

All About Robotics

- ✦ There are many benefits to using robots instead of humans. Can you imagine working in a factory all day, every day, doing the exact same thing over and over again?
- ✦ Robots can be used in situations that may be – or are - hazardous for humans and robotic missions are less expensive than human missions. Because of these factors, robots are idea for gathering information about remote locations so that we can select those of interest and prepare for humans to visit.
- ✦ There are things that humans can do that robots cannot. Humans can make rapid assessments of their surroundings and decide what needs to be done first, second, and third – or what does not need to be done. Robots need to be programmed for each and every step; robots are the tool - humans still have to make the determinations.
- ✦ The good thing about robots is that they will never get bored, and they will do things more efficiently than people. Also, robots never get sick, or need to rest. This means they can work for 24 hours a day, 7 days a week.
- ✦ Robots can be made from a variety of materials including metals and plastics.
- ✦ The hardest thing for a robot to do is to walk. This is hard for the creators of the robot as well, since the act of walking involves hundreds of specific motions.
- ✦ Some real robots must walk on uneven surfaces, like the surface of Mars, so these robots need sensors in their legs to find good footholds!
- ✦ Most robots usually have at least 3 main parts that work together for the robot to operate: 1) the Controller, also known as the "brain" which is run by a computer program; 2) mechanical parts; and 3) sensors to tell the robot about its surroundings.
- ✦ Several robots have been sent to Mars, including the Viking Landers, Pathfinder, and the Mars Exploration Rovers. These robots collect soil, rock and atmosphere samples, analyze them and then send the data back to Earth.
- ✦ Lots of robotic spacecraft are operating across our solar system, around the Moon, Mars, Mercury, Saturn, on the way to Pluto, and even beyond. They are collecting information to help us understand what our solar system is like and how it formed, and to help us prepare for future exploration.
- ✦ Robonaut is a humanoid robot. It looks like an astronaut, is highly mobile, and has a large range of motion in its sensor-covered "hands." Robonaut is intended to perform many of the mechanical functions of astronauts.