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Smart Robot Market Report by Component (Hardware, Software, Services), Mobility (Stationary, Mobile), Application (Welding and Painting, Assembling and Disassembling, Material Handling and Sorting, Inspection and Security, and Others), Vertical (Automotive, Manufacturing, Electrical and Electronics, Food and Beverages, Chemical, Residential, and Others), and Region 2024-2032

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Abstracts

The global smart robot market size reached US$ 12.4 Billion in 2023. Looking forward, IMARC Group expects the market to reach US$ 47.7 Billion by 2032, exhibiting a growth rate (CAGR) of 15.6% during 2024-2032. The market is growing rapidly, driven by advancements in artificial intelligence (AI) and machine learning (ML), rising labor costs, and industrial automation growth, with North America leading due to high technological investment, despite challenges like high initial costs and safety concerns.

Smart Robot Market Analysis:

Major Market Drivers: The combination of AI and ML has significantly boosted the capabilities of smart robots, allowing them to do challenging jobs with precision and efficiency. Furthermore, growing labor costs and the ongoing push for Industry 4.0 and smart manufacturing are driving market expansion.

Key Market Trends: Sensors, vision systems, and robotic hardware are constantly evolving to improve the functionality and reliability of smart robots. Aside from that, one of the key smart robot market trends is the increased

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demand for service robots in the healthcare, hospitality, and retail sectors for jobs such as medical care, cleaning, and customer service is driving their appeal.

Geographical Trends: North America dominates the market due to technical developments, strong industrial infrastructure, and significant investment in automation and robotics. Other regions are also seeing a growth in the smart robot market size as a result of fast industrialization, a burgeoning automobile industry, and the increasing use of automation in production.

Competitive Landscape: Some of the major market players in the smart robot industry include ABB Ltd., F&P Robotics AG, Fanuc Corporation, Hanson Robotics Limited, Honda Motor Co. Ltd, iRobot Corporation, KUKA AG (Midea Group), Neato Robotics Inc. (Vorwerk), Rethink Robotics GmbH, Samsung Electronics Co. Ltd., Seiko Epson Corporation, SoftBank Robotics Corp, Yaskawa Electric Corporation, among many others.

Challenges and Opportunities: The smart robot market insight highlights several challenges, including the high initial cost of these robots and the challenges associated with integrating them into the existing infrastructure. Nonetheless, the business has a significant window of opportunity because to global expansion into developing countries with tremendous industrial growth potential and supportive government regulations.

Smart Robot Market Trends:

Advancements in Artificial Intelligence (AI) and Machine Learning (ML)

The integration of artificial intelligence (AI) and machine learning (ML) has transformed smart robots, greatly increasing their capabilities and broadening their applications across sectors. AI and ML allow robots to interpret massive volumes of data, learn from their experiences, and make intelligent judgments in real time. As a result, advanced robots have emerged that can perform complex tasks with extraordinary precision and efficiency. AI-powered robots, for example, can boost industrial productivity by anticipating maintenance requirements, decreasing downtime, and assuring quality control. AI-powered smart robots can help with surgeries, diagnose diseases, and provide individualized patient care. Additionally, the development of AI algorithms and computer power has made it possible for robots to comprehend and learn human

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emotions, behaviors, and language, opening the door to more lifelike human-robot interactions.

Rising Labor Costs and Shortages

The rising labor costs and shortages of skilled workers are significant factors expanding the smart robot market share. The cost of labor has been steadily increasing due to economic growth, higher living standards, and stringent labor regulations. This trend is compelling businesses to seek cost-effective solutions to maintain their competitiveness. Smart robots offer an attractive alternative by performing tasks that traditionally require human labor, such as assembly, packaging, and material handling, with greater efficiency and at a lower cost. Additionally, the shortage of skilled workers in various industries, particularly in manufacturing, logistics, and healthcare, has further accelerated the adoption of smart robots. These robots can operate continuously without fatigue, reducing the dependency on human labor and mitigating the impact of labor shortages.

Growth in the Industrial Automation Sector

The shift towards industrial automation, epitomized by Industry 4.0, has been a major driver for boosting the smart robot market size. Industry 4.0 emphasizes the integration of advanced technologies, such as the Internet of Things (IoT), big data analytics, and robotics, to create smart manufacturing systems. Smart robots play a crucial role in this transformation by automating various industrial processes, improving efficiency, and reducing operational costs. In automated production lines, robots are used for tasks such as welding, painting, assembling, and quality inspection, ensuring consistent product quality and faster production cycles. Their ability to operate tirelessly with precision and speed makes them indispensable in modern manufacturing. Additionally, the adoption of collaborative robots, or cobots, that work alongside human workers has further driven automation by enhancing flexibility and productivity in manufacturing environments.

Smart Robot Market Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the market, along with forecasts at the global, regional, and country levels for 2024-2032. Our report has categorized the market based on component, mobility, application, and vertical.

Breakup by Component:

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Hardware

Software

Services

Hardware accounts for the majority of the market share

The report has provided a detailed breakup and analysis of the market based on the component. This includes hardware, software, and services. According to the report, hardware represented the largest segment.

Hardware components constitute the largest share, as highlighted in the smart robot market report. This is attributed to their critical role in the robot's functionality and performance. Hardware includes physical components such as sensors, actuators, controllers, power systems, and structural elements that form the robot's body and enable its operation. High-quality hardware is essential for ensuring the robot's durability, precision, and reliability in various applications. Advances in sensor technology, for example, allow robots to perceive their environment accurately, while improvements in actuators and motors enable precise movements and operations.

Breakup by Mobility:

Stationary

Mobile

Mobile holds the largest share of the industry

A detailed breakup and analysis of the market based on the mobility have also been provided in the report. This includes stationary and mobile. According to the report, mobile accounted for the largest market share.

Mobile robots dominate the smart robot market share due to their versatility and wide range of applications. Unlike stationary counterparts, mobile robots can navigate and operate in dynamic environments, making them ideal for tasks that require movement and flexibility. They are extensively used in industries such as logistics, healthcare,

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agriculture, and services for applications like material handling, delivery, patient assistance, and fieldwork. Moreover, the development of advanced navigation and mapping technologies, such as simultaneous localization and mapping (SLAM), has significantly enhanced the capabilities of mobile robots, enabling them to operate autonomously and efficiently in complex settings.

Breakup by Application:

- Welding and Painting
- Assembling and Disassembling
- Material Handling and Sorting
- Inspection and Security
- Others

Assembling and disassembling represents the leading market segment

The report has provided a detailed breakup and analysis of the market based on the application. This includes welding and painting, assembling and disassembling, material handling and sorting, inspection and security, and others. According to the report, assembling and disassembling represented the largest segment.

The latest smart robot market insight finds that assembling and disassembling tasks dominate the application segment due to their critical importance in manufacturing and industrial processes. Smart robots excel in these tasks by providing high precision, speed, and consistency, which are essential for maintaining product quality and meeting production targets. In the automotive, electronics, and consumer goods industries, robots are extensively used to assemble complex products, from circuit boards to car components, with minimal errors and wastage. Additionally, disassembling robots are increasingly employed in recycling and waste management processes, where they help dismantle products to recover valuable materials.

Breakup by Vertical:

- Automotive

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Manufacturing

Electrical and Electronics

Food and Beverages

Chemical

Residential

Others

Automotive exhibits a clear dominance in the market

A detailed breakup and analysis of the market based on the vertical have also been provided in the report. This includes automotive, manufacturing, electrical and electronics, food and beverages, chemical, residential, and others. According to the report, automotive accounted for the largest market share.

The automotive industry holds the largest market share due to its early and extensive adoption of robotic automation. The sector has been a pioneer in implementing robots for various manufacturing processes, including assembly, welding, painting, and quality inspection. These applications require high precision, consistency, and speed, which smart robots can provide, thereby improving production efficiency and product quality. The use of robots in automotive manufacturing also helps in reducing labor costs, minimizing errors, and ensuring worker safety by handling hazardous tasks.

Breakup by Region:

North America

United States

Canada

Asia-Pacific

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China

Japan

India

South Korea

Australia

Indonesia

Others

Europe

Germany

France

United Kingdom

Italy

Spain

Russia

Others

Latin America

Brazil

Mexico

Others

Middle East and Africa

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North America leads the market, accounting for the largest smart robot market share

The report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, North America represents the largest regional market for smart robot.

The latest smart robot market insight finds North America as the dominant region in this sector due to several factors, including technological advancements, robust industrial infrastructure, and high investment in automation and robotics. The region is home to some of the world's leading technology companies and research institutions that drive innovation in robotics and artificial intelligence (AI). This has led to the development of advanced smart robots that are widely adopted across various industries, such as manufacturing, healthcare, logistics, and retail. The strong presence of major automotive and aerospace manufacturers in North America has further fueled the demand for smart robots in these sectors, where precision and efficiency are crucial.

Competitive Landscape:

> The market research report has also provided a comprehensive analysis of the competitive landscape in the market. Detailed profiles of all major companies have also been provided. Some of the major market players in the smart robot industry include ABB Ltd., F&P Robotics AG, Fanuc Corporation, Hanson Robotics Limited, Honda Motor Co. Ltd, iRobot Corporation, KUKA AG (Midea Group), Neato Robotics Inc. (Vorwerk), Rethink Robotics GmbH, Samsung Electronics Co. Ltd., Seiko Epson Corporation, SoftBank Robotics Corp and Yaskawa Electric Corporation.

(Please note that this is only a partial list of the key players, and the complete list is provided in the report.)

> Leading players, as mentioned in the smart robot market report, are actively engaging in strategic initiatives to maintain their competitive edge and drive market growth. Companies are investing heavily in research to innovate and

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enhance their robotic solutions. They are focusing on integrating advanced technologies such as artificial intelligence (AI), machine learning (ML), and the Internet of Things (IoT) into their robots, enabling them to perform more complex tasks with greater efficiency and precision. Additionally, leading firms are expanding their global footprint through acquisitions and establishing new facilities in emerging markets to tap into the growing demand for automation. They are also tailoring their products to meet the specific needs of different industries to enhance productivity and operational efficiency.

Smart Robot Market News:

In December 2023: ABB announced an expansion of its relationship with Volvo Cars to offer over 1300 robots and functional packages for the next generation of electric cars (EVs). Volvo Cars will benefit from ABB's new range of energy-efficient big robots and OmniCoreTM controllers, which will enable up to 20% energy savings.

In October 2023: Fanuc and Volvo Cars have agreed to transform car manufacturing with sustainable robotics. Under the arrangement, Fanuc will supply industrial robots to various production units within Volvo's automotive manufacturing facilities.

Key Questions Answered in This Report

1. How big is the global smart robot market?

2. What is the expected growth rate of the global smart robot market during 2024-2032?

3. What are the key factors driving the global smart robot market?

4. What has been the impact of COVID-19 on the global smart robot market?

5. What is the breakup of the global smart robot market based on the component?

6. What is the breakup of the global smart robot market based on the mobility?

7. What is the breakup of the global smart robot market based on the application?

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8. What is the breakup of the global smart robot market based on the vertical?

9. What are the key regions in the global smart robot market?

10. Who are the key players/companies in the global smart robot market?

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