

Name: Harsh Mandalia
Roll No. 19110186

Task 2:

1. Robotic Manipulators: <https://www.youtube.com/watch?v=cRt8cH1iMp4>
The first Canadarm was a remotely controlled robotic arm that was used on the space shuttle. The main use of it was to move loads, repair satellite remotely, etc. its accuracy was 5cm.
2. Mobile Robots: <https://www.youtube.com/watch?v=9DaTZQxg21U>
One of the examples of a mobile robot is a Humanoid robot and one of the best examples of a humanoid robot is Sophia. This robot is closest to the human thanks to the AI used.
3. Aerial Robots: https://www.youtube.com/watch?v=4ErEBkj_3PY
Drones are the best example of aerial robots. The smaller drones are better as they are more agile(smarter).
4. Under water robots: <https://www.youtube.com/watch?v=shimvNXyVtw>
These are the bots that travel underwater without the need of any external commands. Aquanaut, the Underwater Transformer is like a submarine but it can transform into a robot underwater and do many things.
5. Soft robots: <https://www.youtube.com/watch?v=058hRtaCWC0>
The soft robots are made using plastic. Unlike traditional robots these can do many other things and we can like pack them so that it uses less space. This shown example uses a plastic pump to pressurise the robot to do certain things.
6. Micro robots: <https://www.youtube.com/watch?v=N7IXymxsdhw>
The shown robot in this video is a micro robot (size in mm) it works takes the magnetic field as an input. These robots can be used in medical area.
7. Hybrid robots: https://www.youtube.com/watch?v=ODsHzQvM6_4
These type of robots are controlled both electrically and biologically. In the shown example, the hybrid robot is just moving a sheet from one place to the other.

Task 3:

1. Asynchronous AC motors
It's an AC motor that works using the induction, so there is no contact between the magnetic field and the rotor. The rotor speed and the speed of stator's magnetic field is not same that's why it's called Asynchronous.
2. Synchronous AC motors
This is similar to the Asynchronous AC motor but the only difference is that the rotor speed and the speed of stator's magnetic field is same because the rotor follows the stator's magnetic field.
3. Brushed DC motor
This motor as the name suggests uses brushes to change the polarity of the current and thus the polarity of the magnetic field generated.

4. Brushless DC motor(BLDC)

This works similar to the Brushed DC motors. In brushed DC motors, the polarity was changed using the brushes but here, the polarity is being changed electronically.

5. Stepper motor(Brushless)

This works similar to the BLDC motor but in BLDC, the polarity is changed according to the peak in the back emf, in stepper motor the polarity is changed according to the number of steps required. Each change in polarity corresponds to a step in the rotor.

6. Servo motor(Brushed DC)

This is similar to a DC motor but the main difference is the feedback loop which uses potentiometer(or encoder) to get to the correct angle.