

Top Robotics Market with COVID-19 Impact Analysis by Top Industrial Robotics (Articulated, SCARA, Cartesian, Parallel, Collaborative), Top Service Robotics (Logistics, Domestic, Medical, Defense, Rescue, and Security) - Global Forecast to 2025

<https://marketpublishers.com/r/T2629835DC2EN.html>

Date: October 2020

Pages: 342

Price: US\$ 4,950.00 (Single User License)

ID: T2629835DC2EN

Abstracts

The top robotics market is expected to grow from USD 76.6 billion in 2020 and is projected to reach USD 176.8 billion by 2025; it is expected to grow at a CAGR of 18.2% during the forecast period. Manufacturing industries are expected to face a workforce shortage within the next few years. Due to the anticipated shortage of skilled labor in manufacturing industries, increasing automation using industrial robots to counter the skill gap is one of the solutions adopted by companies. Service robots are increasingly being adopted for new applications due to various advantages such as increased productivity, streamlined processes, and more excellent workplace safety. The main advantage of using service robots is the reduction in the cost of operation and high ROI.

“Professional service robots expected to maintain its market dominance during the forecast period”

Professional service robots are high-tech, sophisticated, and expensive service robots that are increasingly deployed in factories, hospitals, public buildings, and dangerous and hazardous environments. Service robots used for professional applications include drones, automated guided vehicles (AGVs), agricultural robots, inspection robots, humanoid robots, exoskeletons, construction robots, robotic kitchen, laundry robots, unmanned surface vehicles (USVs), autonomous underwater vehicles (AUVs), remotely operated vehicles (ROVs), inspection robots, telepresence robots, surgical robots, and cleaning robots. Due to the high cost of these robots, there is less penetration for

domestic applications.

“Collaborative robots expected to grow at highest CAGR during the forecast”

Collaborative industrial robots are gaining traction not only in SMEs but are replacing traditional industrial robots in a few cases. Rising wages, the shortage of skilled workers, and tighter margins pushing SMEs to automate, and the ease of deployment of collaborative robots is contributing to their huge growth. Collaborative robots are largely being adopted by SMEs as they provide a fast ROI of about 3–12 months. Also, many collaborative robot manufacturers such as Universal Robots (Denmark) have an easy-to-use programmable software, which is compatible with a wide variety of end effectors, vision systems, and other peripherals. This reduces the cost and complexity of integration when compared to traditional industrial robots. Due to the unique ability of collaborative robots to share the same workspace with a human worker, these robots are expected to be adopted at a faster rate in the coming years.

“Handling application to dominate the top industrial robotics market in 2020”

The term material handling encompasses a wide variety of operations such as pick and place, palletizing, packaging, and loading and unloading (or machine tending). Factors such as payload, speed, and factory layout contribute to the selection of the robot. Material handling generally requires a higher payload capacity compared with other applications. Fitting the industrial robot with the appropriate end effector is also necessary for specific material-handling applications. Industrial robots with a payload capacity of 10 kg and more than 250 kg are adopted for the handling application. The handling application utilizes a wide range of payloads compared with applications such as welding and painting, which utilize robots with a payload between 20 kg to 50 kg and require specialized design. All types of industrial robots can perform handling applications, but the same is not the case for other applications. Hence, the handling application held the largest share.

“APAC to grow at a significant rate for top service robotics market in 2020–2025”

The market in APAC is expected to grow at the highest CAGR during the forecast period. This is because of the presence of countries such as Japan, China, and Korea, which, according to IFR, in 2017, were the 4th, 5th, and 6th largest service robot manufacturers. Also, the rise in disposable income due to increasing industrialization in developing countries such as India and the Philippines is expected to increase the demand for service robots. The oil & gas industry in APAC has witnessed significant

growth in the past 2–3 years, which is leading to a high demand for autonomous underwater vehicles (AUVs) and remotely operated vehicles (ROVs).

The effects of COVID-19 is expected to vary widely across different regions and among different top robotic manufacturers due to disruptions in the supply chain. For service robots, pandemic is prompting more service robot usage worldwide. The European Commission is offering small businesses USD 178 million in funding to develop treatment, testing, monitoring, and other robotic technologies. In China, drones, AGVs, and telepresence robots are being deployed in hospitals and other areas for transport, cleaning, and remote checkup. For industrial robots, European and North American industrial robotics market saw a sharp decline in the first and second quarter of 2020. Due to the faster recovery in APAC countries such as China and Japan, the negative impact of industrial robots is expected to subside over time.

In the process of determining and verifying the market size for several segments and subsegments gathered through secondary research, extensive primary interviews have been conducted with key industry experts in the top robotics marketplace. The break-up of primary participants for the report has been shown below:

By Company Type: Tier 1 – 40%, Tier 2 – 30%, and Tier 3 – 30%

By Designation: C-level Executives – 40%, Directors – 40%, and Others – 20%

By Region: North America – 40%, APAC – 30%, Europe – 20%, and RoW – 10%

The report profiles key players in the top robotics market with their respective market ranking analysis. Prominent industrial robot players profiled in this report are FANUC (Japan), ABB (Switzerland), YASKAWA (Japan), KUKA (Germany), Kawasaki Heavy Industries (Japan), Mitsubishi Electric (Japan)

Research Coverage:

This research report categorizes industrial and service robots in the top robotics market on the basis of type, environment, application, industry, and geography. The report describes the major drivers, restraints, challenges, and opportunities pertaining to the top robotics market and forecasts the same till 2025 (including analysis of COVID-19 impact on the market). Apart from these, the report also consists of leadership mapping and analysis of all the companies included in the top robotics ecosystem.

Key Benefits of Buying the Report

The report would help leaders/new entrants in this market in the following ways:

1. This report segments the top robotics market comprehensively and provides the closest market size projection for all subsegments across different regions.
2. The report helps stakeholders understand the pulse of the market and provides them with information on key drivers, restraints, challenges, and opportunities for market growth.
3. This report would help stakeholders understand their competitors better and gain more insights to improve their position in the business. The competitive landscape section includes competitor ecosystem, product developments and launches, partnerships, and mergers and acquisitions.
4. The analysis of the top 25 companies as well as start-ups, based on the strength of the market rank as well as the product footprint will help stakeholders visualize the market positioning of these key players.
5. Patent analysis and technological trends that will shape the market in the coming years has also been covered in this report.

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11.4.2.1 South Korea's electronics industry ranked third in terms of production globally in 2018

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11.4.3.1 Japan's aging population makes labor costly and increases demand for industrial robots

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11.4.4.1 Taiwan is home to TSMC, world's largest independent semiconductor foundry

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16.2.2.1 Consumer drones are mainly adopted by individuals for personal and hobby purposes

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16.3.1.1 Tow vehicles

16.3.1.1.1 Tow vehicles can move more load with multiple trailers than a single fork truck

16.3.1.2 Unit load carriers

16.3.1.2.1 Unit load carriers are used to move unit loads such as standard pallets, drums, carts, racks, rolls, and custom containers

16.3.1.3 Pallet trucks

16.3.1.3.1 Pallet trucks have a capacity of up to 6,000 lbs. and can handle more

than one pallet

16.3.1.4 Forklift trucks

16.3.1.4.1 Forklift trucks offer easy tracking of goods, just-in-time picking, less damage, and fewer operator hours

16.3.1.5 Assembly line vehicles

16.3.1.5.1 Implementation of assembly line AGVs at production plants results in up to 50% increase in efficiency

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16.3.2.1 Vacuuming robots

16.3.2.1.1 Vacuuming robots offer features such as adjustable suction power, scheduling mechanism, voice recognition, and smart navigation system

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16.3.2.2 Lawn mowers

16.3.2.2.1 Manufacturers are integrating robotic lawn mowers with voice command, AI, and onboard GPS systems to make them more user-friendly

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16.3.2.3 Pool cleaning robots

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16.3.3.1.1 Milking robots are also known as voluntary milking systems

16.3.3.2 Automated harvesting systems

16.3.3.2.1 Automated harvesting systems use a combination of cameras, sensors, and machine vision to harvest

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16.3.4.1 Laparoscopy robotic systems

16.3.4.1.1 Robotic laparoscopy devices offer better stability than the human hand, reduced number of incisions, and better visual magnification

16.3.4.2 Orthopedic robotic systems

16.3.4.2.1 Orthopedic surgeries are expected to increase due to rise in obesity and aging demographic

16.3.4.3 Neurosurgical robotic systems

16.3.4.3.1 Robotic neurosurgery is witnessing slow development as it is more complicated than other robotic surgeries

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TABLE 103 ENTERTAINMENT & LEISURE ROBOTS MARKET, BY ROBOT TYPE,
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16.3.5.1 Toy robots

16.3.5.1.1 Humanoids, pets, retro robots, and remote-controlled robots are a few types of toy robots

16.3.5.2 Hobby systems

16.3.5.2.1 Hobby systems are more associated with leisure or sports

16.3.6 INSPECTION ROBOTS

16.3.6.1 Inspection robots are generally used in conditions that are hazardous for humans

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16.3.7.1 Humanoids are being used mainly for public relation application worldwide

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16.3.9.1 Telepresence robots are used in healthcare, corporate, and personal applications

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TABLE 111 MARINE ROBOTS MARKET, BY ROBOT TYPE, 2017–2025 (USD MILLION)

16.4.1 UNMANNED SURFACE VEHICLES (USVS)

16.4.1.1 USVs are used for applications such as defense, oceanography, surveillance, and search and rescue operations

TABLE 112 PRODUCT OFFERINGS OF VARIOUS USV MANUFACTURERS

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TABLE 114 PRODUCT OFFERINGS OF VARIOUS AUV MANUFACTURERS

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16.4.3.1 ROVs have an endurance of about 8 hours

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16.5.2 ENVIRONMENT IN WHICH SERVICE ROBOTS MIGHT BE LEAST IMPACTED

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TABLE 119 TOP SERVICE ROBOTICS MARKET FOR DOMESTIC APPLICATION, BY ROBOT TYPE, 2017–2025 (USD MILLION)

TABLE 120 TOP SERVICE ROBOTICS MARKET, BY DOMESTIC APPLICATION TYPE, 2017–2025 (USD MILLION)

17.2.1 FLOOR CLEANING

17.2.1.1 Newer models of floor cleaning robots are equipped with Wi-Fi connectivity, HEPA filter, real-time floor mapping, and automated recharging and waste disposal

17.2.2 LAWN MOWING

17.2.2.1 Newer models of lawn mowing robots are equipped with rain sensors, self-docking capability, and proximity sensors

17.2.3 POOL CLEANING

17.2.3.1 Pool cleaning robots use laser sensors to detect walls and obstacles

17.2.4 OTHERS

17.3 MEDICAL

FIGURE 104 MARKET FOR POWERED EXOSKELETONS IN MEDICAL APPLICATIONS IS EXPECTED TO GROW AT HIGHEST CAGR DURING FORECAST PERIOD

TABLE 121 TOP SERVICE ROBOTICS MARKET FOR MEDICAL APPLICATION, BY ROBOT TYPE, 2017–2025 (USD MILLION)

TABLE 122 TOP SERVICE ROBOTICS MARKET, BY MEDICAL APPLICATION TYPE, 2017–2025 (USD MILLION)

17.3.1 SURGERY ASSISTANCE

17.3.1.1 Surgical robots are penetrating the market at a high rate as they offer minimally invasive surgery

17.3.2 HANDICAP ASSISTANCE

17.3.2.1 Inclusion in various insurance policies is a key factor driving demand for handicap assistive robots

17.3.3 UV DISINFECTION

17.3.3.1 UV disinfection robots are a niche category of robots

17.3.4 OTHERS

17.4 FIELD

TABLE 123 TOP SERVICE ROBOTICS MARKET FOR FIELD APPLICATION, BY ROBOT TYPE, 2017–2025 (USD MILLION)

TABLE 124 TOP SERVICE ROBOTICS MARKET, BY FIELD APPLICATION TYPE, 2017–2025 (USD MILLION)

17.4.1 HARVEST MANAGEMENT

17.4.1.1 Due to shortage of labor, high production costs, and environmental factors, the need for harvest management robots is increasing

17.4.2 FIELD FARMING

17.4.2.1 Crop monitoring

17.4.2.1.1 Crop monitoring is generally performed aerially by agricultural drones

17.4.2.2 Plant scouting

17.4.2.2.1 Plant scouting robots are generally used for indoor farming applications in greenhouses or vertical farms

17.4.2.3 Crop scouting

17.4.2.3.1 Crop scouting robots measure traits and readings of individual plants in plantations using a combination of cameras and sensors

17.4.3 DAIRY & LIVESTOCK MANAGEMENT

17.4.3.1 Drones and milking robots are dominant robots for dairy and livestock management applications

17.4.4 OTHERS

17.5 DEFENSE, RESCUE, AND SECURITY

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TABLE 125 TOP SERVICE ROBOTICS MARKET FOR DEFENSE, RESCUE, AND

SECURITY APPLICATION, BY ROBOT TYPE, 2017–2025 (USD MILLION)

17.5.1 DEMINING

17.5.1.1 Demining robots can work efficiently and flexibly, and improve personnel safety

17.5.2 FIRE AND BOMB FIGHTING

17.5.2.1 Firefighting robots are more precise due to their capability to handle fire from a closer distance

17.5.3 BORDER SECURITY & SURVEILLANCE

17.5.3.1 Border security and surveillance robots are used to curb illegal immigration and imports, implanting of explosive devices, and terrorist activities

17.5.4 OTHERS

17.6 ENTERTAINMENT, EDUCATION, AND PERSONAL

TABLE 126 TOP SERVICE ROBOTICS MARKET FOR ENTERTAINMENT, EDUCATION, AND PERSONAL APPLICATION, BY ROBOT TYPE, 2017–2025 (USD MILLION)

TABLE 127 TOP SERVICE ROBOTICS MARKET, BY ENTERTAINMENT, EDUCATION, AND PERSONAL APPLICATION TYPE, 2017–2025 (USD MILLION)

17.6.1 ENTERTAINMENT

17.6.1.1 Entertainment robots can be used at residences for kids, guests, and elderly people

17.6.2 EDUCATION

17.6.2.1 Robotics enhance educational pursuits and help achieve individual learner requirements

17.6.3 COMPANIONSHIP AND ELDERLY ASSISTANCE

17.6.3.1 Increasing geriatric population worldwide is driving assistance robots market

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*Details on Business overview, Products offered, Recent developments, COVID-19-related developments, SWOT analysis, and MnM view might not be captured in case of unlisted companies.

20.3 RIGHT TO WIN

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About

According to the new market research report "Top Robotics Market by Top Industrial Robotics (Articulated, SCARA, Cartesian, Parallel, and Collaborative), Top Service Robotics (Logistics, Domestic, Medical, Field, and Defense, Rescue, & Security) - Global Forecast to 2023", The top industrial robotics market is expected to grow from USD 44.02 Billion in 2018 to USD 69.14 Billion by 2023, at a CAGR of 9.45% during the forecast period; the top service robotics market is expected to grow from USD 11.27 Billion in 2018 to USD 29.76 Billion by 2023, at a CAGR of 21.44% during the forecast period. The growth of the top robotics market is driven by factors such as increasing demand for service robots from medical and healthcare sectors, and growing investments for automation in various industries.

The top service robotics market is currently dominated by players such as:

Northrop Grumman (US),

iRobot (US), DJI (China),

Intuitive Surgical (US), and

Honda Motor (Japan).

Samsung Electronics (South Korea),

GeckoSystems (US), DeLaval (Sweden)

Kongsberg Maritime (Norway)

The top industrial robotics market is currently dominated by players such as FANUC (Japan), ABB (Switzerland), Yaskawa (Japan), KUKA (Germany), and Mitsubishi (Japan). CMA Robotics S.p.A. (Italy), Robert Bosch GmbH (Germany), Anhui Efort Intelligent Equipment (China), Precise Automation, Inc. (US), Rethink Robotics (US), and F&P Robotics AG (Switzerland) are some of the emerging players in the top industrial robotics market.

Articulated robots to capture the largest share of the top industrial robotics

market in 2018

Articulated robots are expected to hold the largest share of the top industrial robotics market in 2018 owing to increased payload capacity, work envelope, reliability, and speed, articulated robots are used in several applications, including welding, painting, assembly, packaging, palletizing, depalletizing, machine tending, sealing, gluing, cutting, cleaning, deburring, die casting, grinding, polishing, material handling, case packing, pick and place, pre-machining, and press brake tending.

Top industrial robotics market for metal and machinery industry to grow at a high rate during the forecast period

The metals and machinery industry has been among the versatile industries for automation solutions. It performs several functions ranging from small details to higher performance in complex tasks. With growing demand for machines in industries, such as agriculture, packaging, and manufacturing, for various applications, the top industrial robots market for the metals and machinery industry is expected to grow at a high rate during the forecast period.

APAC to hold the largest share of the top service robotics market during the forecast period

Among the 4 regions considered (North America, Europe, APAC, and RoW) in the report, APAC is expected to hold the largest share of the top service robotics market during the forecast period (2018-2023). Adoption of service robots by countries such as China, India, Japan, and South Korea for a myriad of personal and professional applications contribute to the growth of the top service robotics market in APAC. Also, the rising demand for mobile service robots, such as autonomous ground vehicles (AGVs) and logistic robots, for logistic stock management application is driving the growth of the market in this region.

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