Robotics Badges:

Glossary for Cadettes

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 from one place to another, a recipe for baking, and a computer program are all types of algorithms.

Artificial intelligence (AI) – a type of computer program that acts as if it can think like a human. For example, AI is used in devices that answer people's questions and hold conversations using ordinary language.

Assistive technology – products, equipment, and systems designed to improve learning, working, and daily living for persons with disabilities.

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.

Circuit – a path for electricity to travel along. Most circuits are designed as loops, with a switch that can open and close the circuit, like a drawbridge. A circuit must be closed for electricity to flow.

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.

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.

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

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

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

Crowdfunding – raising money from a large number of people who each contribute a relatively small amount, usually through websites like Kickstarter.

Data – information that a computer can understand.

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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 you designed and built a project.

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.

Housing – a robot's body.

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.

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

Prototype – a rough model used for visualizing and testing a design.

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.

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.

Telepresence robots – rolling platforms with webcams that let you see, hear, and respond to what's going on around the robot. They are used by homebound students, tour guides, night watchmen, factory inspectors and healthcare workers.