



11.3.4 Applications

Outer space: Exploring stars, planets etc., investigation of the mineralogy of the rocks and soils on Mars, analysis of elements found in rocks and soils.

Mars Rovers of NASA



Twin Mars Rovers



Mars Pathfinder Mission



Litter robot



Welding



Cutting



Assembling



Vacuum Cleaners



Packing



Transport



Surgery



Weaponry



Lawn mowing



Laboratory



Underwater



Hospitals



Agriculture



Pool cleaning



Nanorobots

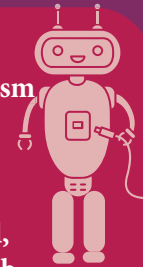
The size of the nano robots is reduced to microscopic level to perform a task in very small spaces. However, it is only in the developmental stage. The future prospects of it are much expected in the medical field: Nano-robots in blood stream to perform small surgical procedures, to fight against bacteria, repairing individual cell in the body. It can travel into the body and once after the job is performed it can find its way out. Chinese scientists have created the world's first autonomous DNA robots to combat cancer tumours.

Materials used to make robots

For robots, aluminum and steel are the most common metals. Aluminum is a softer metal and is therefore easier to work with, but steel is several times stronger. In any case, because of the inherent strength of metal, robot bodies are made using sheet, bar, rod, channel, and other shapes.

11.3.5 Advantages of Robotics

1. The robots are much cheaper than humans.
2. Robots never get tired like humans. It can work for 24 x 7. Hence absenteeism in work place can be reduced.
3. Robots are more precise and error free in performing the task.
4. Stronger and faster than humans.
5. Robots can work in extreme environmental conditions: extreme hot or cold, space or underwater. In dangerous situations like bomb detection and bomb deactivation.
6. In warfare, robots can save human lives.
7. Robots are significantly used in handling materials in chemical industries especially in nuclear plants which can lead to health hazards in humans.



11.3.6 Disadvantages of Robotics

1. Robots have no sense of emotions or conscience.
2. They lack empathy and hence create an emotionless workplace.
3. If ultimately robots would do all the work, and the humans will just sit and monitor them, health hazards will increase rapidly.
4. Unemployment problem will increase.
5. Robots can perform defined tasks and cannot handle unexpected situations
6. The robots are well programmed to do a job and if a small thing goes wrong it ends up in a big loss to the company.
7. If a robot malfunctions, it takes time to identify the problem, rectify it, and even reprogram if necessary. This process requires significant time.
8. Humans cannot be replaced by robots in decision making.
9. Till the robot reaches the level of human intelligence, the humans in work place will exit.

