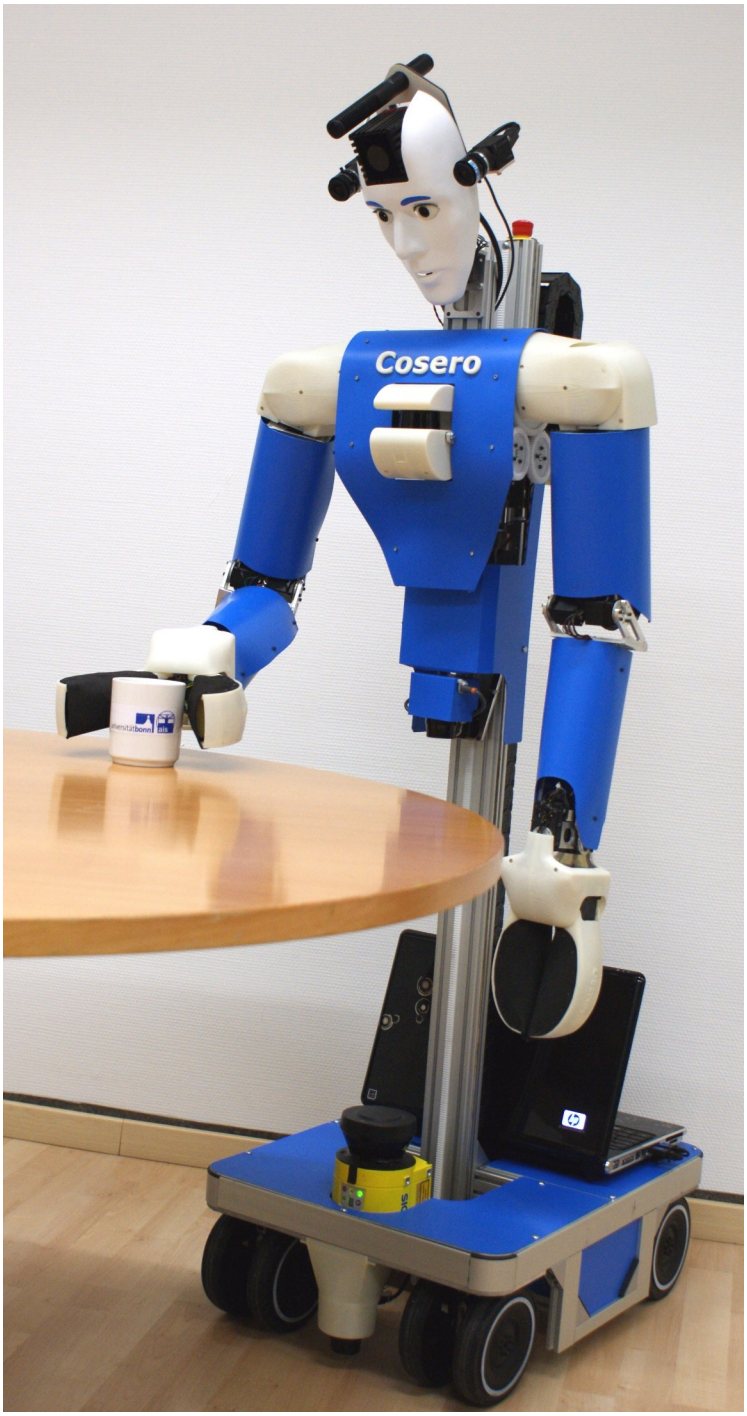
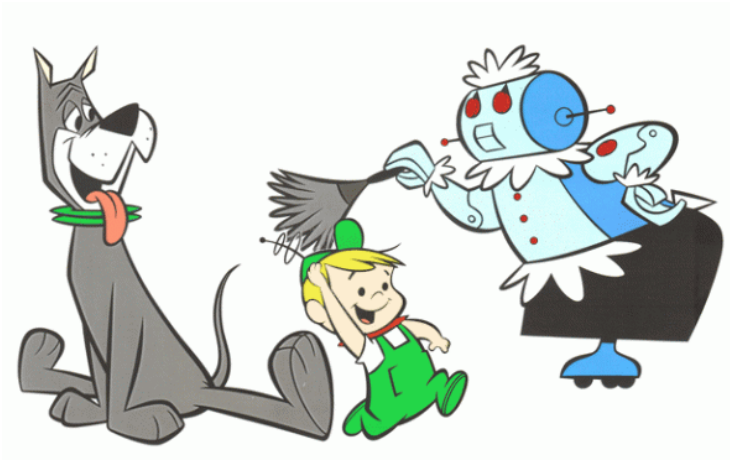
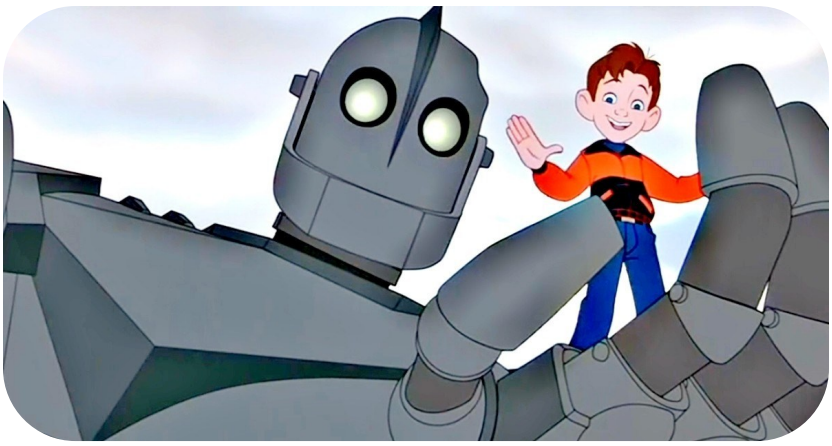


Robots

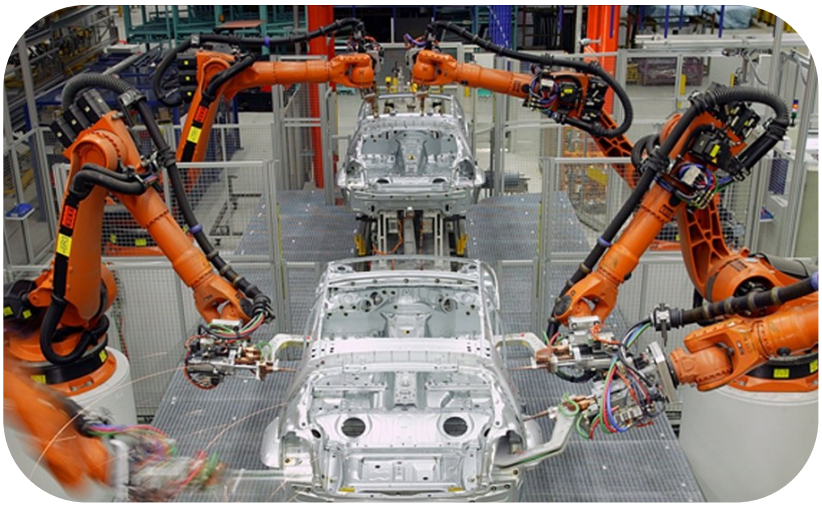
Inventors of Tomorrow

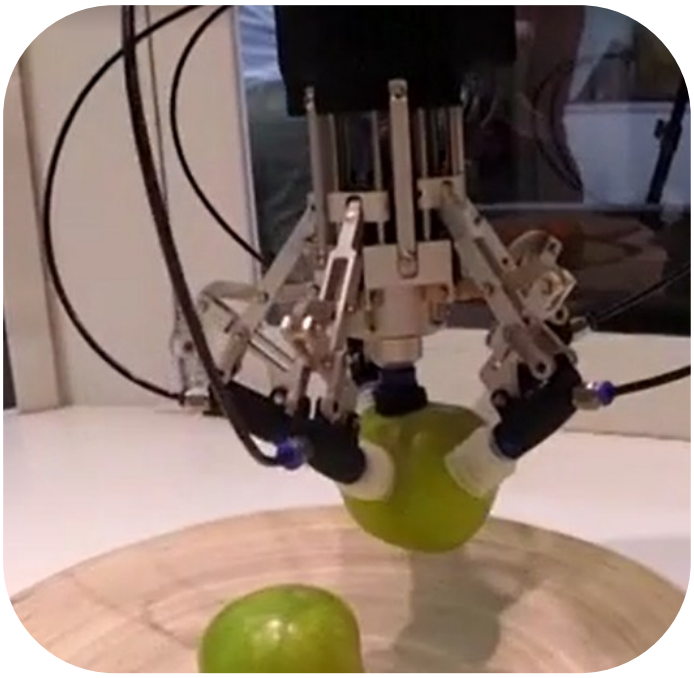


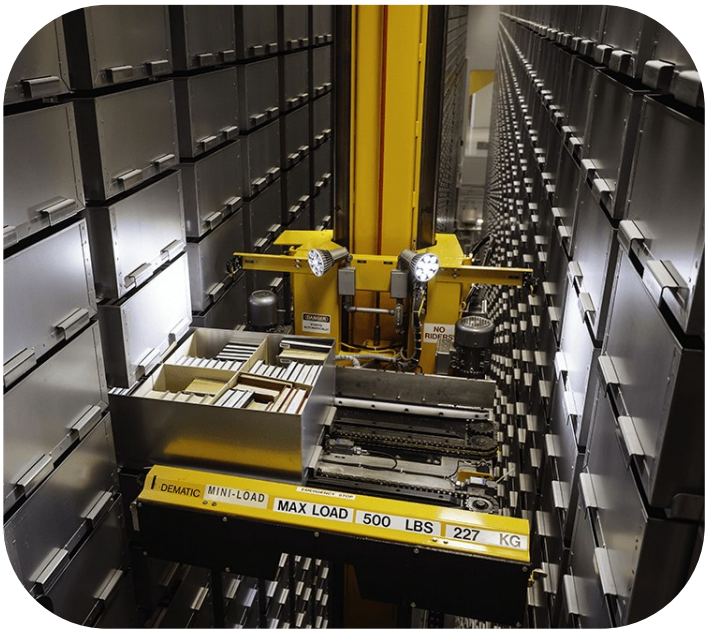
In books and movies, you may have seen robots that walk, talk, have feelings, and look cute.



Real robots are not quite that advanced. Here are some real robots, doing the jobs they were designed for.







These robots are designed to assemble cars, pick fruit, get books from library shelves or move large boxes around a warehouse.

What is a Robot?

Robots are machines that humans build to do something.

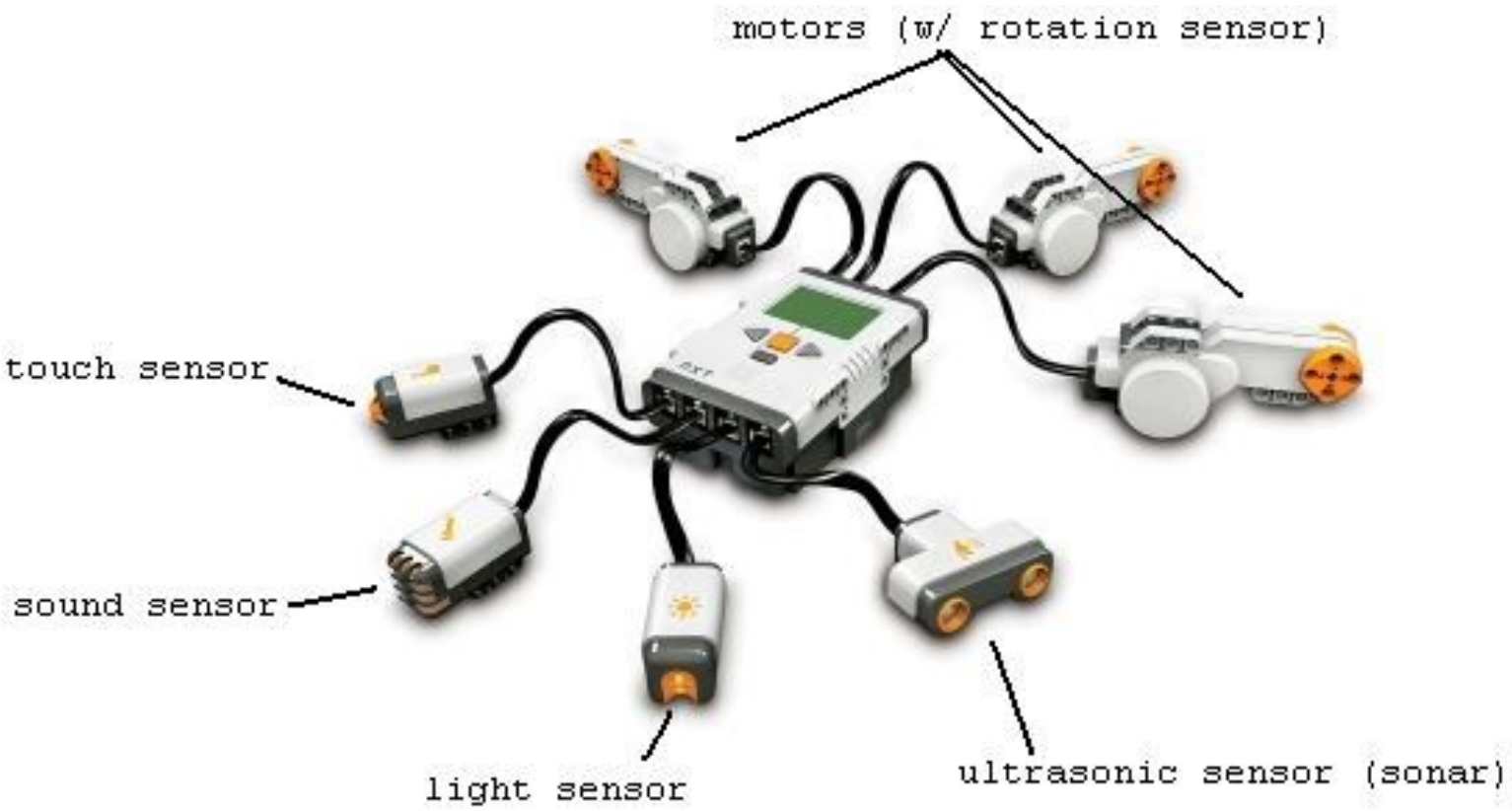
What does a robot do?

A true robot can sense information about its environment, “think” about the information, and take an action.

This Gita robot is like a shopping cart bot. You load it with your stuff, then it follows you around. Its sensors tell it when you stop, start or turn, so it can stay close behind you.

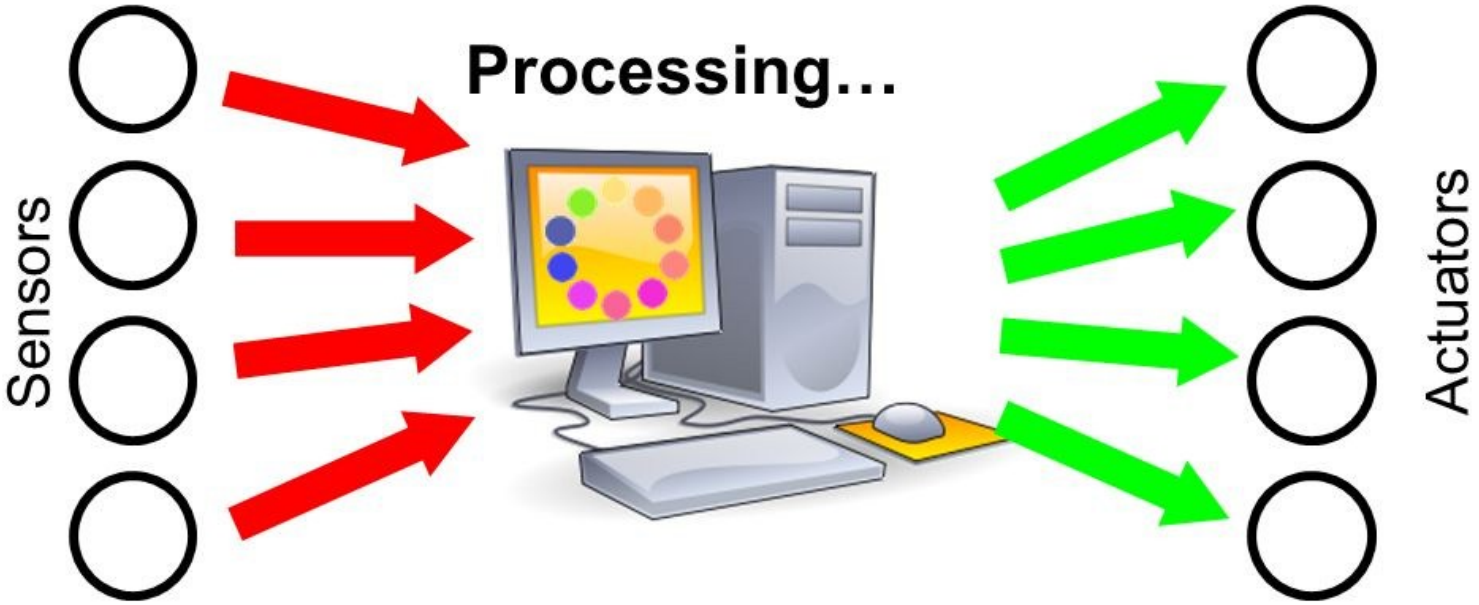
Sensors

Robots can “see” with light sensors, some have “touch” sensors that notice pressure or temperature, some can “smell” chemicals or “hear” sounds.



Processors

Robot sensors take in information, then a computer processes the information and makes a decision about what to do. This is like when our brains think about what we learn from our senses.



A computer program tells the robot how to respond. A robot vacuum has a program that says “If your bumpers run into a wall, then turn. Else, just keep vacuuming.”

Another program says “If your sensors show you’re at a cliff, then back up and turn around. Else, just keep vacuuming.”

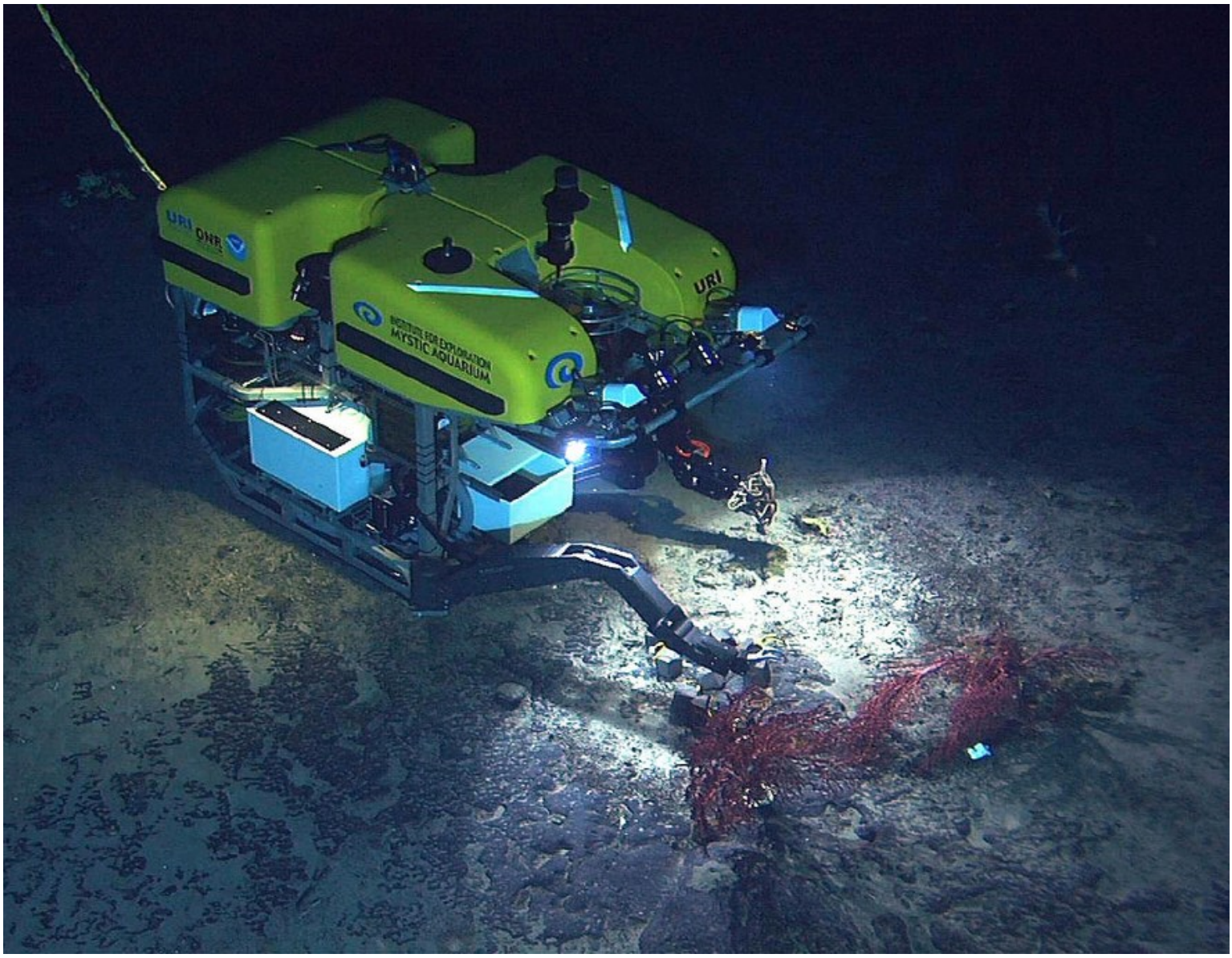
Actuators

Robots need to be able to move or to do something. They might move on legs or on wheels, or may have “arms” that move.

This Lego Mindstorm robot can solve a Rubik’s cube puzzle.

Why do humans build robots?

We invent robots to do jobs that humans can't do or don't want to do.



This robot explores the ocean and takes pictures underwater.

Some robots do boring jobs that humans don’t like to do...

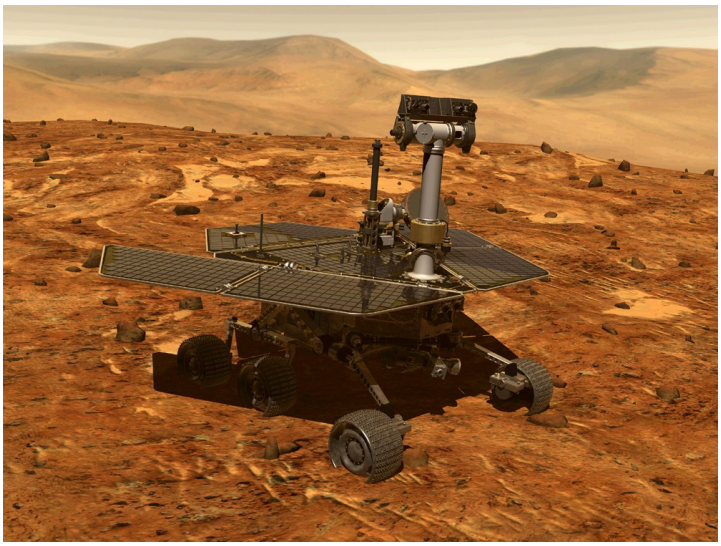
This robot cleans swimming pools.

Some do jobs that are dangerous for humans to do.

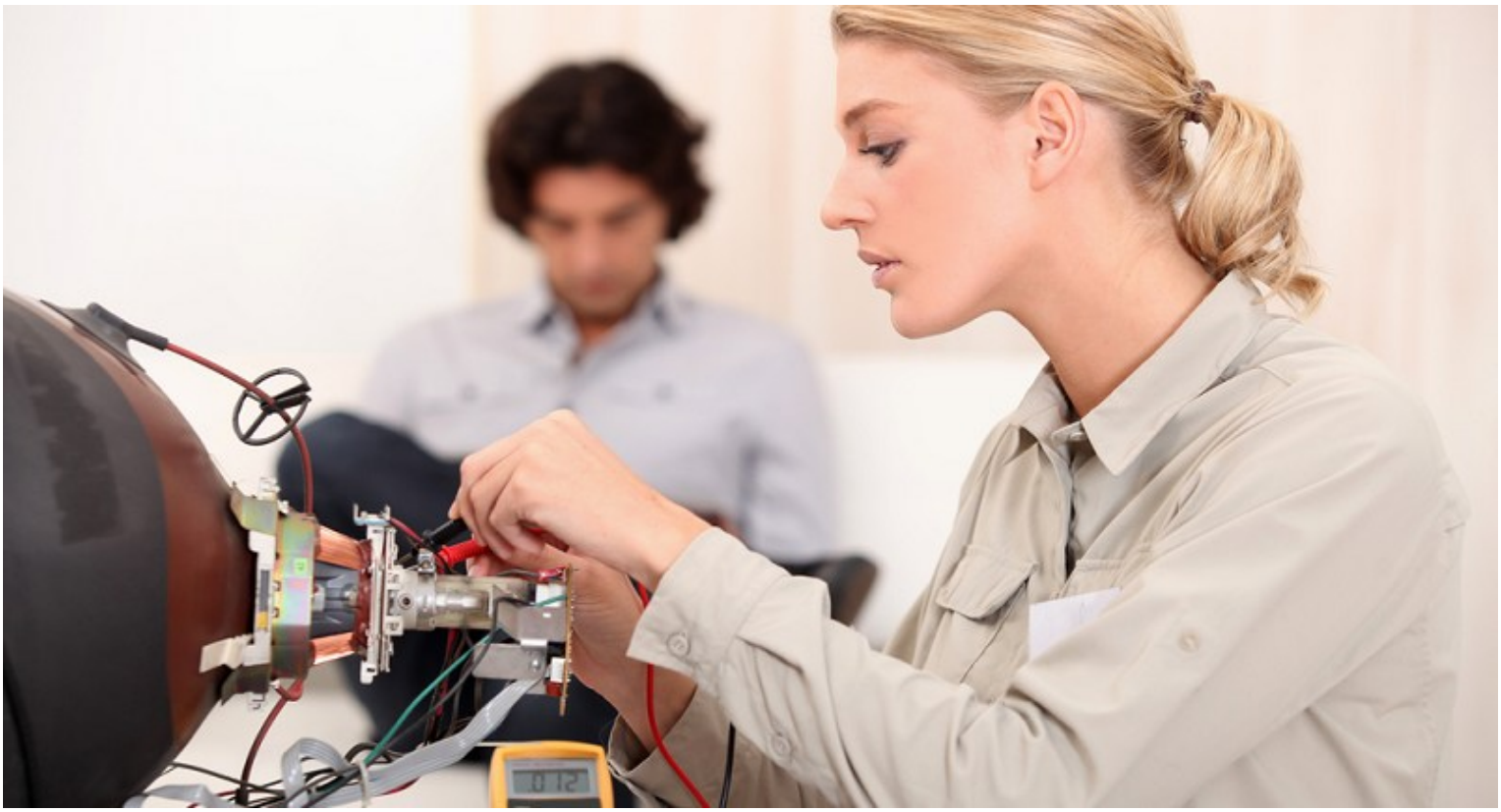
Like fight fires...

Clean windows on high rise buildings...

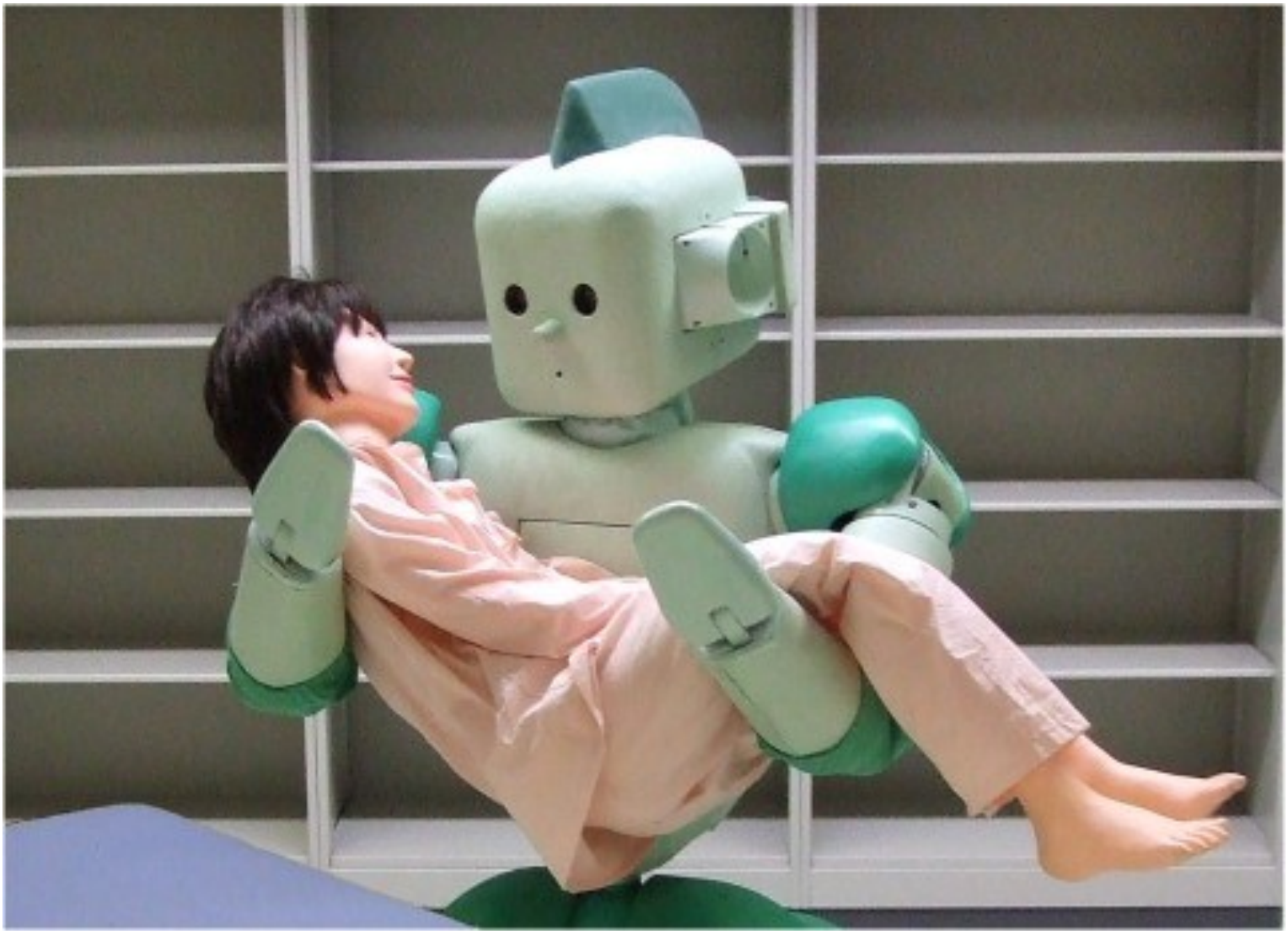
... or explore Mars



Designing a Robot



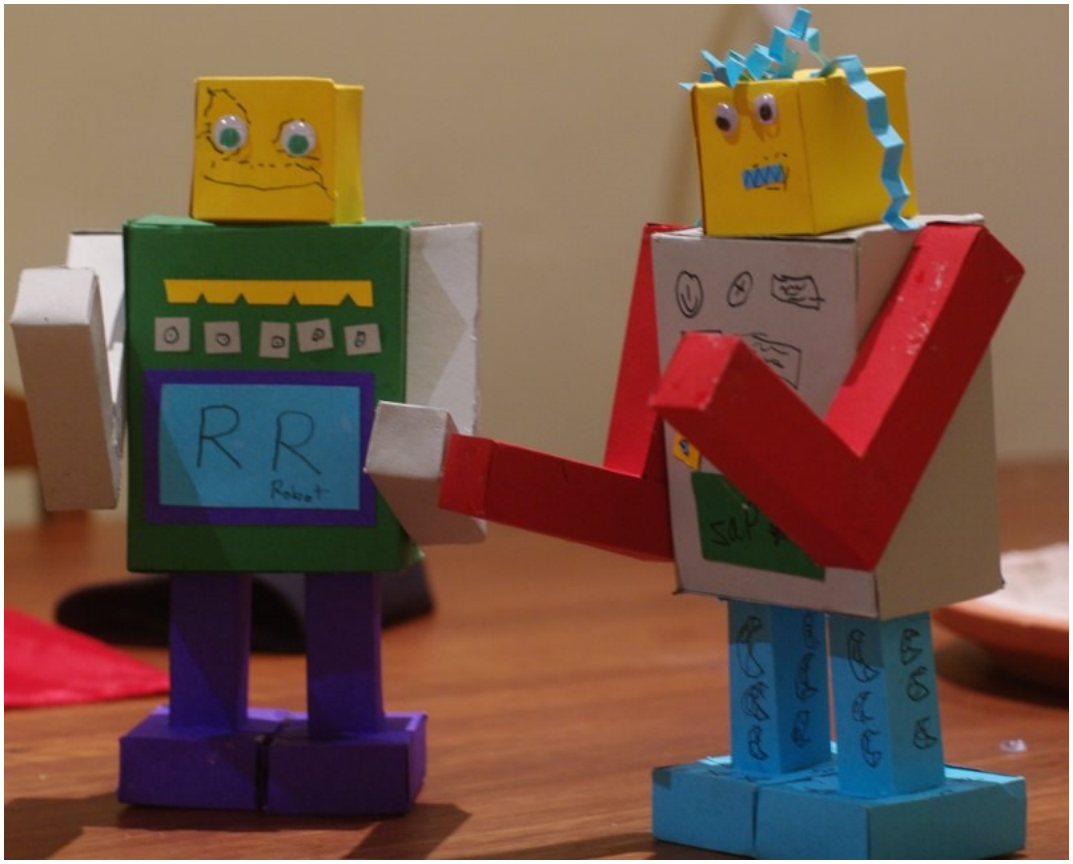
When an engineer designs a robot, they first decide what job they want it to do. That helps them decide what material to make it out of, what shape to make it, and what types of sensors and actuators to include.



If you wanted to build a robot nurse to take care of people who are sick, what would it be like?

What Would You Build?

Imagine you could build any kind of robot.



Goals: First, think about your goals: what job would you want your robot to do? (Try to think of something you can't do or don't want to do.)

Design: What tools (actuators) would it need to do the job? What sensors would it need? What materials could it be made of? Will it need to move? If so, how will it move?

Create: Draw a picture of your robot design. Or write a story about it. Or build a model.