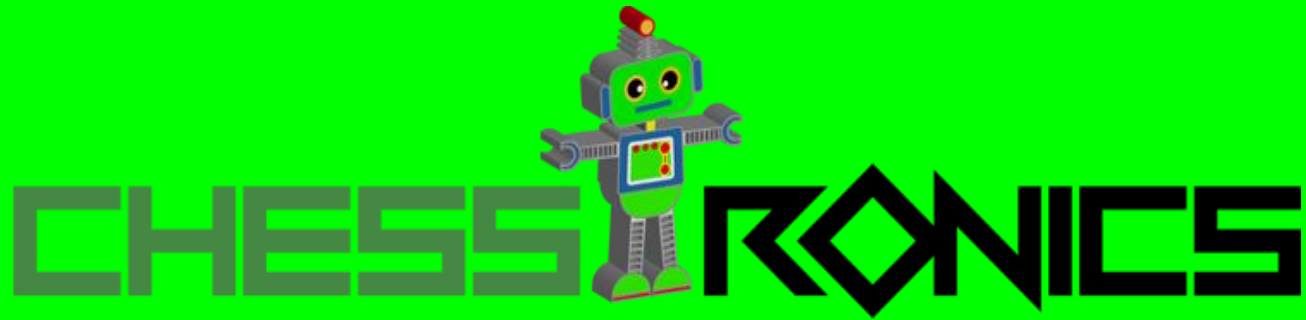


SUMMER CAMP 2019 ROBOTICS SESSION



CODE - CREATE - CHECKMATE



ROBOTICS



Robotics



Robotic History



Robotic Technology



Types of Robots





What is a Robot...?

A re-programmable, multifunctional, automatic industrial machine designed to replace human in hazardous work. It can be used as :-

- An automatic machine sweeper
- An automatic car for a child to play with
- A machine removing mines in a war field
- In space
- In military , and many more..

<https://youtu.be/UuPAlmipntw>



WHAT IS ROBOTICS...?

Robotics is science of designing or building an application of robots. Simply ,Robotics may be defined as “The Study of Robots”. The aim of robotics is to design an efficient robot.

WHY IS ROBOTICS NEEDED...?

Robotics is needed because:-

- Speed
- Can work in hazardous/dangerous temperature
- Can do repetitive tasks
- Can do work with accuracy



ROBOTIC HISTORY

First use of the word “Robotics”

Three Laws of Robotics

The first robot “Ultimate”

First use of the word “Robotics”

The word robot was introduced to the public by Czech writer Karel Capek(1890-1938) in his play R.U.R. (Rossum's Universal Robots), published in 1920. The play begins in a factory that makes artificial people called robots . Capek was reportedly several times a candidate for the Nobel prize for his works .



The word "robotics", used to describe this field of study, was coined accidentally by the Russian –born , American scientist and science fiction writer, Isaac Asimov(1920-1992) in 1940s.

The Three laws of Robotics

Asimov also proposed his three "Laws of Robotics", and he later added a "zeroth law".

Zeroth Law : A robot may not injure humanity, or, through inaction, allow humanity to come to harm

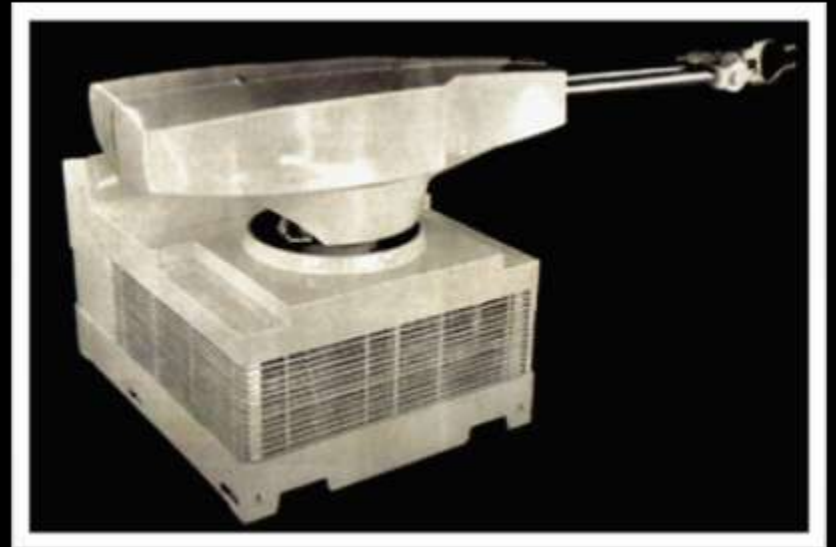
First Law : A robot may not injure a human being, or, through inaction, allow a human being to come to harm, unless this would violate a higher order law

Second Law: A robot must obey orders given it by human beings, except where such orders would conflict with a higher order law

Third Law : A robot must protect its own existence as long as such protection does not conflict with a higher order law.



The First Robot “UNIMATE”



ROBOTICS TECHNOLOGY

Most industrial robots have at least the following five parts:



Sensors



Effectors

Actuators

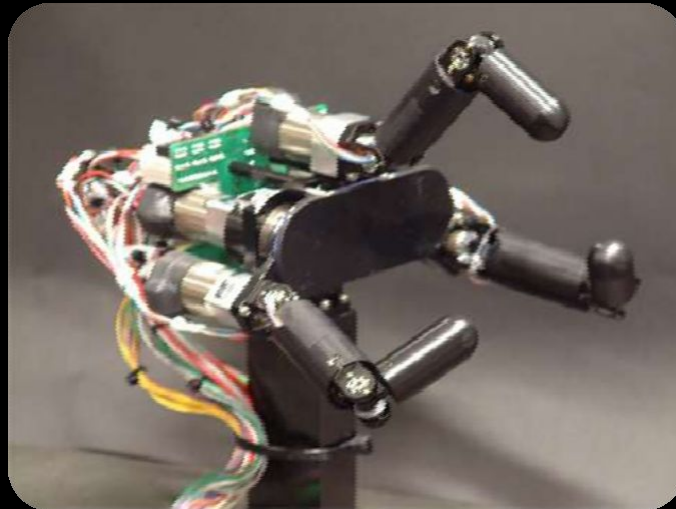


Controllers

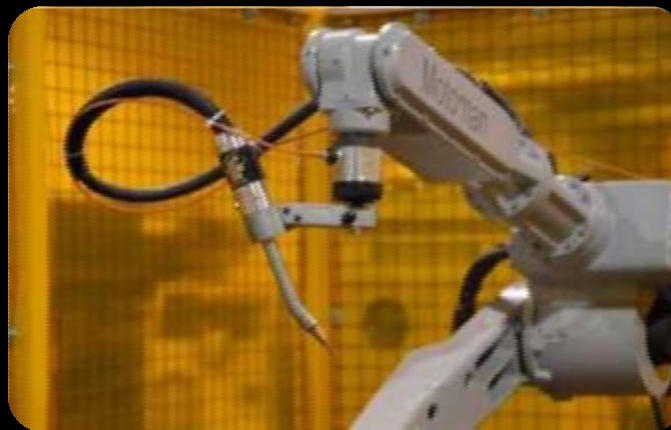


Arms





Sensor



Effector



Controller

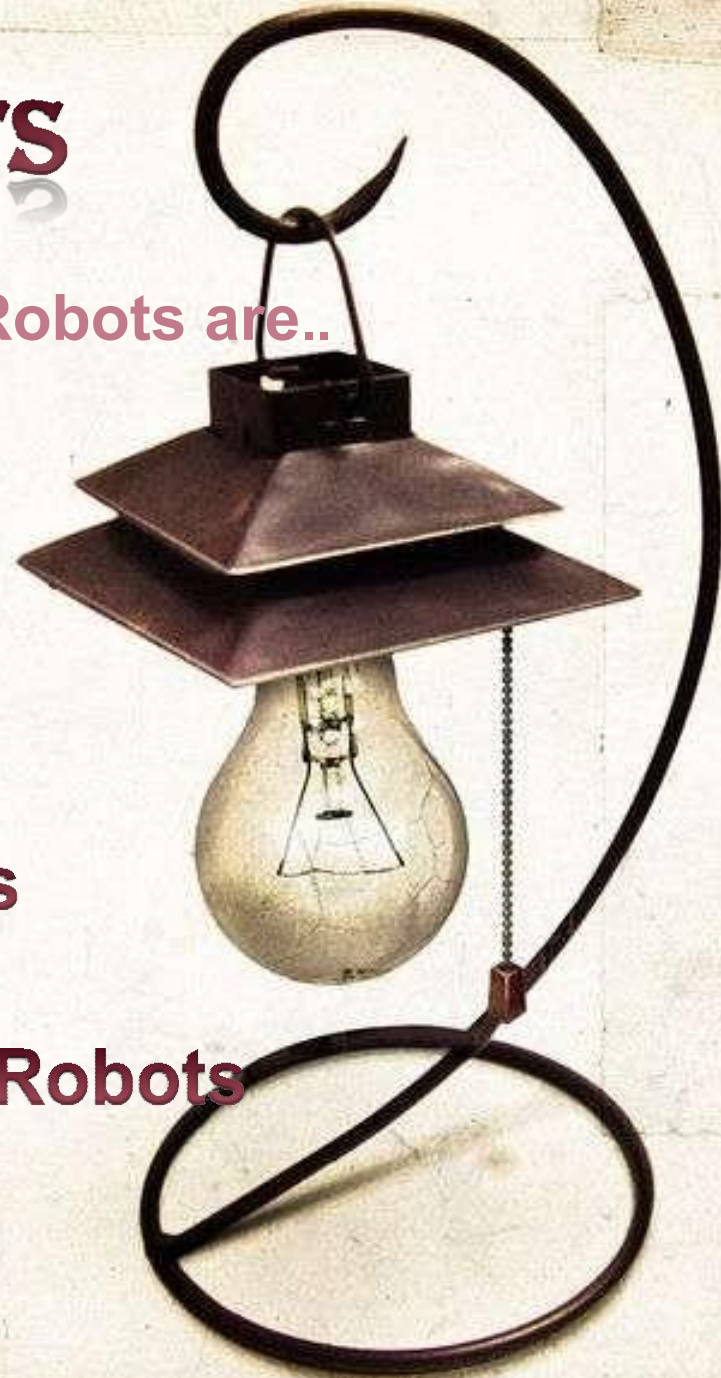


Arm

TYPES OF ROBOTS

The most common types of Robots are..

- **Mobile Robots**
- **Stationary Robots**
- **Autonomous Robots**
- **Remote-Controlled Robots**
- **Virtual Robots**



Mobile Robots

Mobile robots are of two types....

Rolling Robots-

Rolling robots have wheels to move around. They can quickly and easily search. However they are only useful in flat areas.



Walking Robots

Robots on legs are usually brought in when the terrain is rocky. Most robots have at least 4 legs; usually they have 6 or more.



Stationary Robots

Robots are not only used to explore areas or imitate a human being. Most robots perform repeating tasks without ever moving an inch. Most robots are 'working' in industry settings and are stationary .



Autonomous Robots

Autonomous robots are self supporting or in other words self contained. In a way they rely on their own 'brains'.



Remote-Control Robots

A person can guide a robot by remote control. A person can perform difficult and usually dangerous tasks without being at the spot where the tasks are performed.



Virtual Robots

Virtual robots don't exist in real life. Virtual robots are just programs, building blocks of software inside a computer.

Advantages..

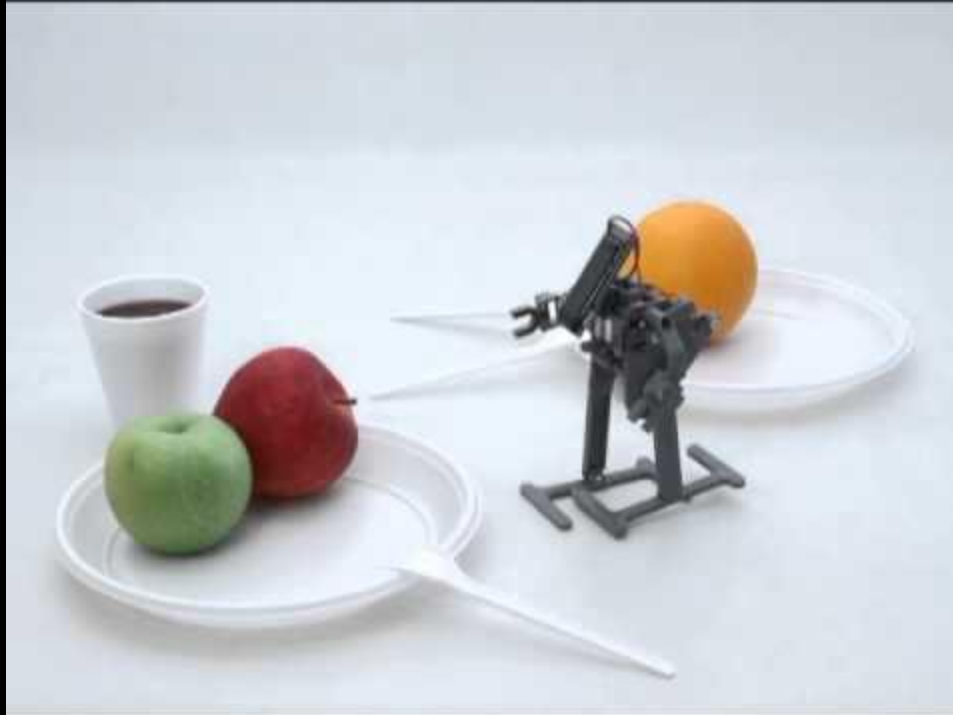
- Going to far away planets.
- Going far down into the unknown waters and mines where humans would be crushed
- Giving us information that humans can't get
 - Working at places 24/7 without any salary and food. Plus they don't get bored
- They can perform tasks faster than humans and much more consistently and accurately
- Most of them are automatic so they can go around by themselves without any human interference.

Disadvantages..

- People can lose jobs in factories
- It needs a supply of power
- It needs maintenance to keep it running .
- It costs money to make or buy a robot

<https://youtu.be/8wHJjLMnik>

3-1 MINI SOLAR ROBOT



3-1 MINI SOLAR ROBOT

THIS IS A SOLAR-POWERED, COMPACT YET MULTIFUNCTIONAL ROBOT! EXPERIENCE THE THREE-WAY OPERATION: ROPE-CLIMBING AND WALKING AS A ROBOT, ALSO RUNNING AS A SOLAR VEHICLE. AWESOME!

PARTS:

**HOOK X 2
GEARBOX COVER,
FACEPLATE,
BASEPLATE,
WHEEL X 2,
SOLAR PANEL SUPPORT,
LINK ARM X 2,
CAM WHEEL X 2,
FOOT X 2,
LEG X 2,
CONNECTOR X 8,**

**SOLAR GEARBOX,
MOTOR WITH WIRES,
SOLAR PANEL,
STRING,
SCREWS
DETAILED INSTRUCTIONS.**

**ALSO REQUIRED BUT NOT
INCLUDED: A SMALL
CROSSHEAD
SCREWDRIVER.**

Thank You!

