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**what is Robots?**

**Robot**, any automatically operated machine that replaces human effort, though it may not resemble human beings in appearance or perform functions in a human like manner. By extension, robotics is the engineering discipline dealing with the design, construction, and operation of robots.

**Types of Robots?**

As robotics manufacturers continue to deliver innovations across capabilities, price, and form factor, robotics solutions are being implemented in an ever-increasing number of industries and applications. Advancements in processing power and AI capabilities mean that we can now use robots to fulfill critical purposes in a plethora of ways.

While robotics applications vary greatly—giving directions, stocking shelves, welding metal in dangerous environments, and much more—today’s robots can generally be grouped into six categories.

1. **Autonomous Mobile Robots (AMRs)**

* AMRs move throughout the world and make decisions in near real-time as they go. Technologies such as sensors and cameras help them ingest information about their surroundings. Onboard processing equipment helps them analyze it and make an informed decision—whether that’s moving to avoid an oncoming worker, picking precisely the right parcel, or selecting an appropriate surface to disinfect. They’re mobile solutions that require limited human input to do their job. Learn more about AMRs.

1. **Automated Guided Vehicles (AGVs)**

* While AMRs traverse environments freely, AGVs rely on tracks or predefined paths and often require operator oversight. These are commonly used to deliver materials and move items in controlled environments such as warehouses and factory floors.

1. **Articulated Robots**

* Articulated robots (also known as robotic arms) are meant to emulate the functions of a human arm. Typically, these can feature anywhere from two to 10 rotary joints. Each additional joint or axis allows for a greater degree of motion—making these ideal for arc welding, material handling, machine tending, and packaging. Learn more about articulated robots and robotic arms.

1. **Humanoids**

* While many mobile humanoid robots may technically fall under the domain of an AMR, the term is used to identify robots that perform human-centric functions and often take human-like forms. They use many of the same technology components as AMRs to sense, plan, and act as they carry out tasks such as providing directions or offering concierge services.

1. **Cobots**

* Cobots are designed to function alongside or directly with humans. While most other types of robots perform their tasks independently, or in strictly isolated work areas, cobots can share spaces with workers to help them accomplish more. They’re often used to eliminate manual, dangerous, or strenuous tasks from day-to-day workflows. In some cases, cobots can operate by responding to and learning from human movements.

1. **Hybrids**

* The various types of robots are often combined to create hybrid solutions that are capable of more complex tasks. For example, an AMR might be combined with a robotic arm to create a robot for handling packages inside of a warehouse. As more functionality is combined into single solutions, compute capabilities are also consolidated.

**Application of Robots Today?**

Businesses and government agencies use robotics in a variety of ways. All five of the common robot types are deployed to enhance outcomes and reduce the burden on employees so they can focus on the most-valuable and most-critical tasks.

**Industrial**

The manufacturing industry has long been at the forefront of using various types of robots to achieve business results. AMRs, AGVs, articulated robots, and cobots are all deployed on factory floors and in warehouses to help expedite processes, drive efficiency, and promote safety—often in conjunction with programmable logic controllers. They’re used across a variety of applications, including welding, assembly, materials transportation, and warehouse security.

**Farming and Agriculture**

AMRs are helping farmers harvest their crops more quickly and efficiently—and they’re using impressive intelligence capabilities to do it. Agricultural robots can assess ripeness, move any branches or leaves out of the way, and pick the crop precisely and delicately to avoid causing any harm to the product.

**Healthcare**

Various types of robots are used in the healthcare industry to enhance the patient experience. AMRs are used to deliver medication, disinfect surfaces, or provide mobile telepresence functionality. Cobots are also used to assist medical professionals during rehabilitation or to help nurses better serve their patients.

**Logistics**

Robotics help logistics and shipping companies to deliver goods quickly and efficiently. They use AMRs and AGVs as warehouse robots that help them process items, expedite operations, and increase accuracy. They also employ AMRs to take shipments the last mile and ensure safe delivery to customers.

**Retail and Hospitality**

Robotics can be used to enhance the customer or guest experience in a variety of ways. Retail and hospitality companies are using robotics to automate inventory processes, provide concierge or way-finding services, clean various environments, and assist customers with their luggage or valet parking.

**Smart Cities**

Robotics help create smarter and safer cities. Humanoid robots offer way-finding and information services. AMRs are used to deliver goods and conduct routine security patrols. Robotics also help expedite building construction, conduct site surveys, and collect building modeling information.