Robotics Badges

Glossary for Seniors

Accelerometer – an electronic sensor that measures movement, including speed and tilt.

Actuator – the part of a robot's power system that makes it move, such as an electric motor or hydraulic pump.

Algorithm – a set of step-by-step instructions to carry out a task. Directions to travel from one place to another, a recipe and a computer program are all types of algorithms.

Artificial intelligence or AI – a type of computer program that acts as if it can think like a human. For example, AI programs are used in devices that can answer questions and hold conversations with people in ordinary language.

Binary – a way of presenting information using only two symbols. In math, a binary system consists of the numbers 0 and 1.

Biomimicry – using animals, humans, or other living things as models for a robot's design.

Bug – a problem in a computer program. To get rid of the problem, you debug the program.

Coding – also known as programming, the task of writing a computer program (or code) that tells a computer what to do.

Command – one step in a computer program.

Computer program – a set of instructions, or an algorithm, that tells the machine what to do.

Conditional statement – in a computer program, a rule that tells the computer to make a choice between two or more actions, depending on whether a certain condition is true or false (or equal to a particular amount).

Conductive materials – substances that carry electricity easily, like metal.

Compliant robot – a robot designed to be safe for people to use when it is in action. For example, it may have an automatic shut-off for when it comes in contact with a person or be made of lightweight material that can't harm someone if it bumps into them.

Controller – the robot's "brain"—it processes information and decides how to react. Examples include computers and microcontrollers.

Data – information that a computer can understand.

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Degrees of freedom – the number of directions a robot part can move in.

Design Thinking Process – a method used to create good, useful products. The steps include defining a need, designing and building a prototype, testing it, and then making improvements by repeating the process.

Documentation – a record in words and pictures of how a project was designed and built.

Effector – a robot part that moves. Arms, grippers, legs, wheels, treads, and propellers, as well as the head (if it can turn), tail, wings, fins, tentacles, antennae, and any other movable parts are all types of effectors.

Elevator pitch – a short, enthusiastic explanation of your project that would make a listener interested in helping you produce it.

Function – a series of commands that is given a name. When you "call" the function, those steps are carried out.

Graphical language – a computer language for beginners that lets you drag and drop command blocks on a screen to create a program instead of typing them in line by line.

Housing – a robot's body.

Hydraulic system – In a hydraulic system, liquid under high pressure is pushed back and forth. When you push in a controller on one side, a piston on the other side is pushed out. When you pull the controller out, the piston moves back in.

Input – data that is sent to a robot's controller, usually by an electronic sensor.

Insulation – materials that don't carry electricity easily. They are used to cover conductive materials and keep electricity from leaving the circuit.

Iterate – to repeat something over again.

LED – short for "light emitting diode," an electronic component that acts like a tiny low-energy light bulb. They are found in flashing toys and as indicator lights in most electronics.

Locomotion – the ability to move from one place to another.

Loop – a computer programming shortcut that tells the computer to go back and repeat a series of commands.

Output – an action that a robot takes after it processes input using a computer program or other kind of control.

Pneumatic system – a power system that uses air or other gas under high pressure to move a piston

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back and forth.

Programmable body – a way of controlling how a robot moves by changing its physical design.

Prototype – a rough model used for seeing what a robot design will look like and testing it out.

Pseudocode – a computer program written in everyday language. It is used as a quick way to plan out a computer program without translating it into a programming language.

Robot – a machine that can take in information about its environment, analyze that information to make decisions about what to do next, and then perform an action in the physical world around it. This is known as the Sense-Think-Act definition of a robot.

Roboticist – a scientist who works on robots and related technology.

Robotics – the branch of technology that deals with designing, building, and using robots.

Scale model – a smaller version of an object that has the same shape as the finished design.

Sensor – an electronic component that can detect conditions around it. On a robot, sensors transmit information to the robot's controller about its environment.

Swarm – a group of robots that work together to complete complicated tasks, such as assembling buildings.

Syntax – the set of rules used by a language. It includes spelling, spacing, symbols, and punctuation.

Tilt sensor – an electronic component that sends a signal when it is tilted.