Autonomous Robots

Overview

Autonomous robots are intelligent machines capable of performing tasks in the world independently, without direct human control. Examples range from autonomous helicopters to industrial production robots.

Applicable Industries

- Aerospace
- Automotive
- Healthcare Services
- Heavy Vehicle
- Equipment & Machinery
- Medical Devices & Equipment
- Mining
- Oil & Gas
- Rail & Metro

Shipping

Applicable Functions

Facility Maintenance

Production - Manufacturing

Quality Assurance

Case Studies

Remote operation of deployed teleoperated robots - Sarcos

Remote operation of deployed teleoperated robots (Guardian™ S) to perform complex tasks and video mapping and monitoring
in areas where human safety is at risk.

Market Size

Estimate A

Electrical engineering company Siemens predicts the global market for autonomous robots to grow to USD 3.6 billion in 2019, and USD 13.9 billion in 2023.

Source: Siemens

Estimate B

Another source puts the global market for autonomous robots at USD 14.2 billion in 2019.

Source: Transparency Market Research

Estimate C

FN Media Group predicts the global market for industrial robotics to grow to USD 40 billion in 2020.

Source: FN Media Group

User Viewpoint

Business Value

How does this use case impact an organization’s performance?

Autonomous robots enable a dynamic, self-adapting robotics environment for production processes.

Ability to work in a dynamic environment by continously adapting to it through proprioception (internal status) and exteroception (external environment).

Key Performance Indicators

How is the success of the system measured for users and for the business?

Time reduction for reconfiguration, production speed, consumed energy.

System Capabilities & Requirements

What are the typical capabilities in this use case?

Customized production processes based on changing input data or environment parameters.

Deployment Environment

Where is the ’edge’ of the solution deployed?

Deployed in any process requiring robots.

Technology Viewpoint

Sensors

What sensors are typically used to provide data into the IoT system, and which factors define their deployment?

Crucial part to be part in a dynamic environment. Whole adaptation and configuration is based on accurate real-time sensor data.

Analytics

What types of analysis are typically used to transform data into actionable information?

Constant analytics of all incoming data about the handled material and environment conditions.

Cybersecurity

What factors define the trustworthiness of the solution?

Location in working environment. Interaction with humans required maximum security.

Cloud & Edge Platforms

What factors define the cloud and edge platforms used to integrate the solution?

Real-time edge analytics are essential to system performance. Cloud storage enables accumulation of historical data.

Connectivity

What factors define the connectivity solutions used to provide both device-to-device and device-to-cloud communication?

Integrated communication capabilities connecting robots with each other and every other machine involved.

User Interface

What factors define the interfaces available to the system users?

Multiple users with different competency levels must receive different alerts.

Data Viewpoint

Data Sources

How is data obtained by the system?

Incoming requirements and models from customer, real-time data from sensors, historical database.

Implementation Viewpoint

Integration Challenges

What integration challenges could impact deployment?

Standards across all involved technologies.

IoT ONE Use Case

Accelerating the Industrial Internet of Things

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