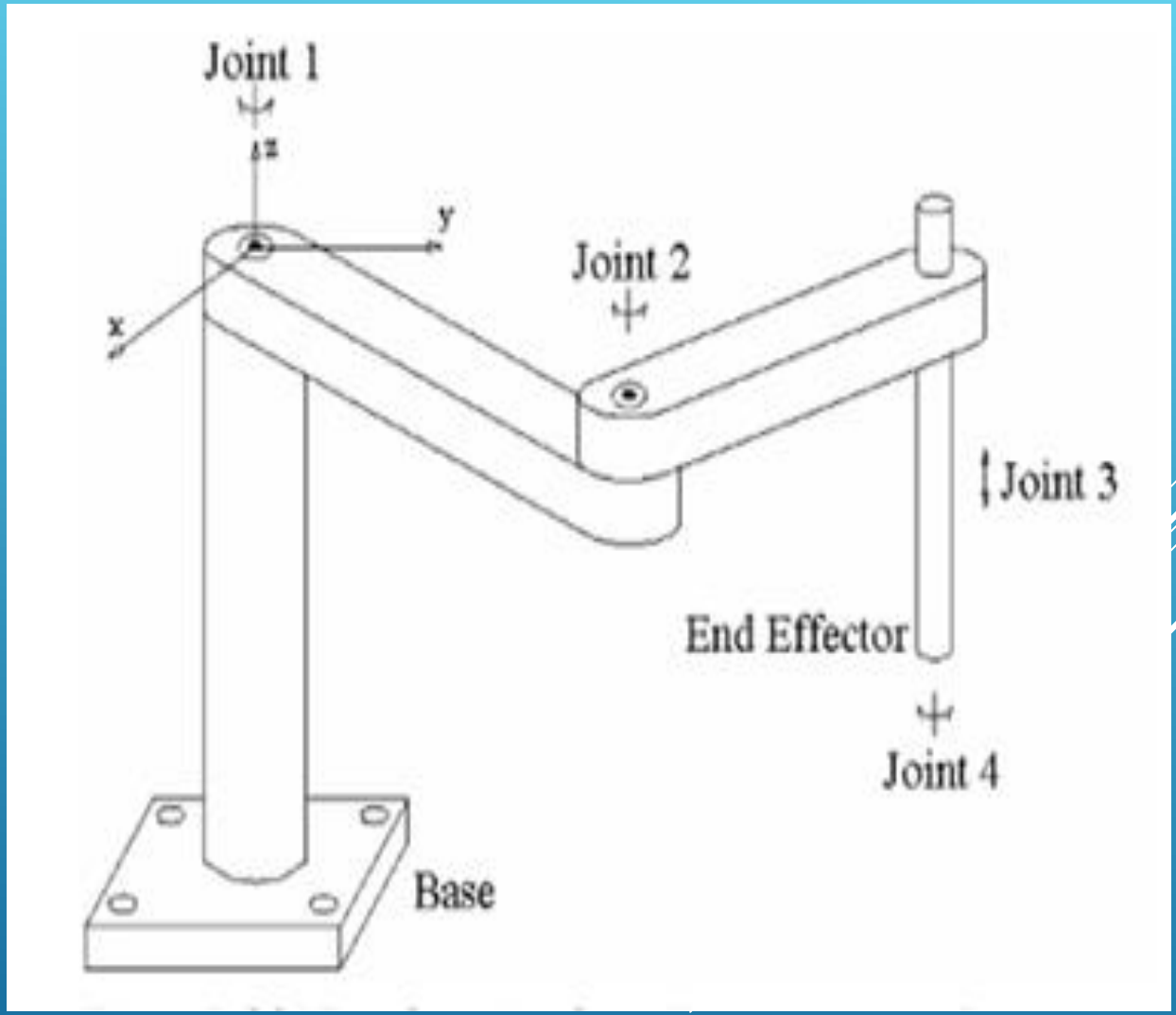
INTRODUCTION TO ROBOTICS

LECTURE 2

WHAT IS TYPICAL ROBOTIC SYSTEM CONSISTS OF?

- Links >> used to transmit mechanical power.
- Joints >>
  - ✓Connects each two links.
  - ✓Constraint motion.
  - ✓Control the motion of the robot.
  - ✓Available in different types.



JOINT (CONTINUED)

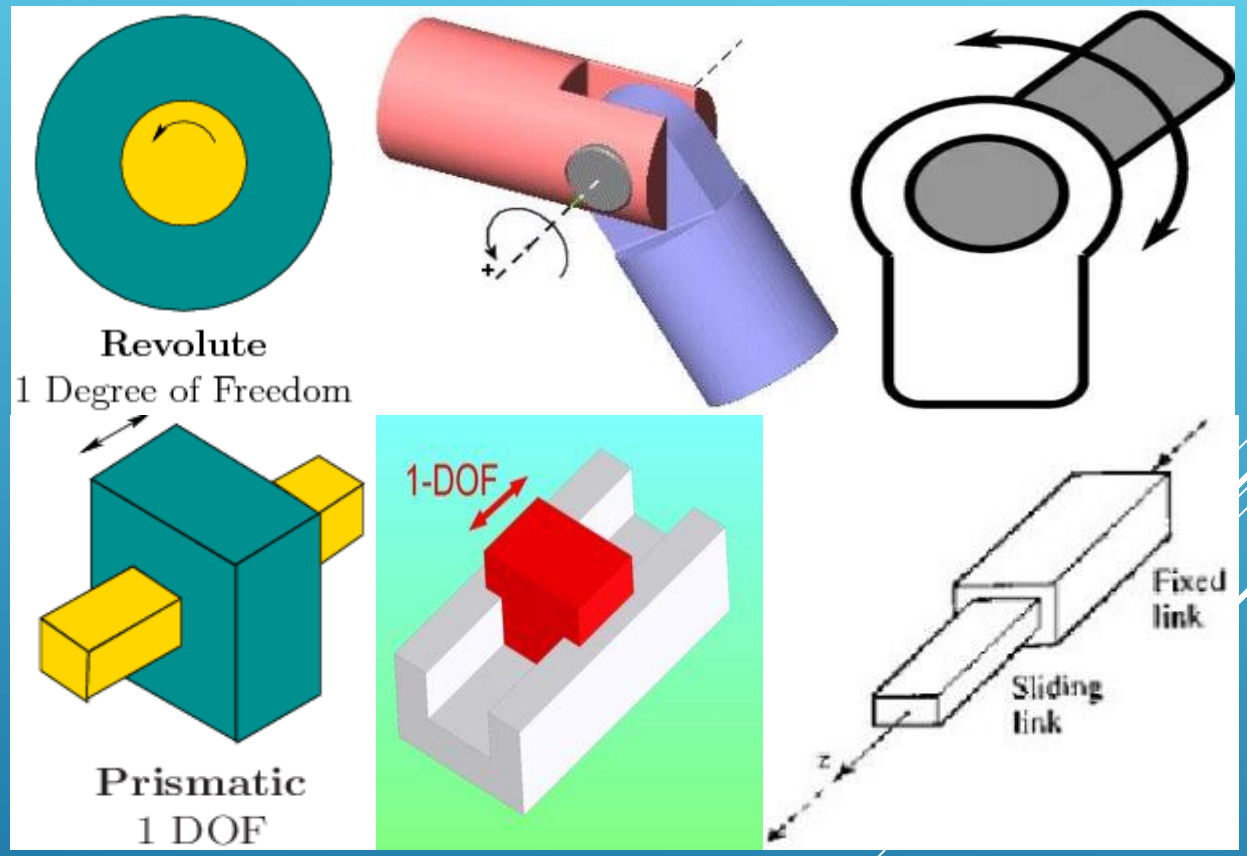
- Types of Joints
  - ✓ Revolute joint (R)

  1 DOF

  Axis of rotation is normal to the page.
  - ✓ Prismatic joint (P)

  Allows translational or rectilinear motion

  1 DOF



JOINT (CONTINUED)

- Types of Joints
  - ✓ Cylindrical joint (C)

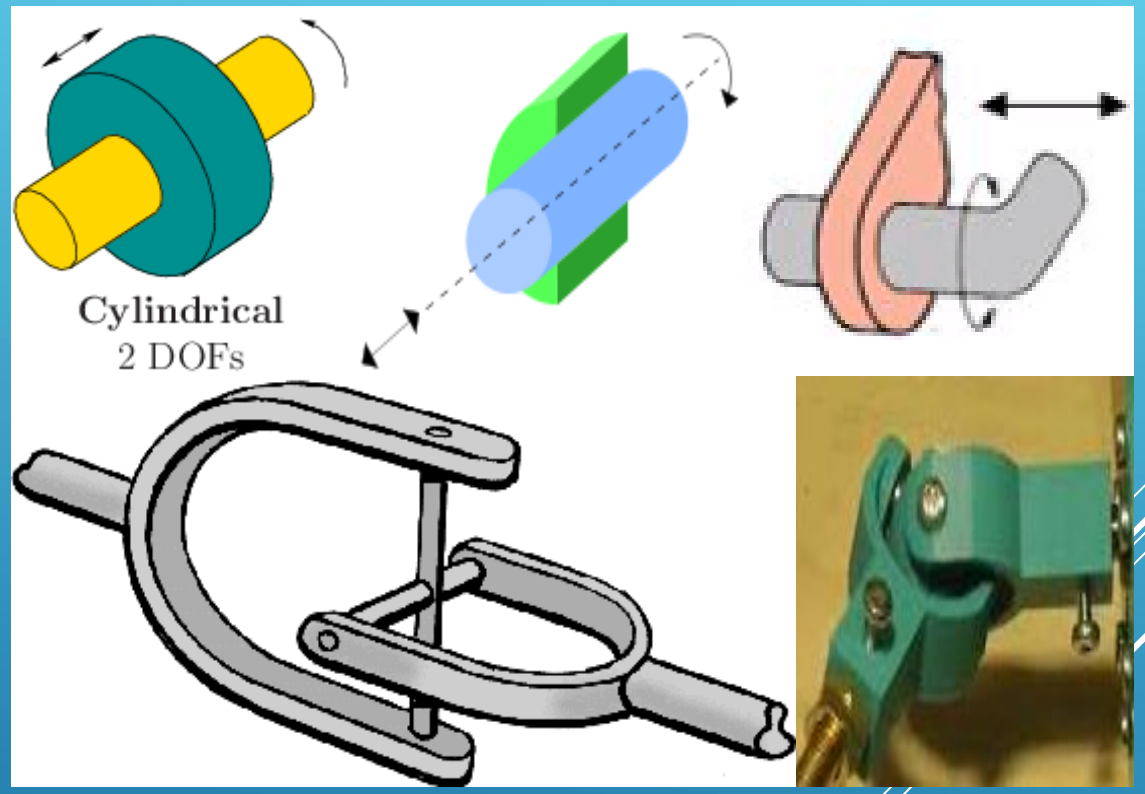
  2 DOF

  Translation along + rotation about motion.
  - ✓ Universal joint (U)

  Two revolute joints connected together

  Axis of rotation normal to each other.

  2 DOF



JOINT (CONTINUED)

- Types of Joints
  - ✓ Spherical joint (S)

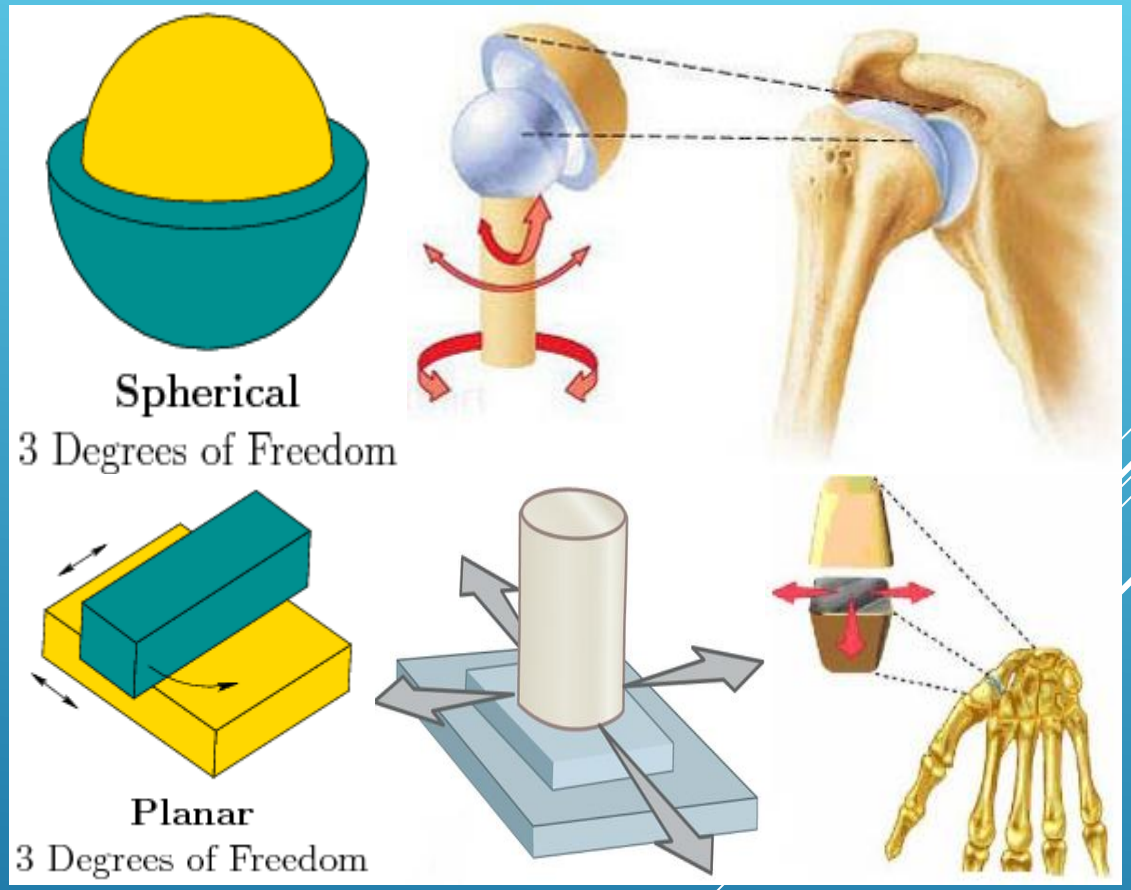
  3 DOF

  two bodies remain connected at a common point,

  rotation about any axis is permitted..
  - ✓ Planar joint (N)

  3 DOF

  stable object resting on a flat surface.

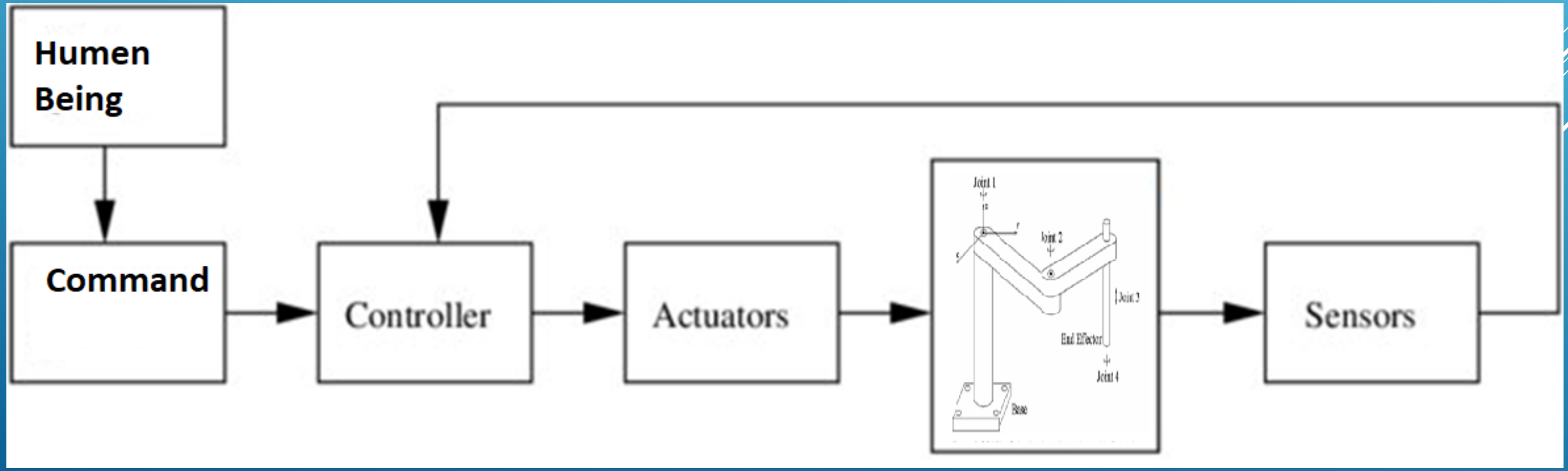


WHAT IS TYPICAL ROBOTIC SYSTEM CONSISTS OF?

- Gripper >> Grip to manipulate.
- Wrist joint >> Grip the end effector to the last link.

WHAT IS TYPICAL ROBOTIC SYSTEM CONSISTS OF?

- Actuator >> converts energy (in **robotics**, that energy tends to be electrical) into physical motion.
- Controller >> "brain" of the **robot**.
  - ✓ Smart controller >>> SENSORS



WHAT IS TYPICAL ROBOTIC SYSTEM CONSISTS OF?

- Sensors >> collect info from the env. And provide it to the controller.