging functions, assembly verification, flaw detection, paint job verification, and code reading. Robotic vision provides the robots with a sight that helps them to complement or replace manual inspection tasks using cameras and image processing. The applications range from basic tasks, like presence detection, to real-time inspection. Manufacturing companies across the globe realize the benefits of these robotic vision systems, particularly in areas where redundant tasks, like inspection, should be performed with precision. They play an essential role in high-speed production lines and hazardous environments. These systems' significant benefits include increased productivity, reduced machine downtime, and tighter process control.

Significant expenditures are required to develop the core components of robotic vision, such as vision sensors and the underlying vision software. The initial cost of implementing robotic vision is also slightly more significant, which may impede market expansion.

The COVID-19 pandemic is expected to increase the growth of vision-guided robots that can reduce human contact in multiple end-user industries. For instance, Orrbec, a US-based company, collaborated with robot manufacturers in China to deploy its 3D camera products in robots for different hospital applications. Food delivery robots, sterilization robots, and directional guiding

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robots using machine vision systems have been deployed across many hospitals in China. With the increased adoption of cognitive humanoid robots, the market is proliferating after the pandemic.

Robotic Vision Market Trends

Growing Demand from End-User Segments like Automotive Industry Drives the Market Growth

To address quality issues, Automotive manufacturers are increasingly investing in vision systems. The technology is increasingly being used by automakers and parts suppliers for various applications, including adhesive dispensing, bin picking, error-proofing, inline welding analysis, material handling, robotic guidance, surface inspection, and traceability. Growing demand for customization, increasing labor shortages, and cost pressures are some significant drivers of vision systems used in the auto industry.

Vision-guided robots are projected to revolutionize the electronics, automotive, and food processing industries. Due to the tremendous technology demand for applications such as arc welding, cutting, and palletizing, these industries are dominated by 3D vision-guided technology.

Advanced machine vision technology plays a significant role in the daily operation of various global automotive plants. Ford Motor Co.'s Van Dyke transmission plant, for instance, uses vision-guided robots to ensure the high-quality assembly of critical components like gears and clutches. The plant has deployed over 500 inline machine vision applications for error-proofing, gauging, and complexity issues.

With the growth of the ADAS system in Automotives, the requirement of components like camera-led lighting, Lidar, and V2X, among others, would play a crucial role shortly for automation and intelligence. Further, according to Neuromation, traffic accidents account for 2.2% of global deaths. With 2D and 3D machine vision and intelligent transportation systems (ITS), drivers are provided with a safety net. These technologies make it possible to mitigate human error in the auto industry, assisting drivers at the wheel with tools and features that keep them from committing severe mistakes and accidents.

Because of their noncontact inspection, high repeatability, and minimal cost, robotic vision systems are becoming more popular for quality control in various sectors. Traditional methods of product quality control rely entirely on human inspection. On the other hand, human inspection performance is projected to decline over a shift of work owing to weariness and repetition. Minor faults may go unnoticed, resulting in non-trivial errors. Technological breakthroughs are transferring the time-consuming inspection labor from humans to machine automation. Significant advances in hardware and software have already shifted most of the quality control inspection labor to machines in various regions of the globe. According to IFR, With approximately 168 thousand new industrial robot installations in China, it had set up the most robotics-worldwide in the previous year.

North America is Expected to become the Fastest Growing Market

In robotics adoption, North America is one of the significant inventors and pioneers and one of the world's largest markets. The rising deployment of robotics across various sectors is the key driver of the market's growth.

According to the International Federation of Robotics, North American industrial robot deployments are predicted to reach 69,000 annually by the current year. According to Advancing Automation, the number of robots sold last year was estimated to rise by 28% over before previous year. As more sectors resorted to automation to enhance productivity and reduce persistent labor shortages, record robot sales were recorded in the fourth quarter of the last year (up by 9% from the fourth quarter of before earlier year), demonstrating strong momentum already gained in the previous few months.

Industrial robots are critical in industrial automation, with various robots managing many vital functions in multiple industries. Electronics, e-commerce, and automotive industries, among others, are growing in tandem with economic expansion in many

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countries in this region. Product manufacturers are rapidly employing robots to automate repetitive procedures in response to rising demand across economies.

Machine vision systems would be produced more frequently due to government efforts such as the Advanced Manufacturing Partnership, which aims to encourage businesses, universities, and the federal government to invest in future automation technology.

According to the MAPI (Manufacturers Alliance for Productivity and Innovation), industrial production in the United States was estimated to rise by 2.8% by the earlier year, boosting the country's use of robotic vision technologies.

Robotic Vision Market Competitor Analysis

The robotic vision market is moderately fragmented due to major players like Qualcomm Technologies, Inc., Keyence Corporation, FANUC Corporation, ABB Group, and Sick AG. Players in the market are adopting strategies such as partnerships, innovations, and acquisitions to enhance their product offerings and gain sustainable competitive advantage.

October 2022 - ABB announced a strategic partnership with the US-based startup Scalable Robotics to expand its user-friendly robotic welding solutions line. Scalable Robotics technology, which uses 3D vision and embedded process awareness, enables users to program welding robots without coding.

Additional Benefits:

The market estimate (ME) sheet in Excel format
3 months of analyst support

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