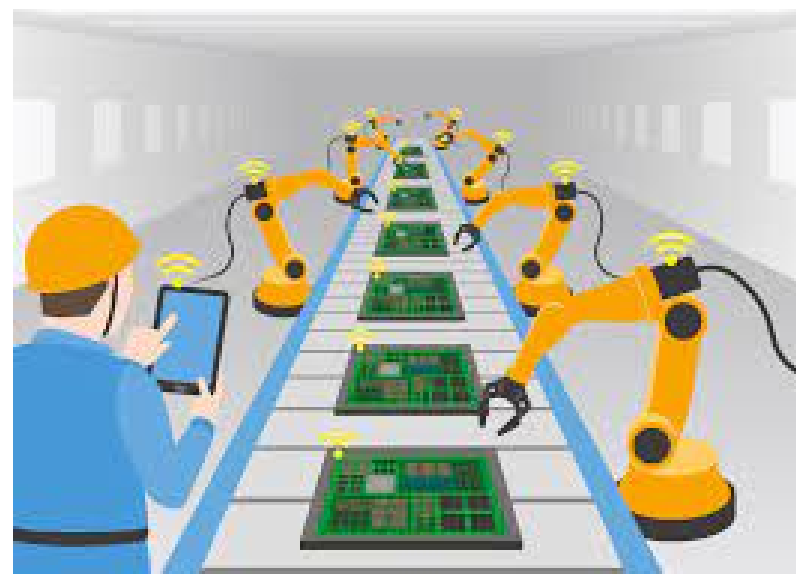# SnS College Of Technology

Department Of ECE

IOT System Architecture

Stationary robots

Done by

Monika.R

1

- **Stationary = having a fixed position**
- Stationary robots **(robotic arms)**
  - * The robots which perform all the task **without changing their position** are stationary robots .
  - * Used for **picking , placing , sorting , assembling and welding** .
  - * Majority of the robots are stationary and tethered to pc.
  - * The term stationary is associated with the body of the robot and not the whole robot moves around to perform desired operation.



2

Cylindrical Coordinate Robots :

- Robots whose axes from the cylindrical coordinate system.
- Cylindrical robots are commonly used for **manufacturing operations, welding, machining tools handling, and die casting machines**.
- Most of the movement of the robotics arm is up and down.
- The robot can perform this motion by extending arm cylinders. In most cylindrical robots the rotation motion is provided by motors and gears and up and down motion provided by a **pneumatic cylinder**.

- **Advantages :**
  Rigid. Accurate. Perfect in applications that require circular geometry.

- **Disadvantages :**
  Older technology. Limited flexibility of movement.

Cylindrical

3
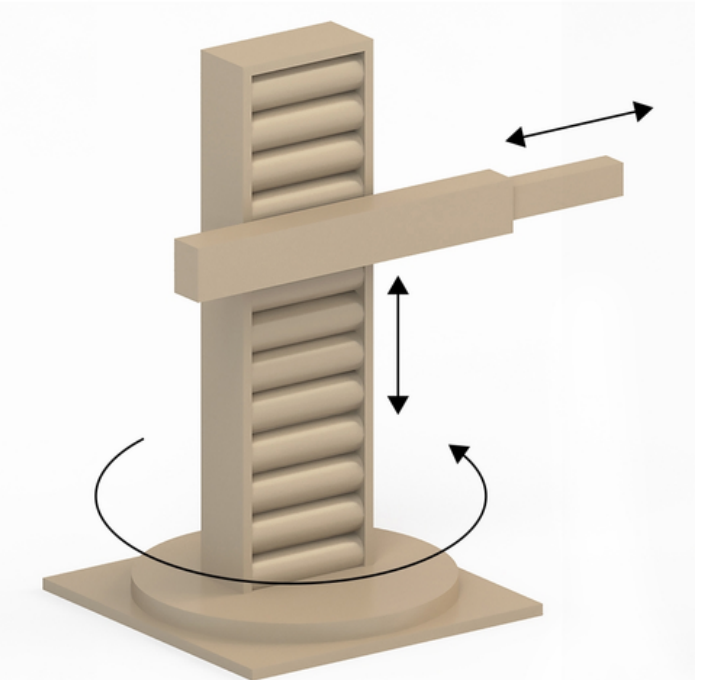
Cartesian / Gantry robots :

- Firstly, The cartesian coordinate robot is also known as (liners robots).
- Cartesian robots are industrial type robots that have three principal axes of control which are linear.
- The cartesian robot moves in a straight line rather than rotation.
- The three sliding joints move In up-down, in-out, back and forth direction.

Advantages :

- Depending on the model, can lift very heavy objects.
- Can be made very large, spanning the entire length of the facility, if desired.
- Can be very cost-effective for the right applications.

Disadvantages :

- Cannot do rotational movement.


4

SCARA Robots :

- The SCARA (Selective Complaint Assembly Robot Arm) or Selective compliant articulate Robot arm.
- The robot arm is rigid in the Z-axes and movable in XY-axes.
- SCARA are generally faster and cleaner than comparable Cartesian robot systems.

Advantages :

- Excellent for many assembly applications.
- Fast and accurate.
- Cost-effective for assembly operations.

Disadvantages :

- Not as flexible as articulated arms.
- Not as accurate as Cartesian arms. Not as fast as Delta robot arms.

Scara

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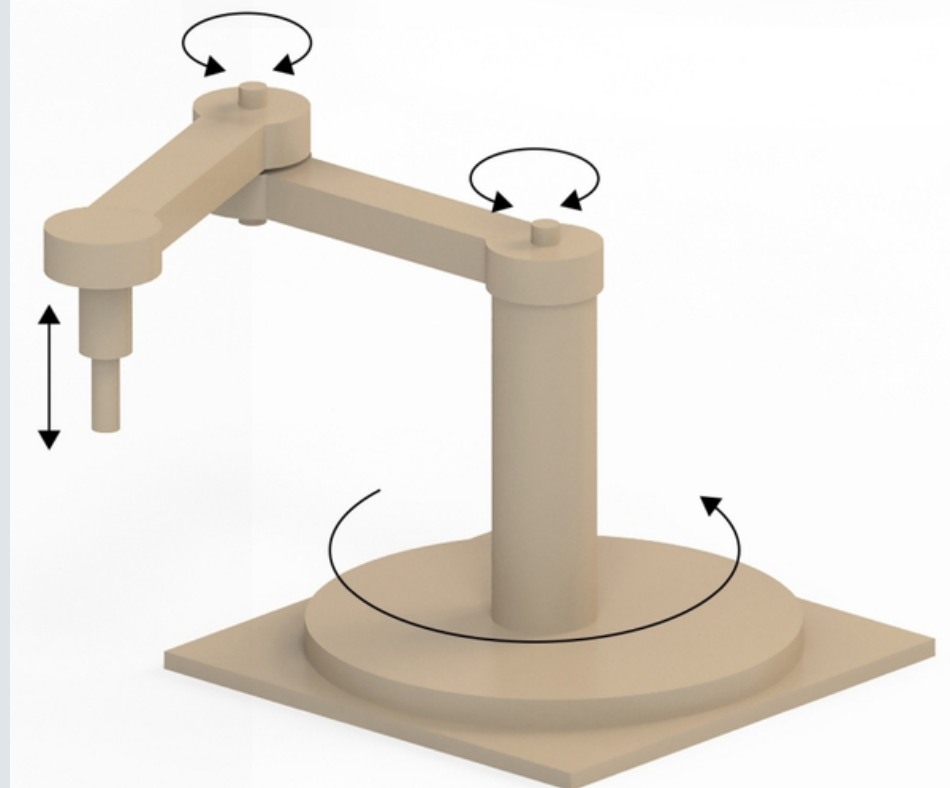
Robotic arm :

- Robotics Arms are the most commonly used in manufacturing industries.
- They are specially used for Assembly operations.
- These robots have different rotary joints structure.
- Besides, the robot arm has twisted joints attached to the base.

Advantages :

- Most flexible movement of all the robot arm types.
- Can be quite powerful, capable of lifting heavy objects.

Disadvantages :

- Might need to be fenced off.
- Slower than some of the other robot arms.
- More expensive than other robot arms.



6
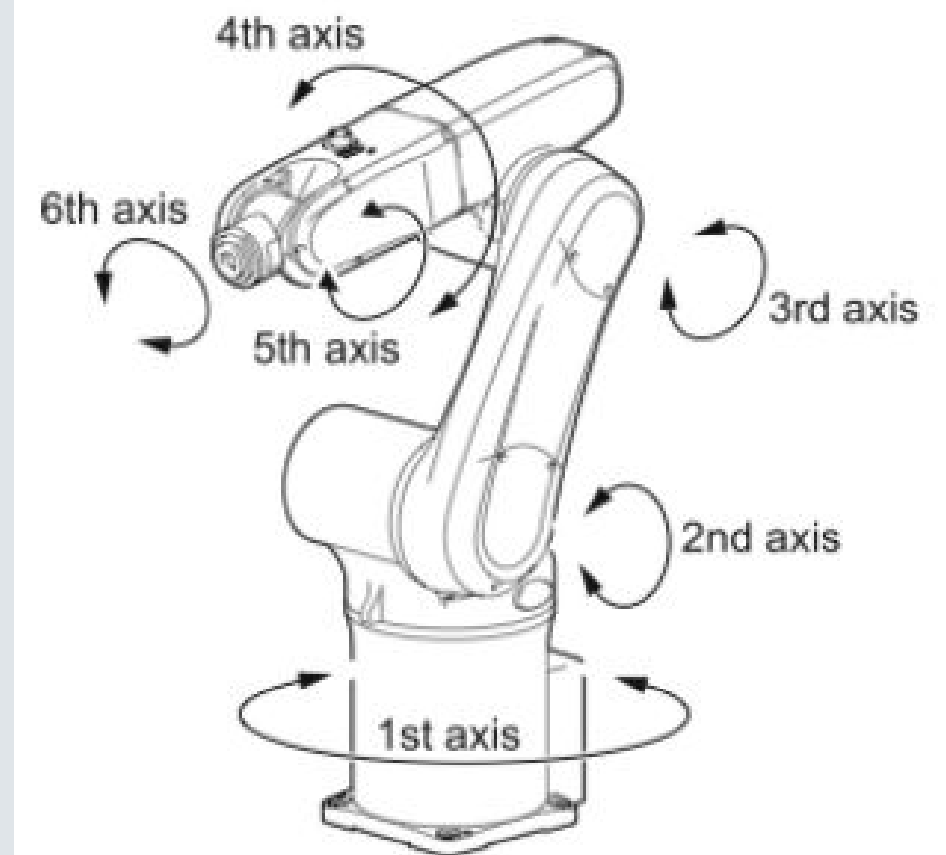
Spherical robots :

- It's a robot with two rotation axes and one linear axis. in other words, two rotary joints and a prismatic joint.
- Finally, An arm of a spherical robot forms a spherical coordination system.

Advantages :

- Simpler control system than articulated arm.
- May be faster than articulated arm.

Disadvantages :

- Not as flexible as articulated robot arms.
- Older technology. Often needs a rather large footprint.
- Not as fast as Delta arms.

Polar

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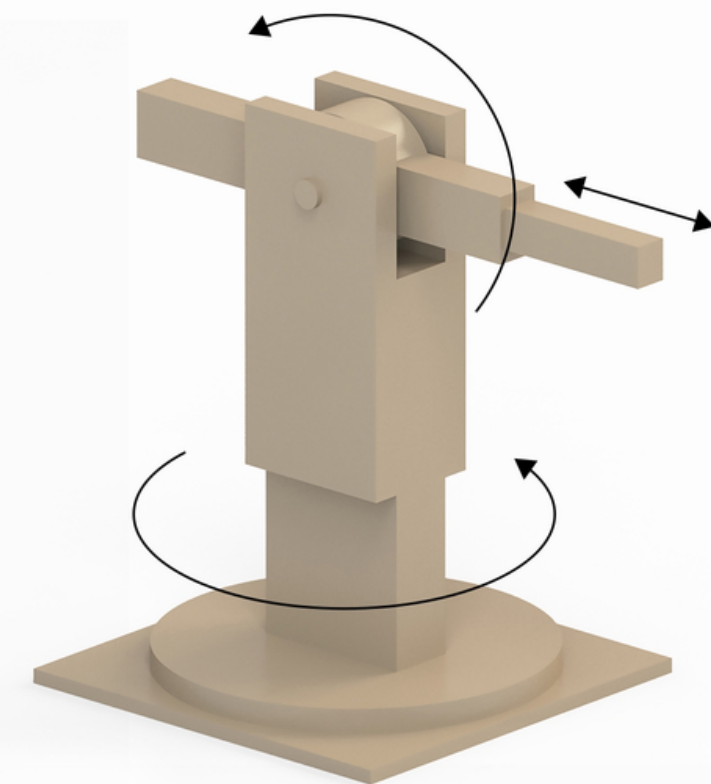
Parallel Robots :

- Firstly, Parallel or delta robots used often for pick and place operations.
- parallel robots are also known as delta robots.
- Secondly, Parallel robots have parallelogram type structure connected to the base.
- The robot moves its single end of the arm in a dome-shaped structure.

Advantages:

- Fastest design of robot arms for pick and place operations.
- Lightweight. Accurate.

Disadvantages:

- Limited to relatively small and lightweight objects.
- Not suitable for working on objects in a vertical plane. Limited reach.

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Thank you

done by :

Monika.R

Guided by Ms Lakshmi .S