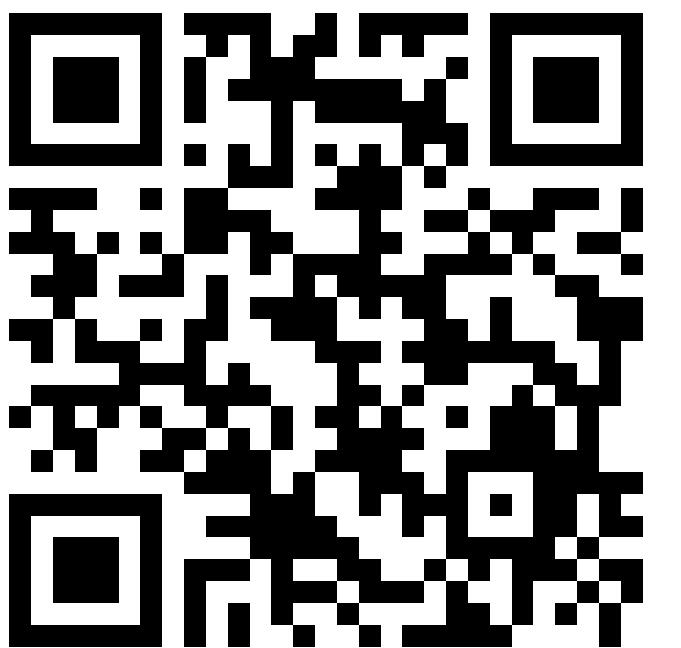


Dynamic Motion

DOCENDO DISCIMUS (2020)

My docendo discimus is teaching you how I am approaching learning how to create dynamic motion control. This presentation is a brief overview into topics and skills I have experimented into.



Open Hardware Dynamic Motion Github Link

Degree-of-freedom of a human arm

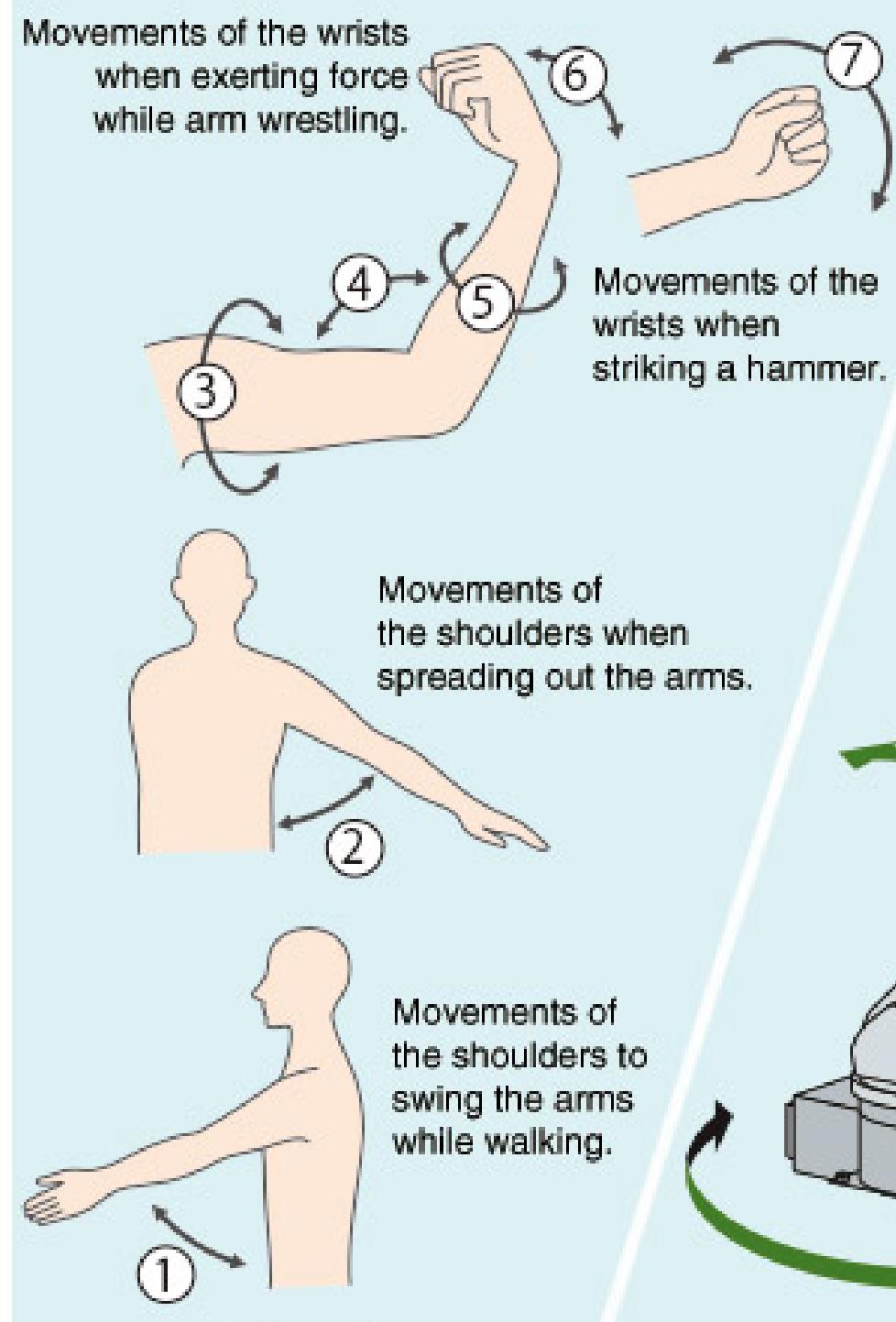


Figure 1

Degree-of-freedom of the arms of a robot

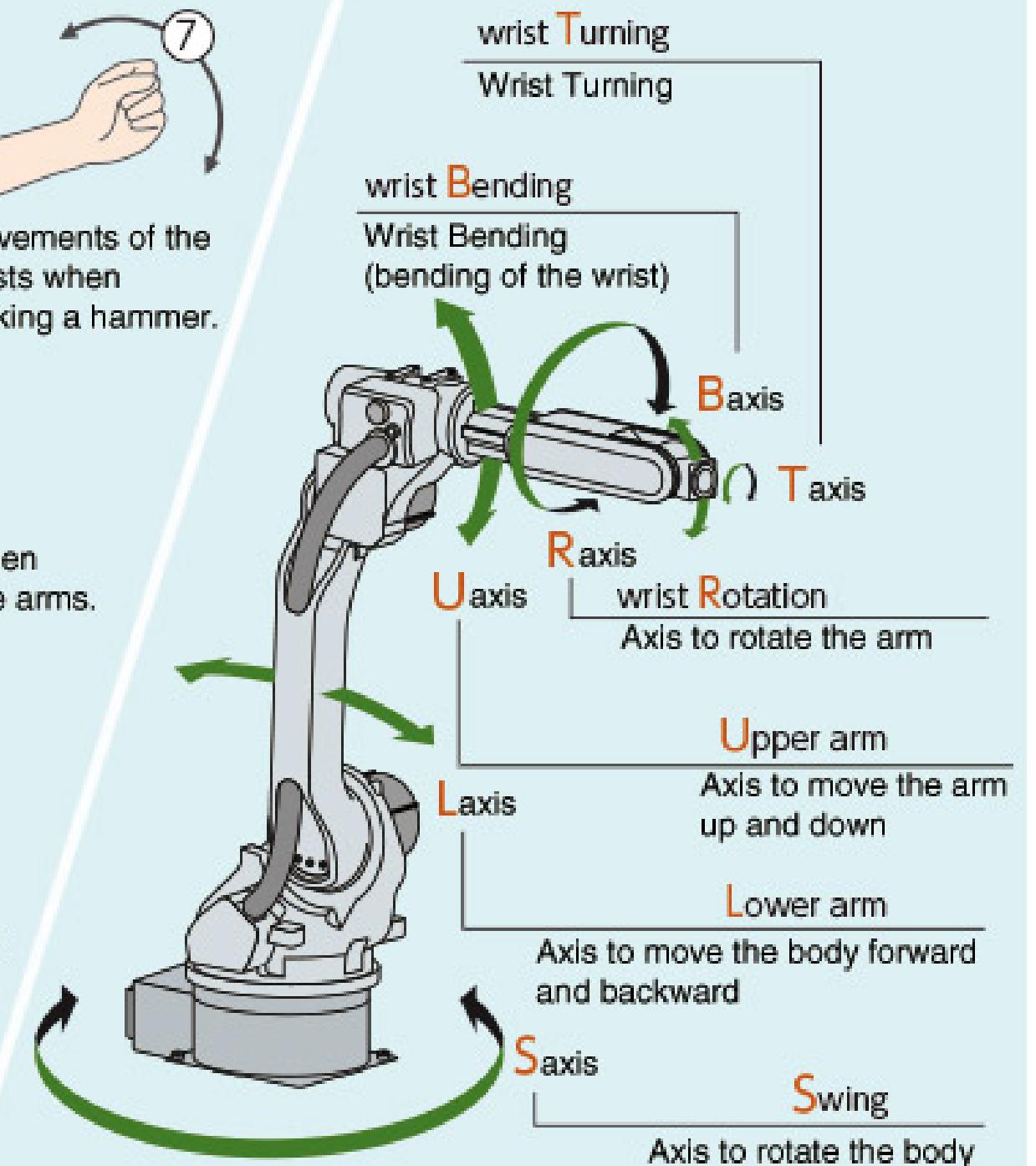
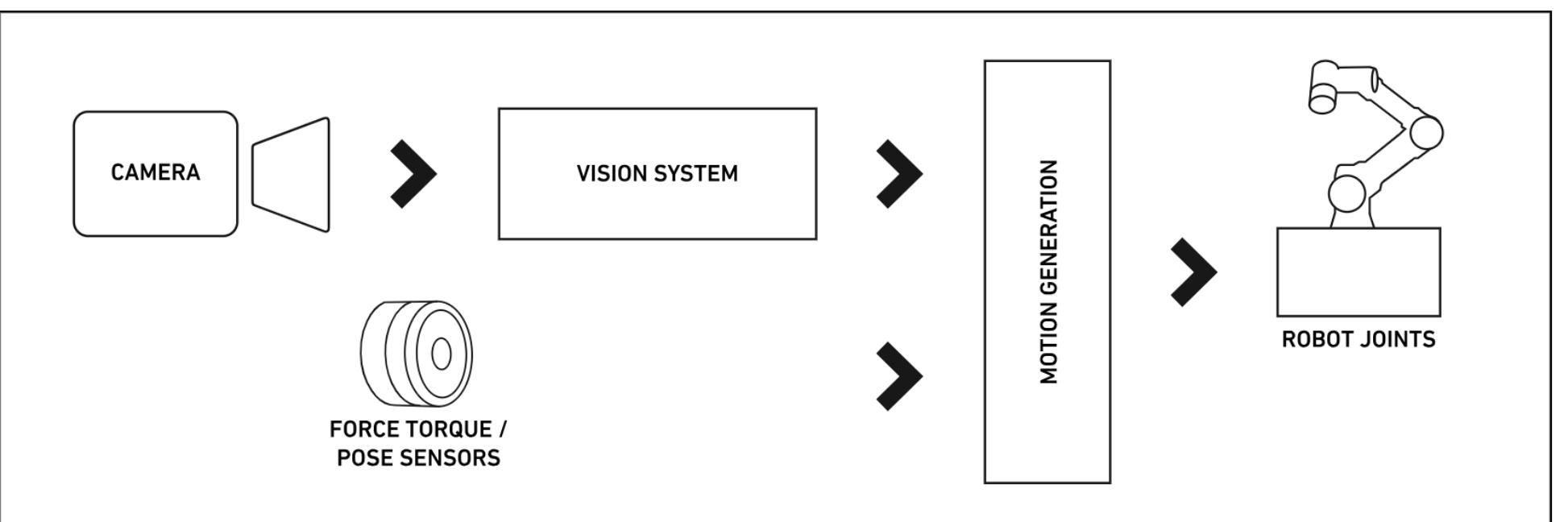
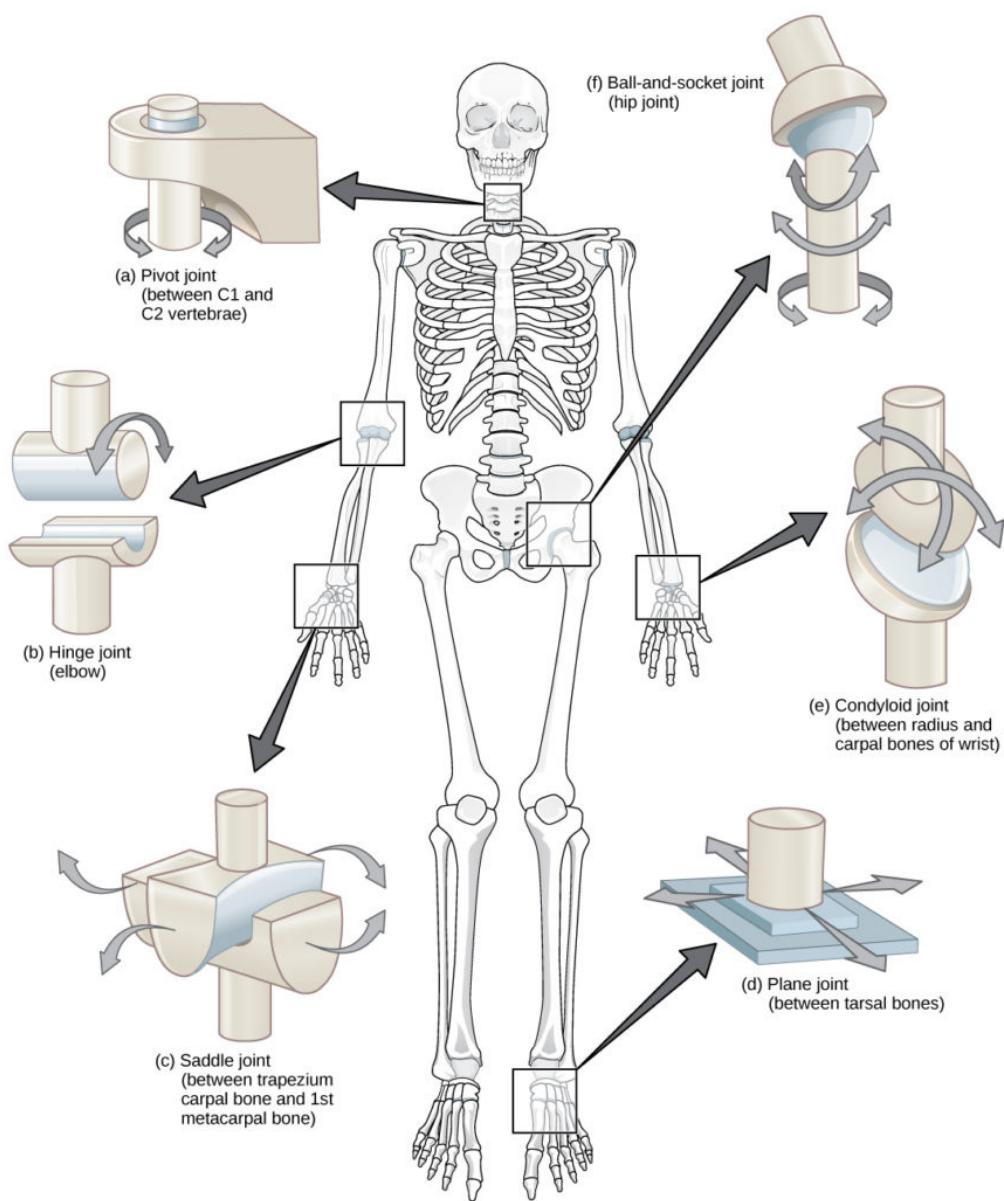
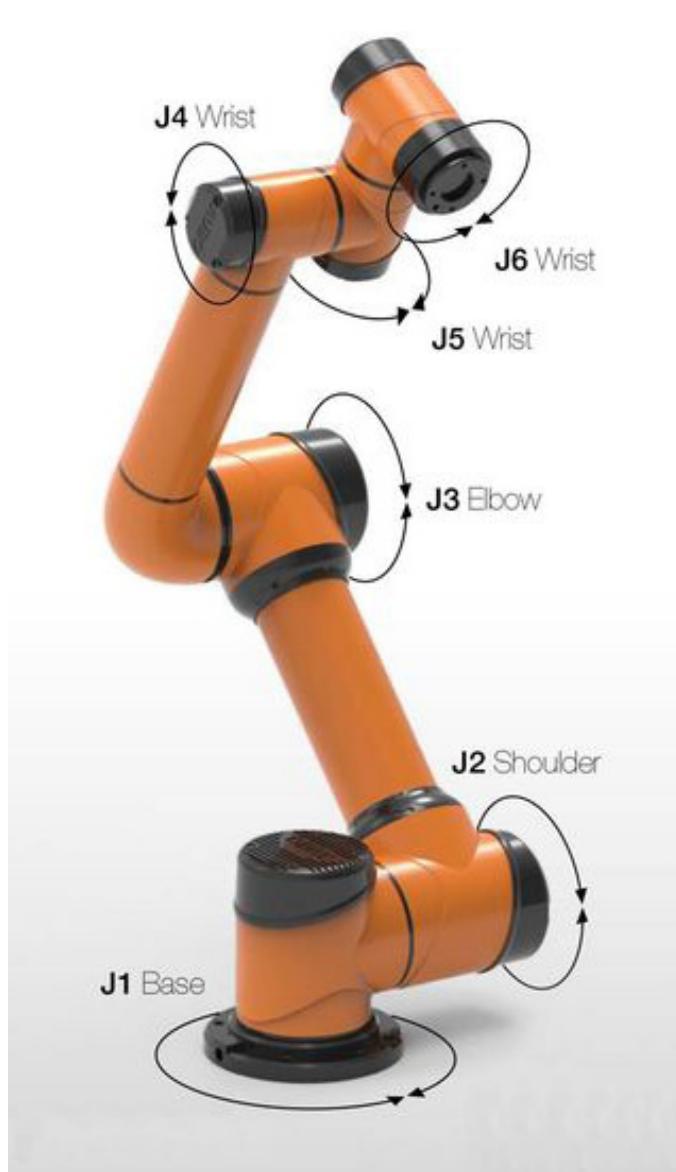
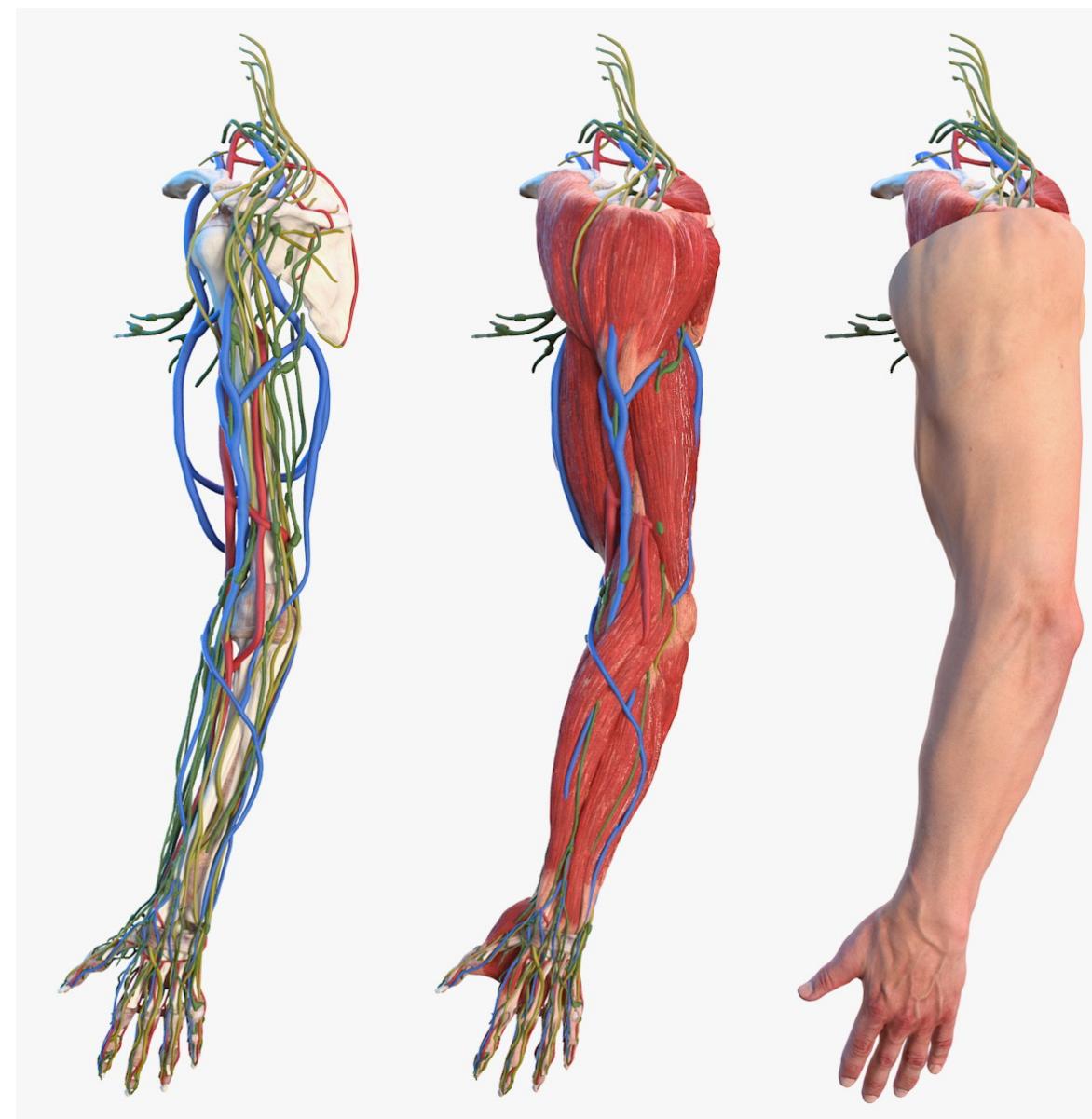


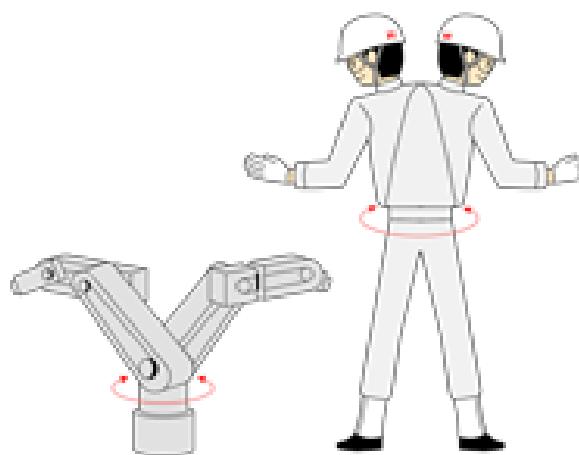
Figure 2



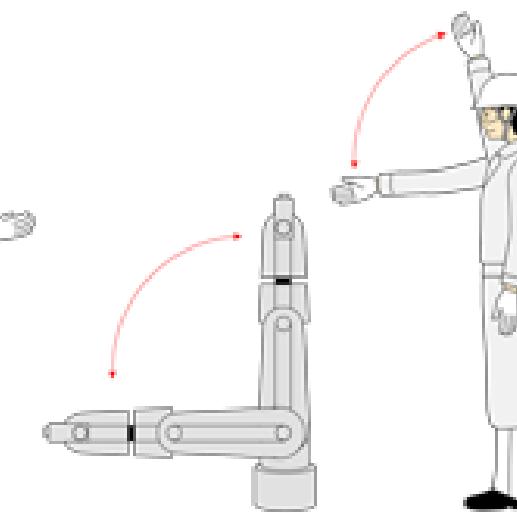
STUDY IN ARTICULATION: SERIES OF JOINTS, MOTORS AND AXIS



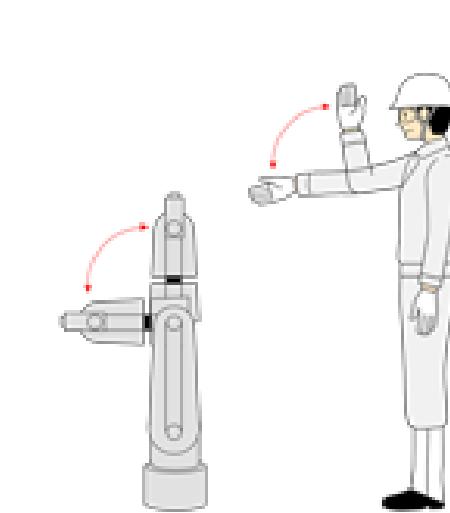
1st axis: Waist



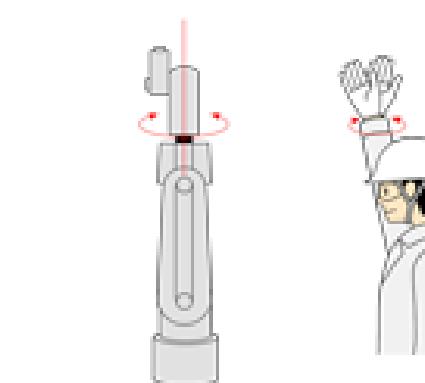
2nd axis: Shoulder



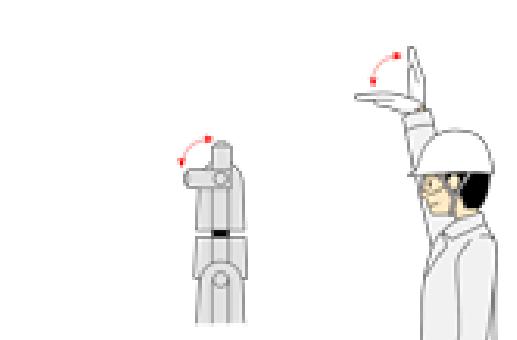
3rd axis: Elbow



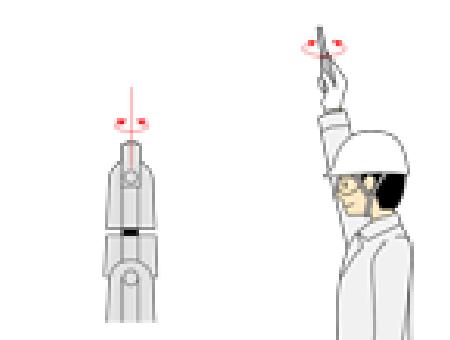
4th axis: Wrist (Rotating)



5th axis: Wrist (Bending)



6th axis: Fingertip



ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

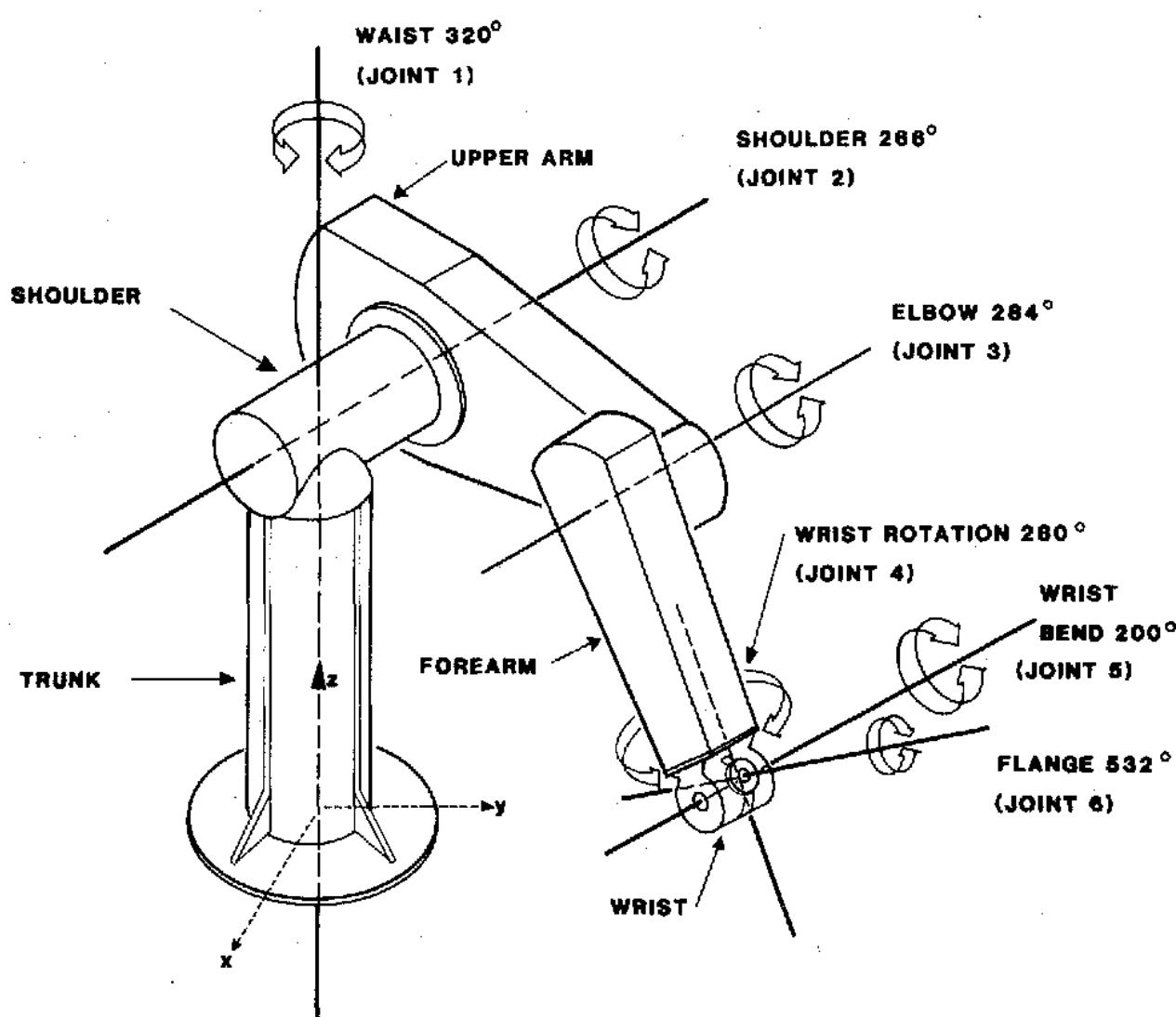
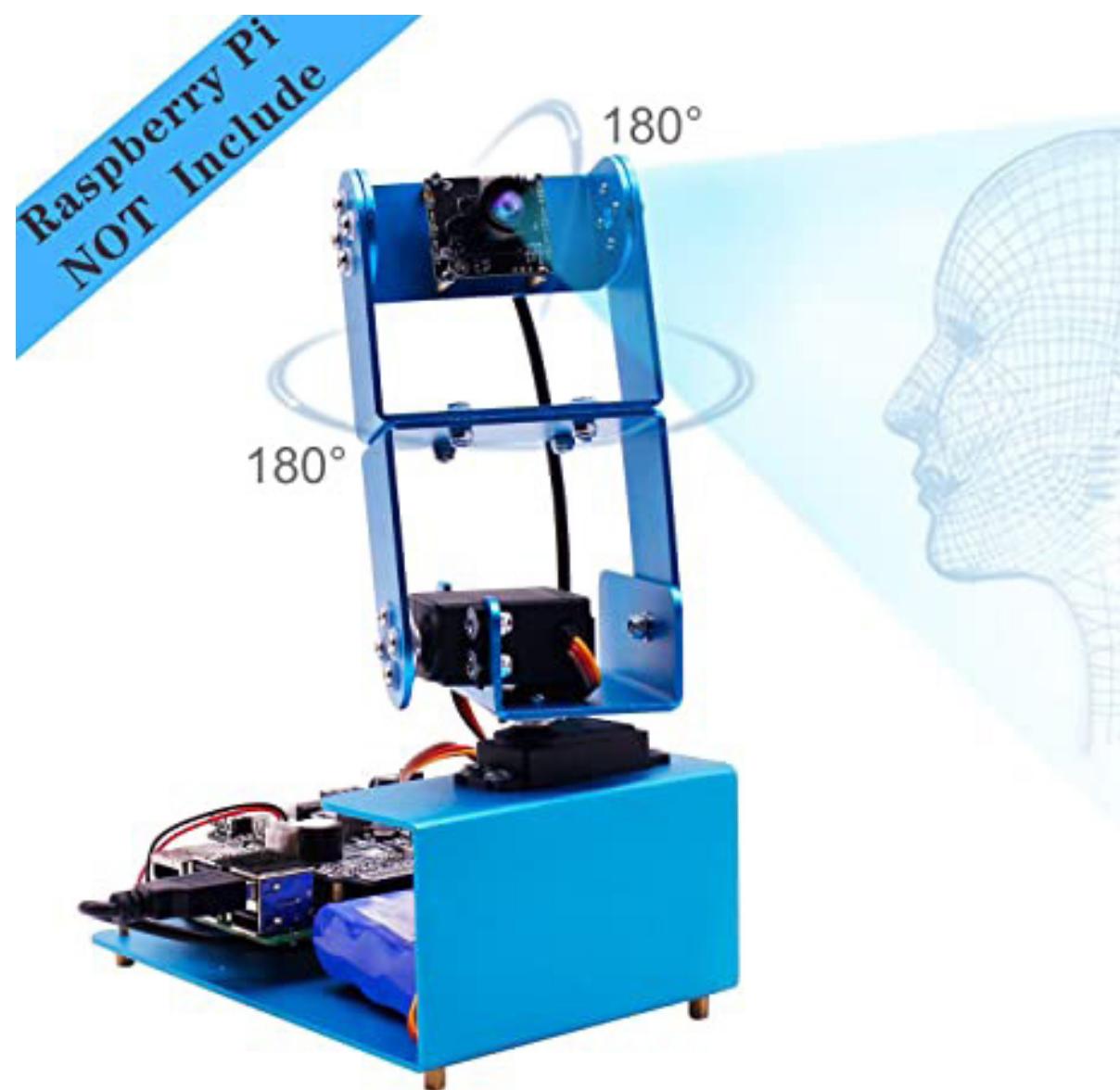


Fig. 1. PUMA 560 robot arm. Degrees of joint rotation and member identification.

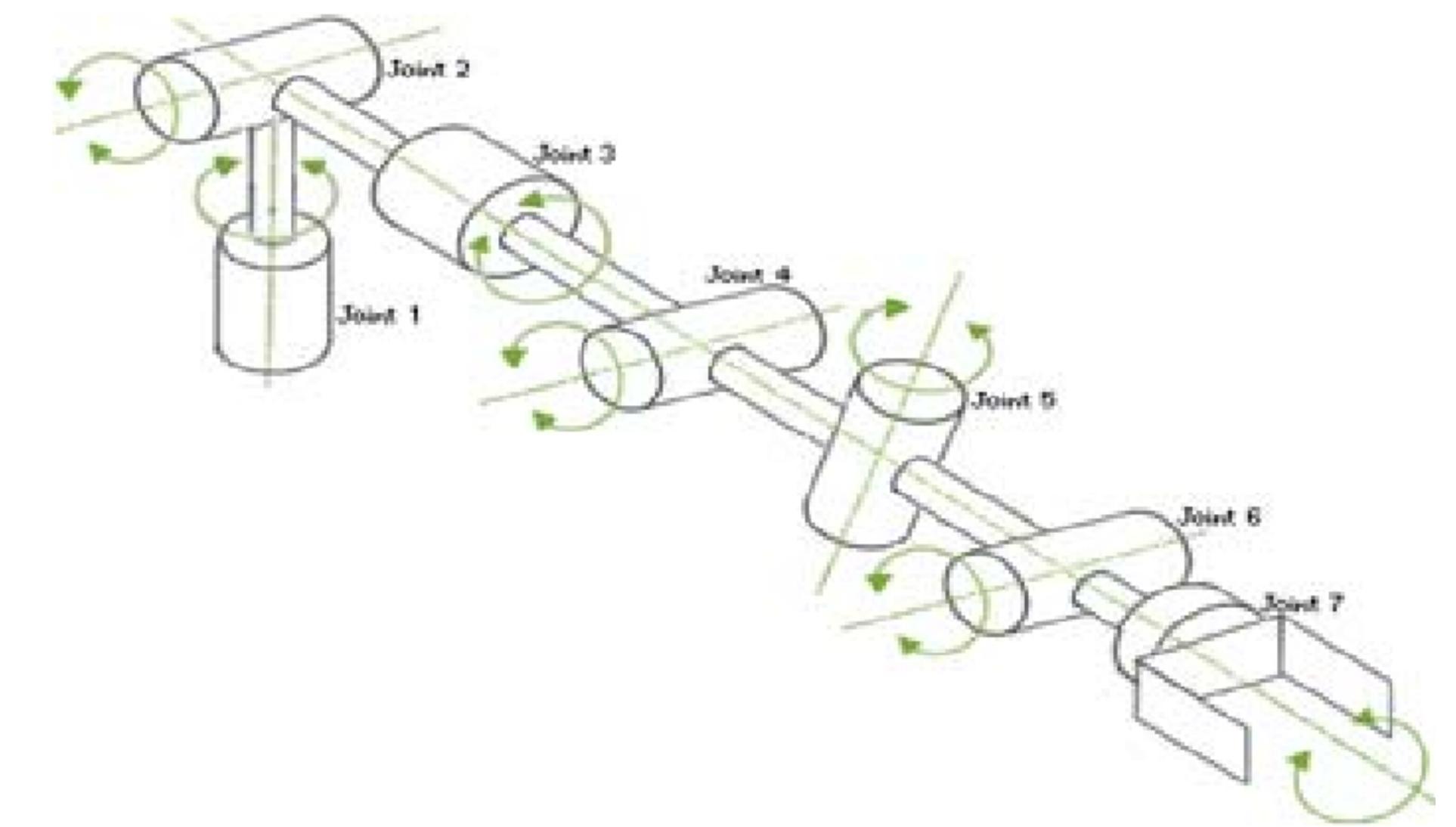


Figure 3. A seven joint robotic arm [9]

COMPONENTS FOR MOVEMENT

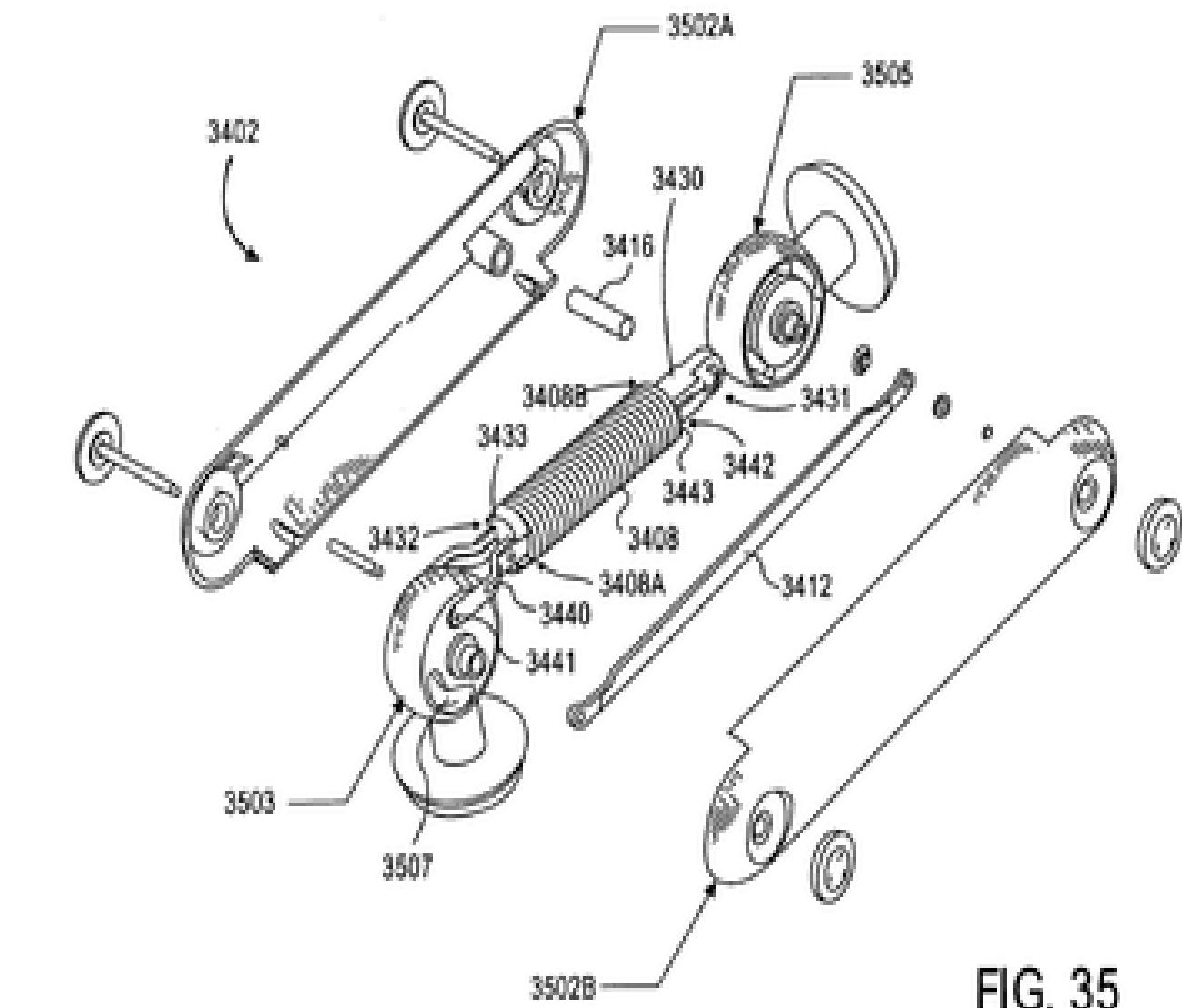
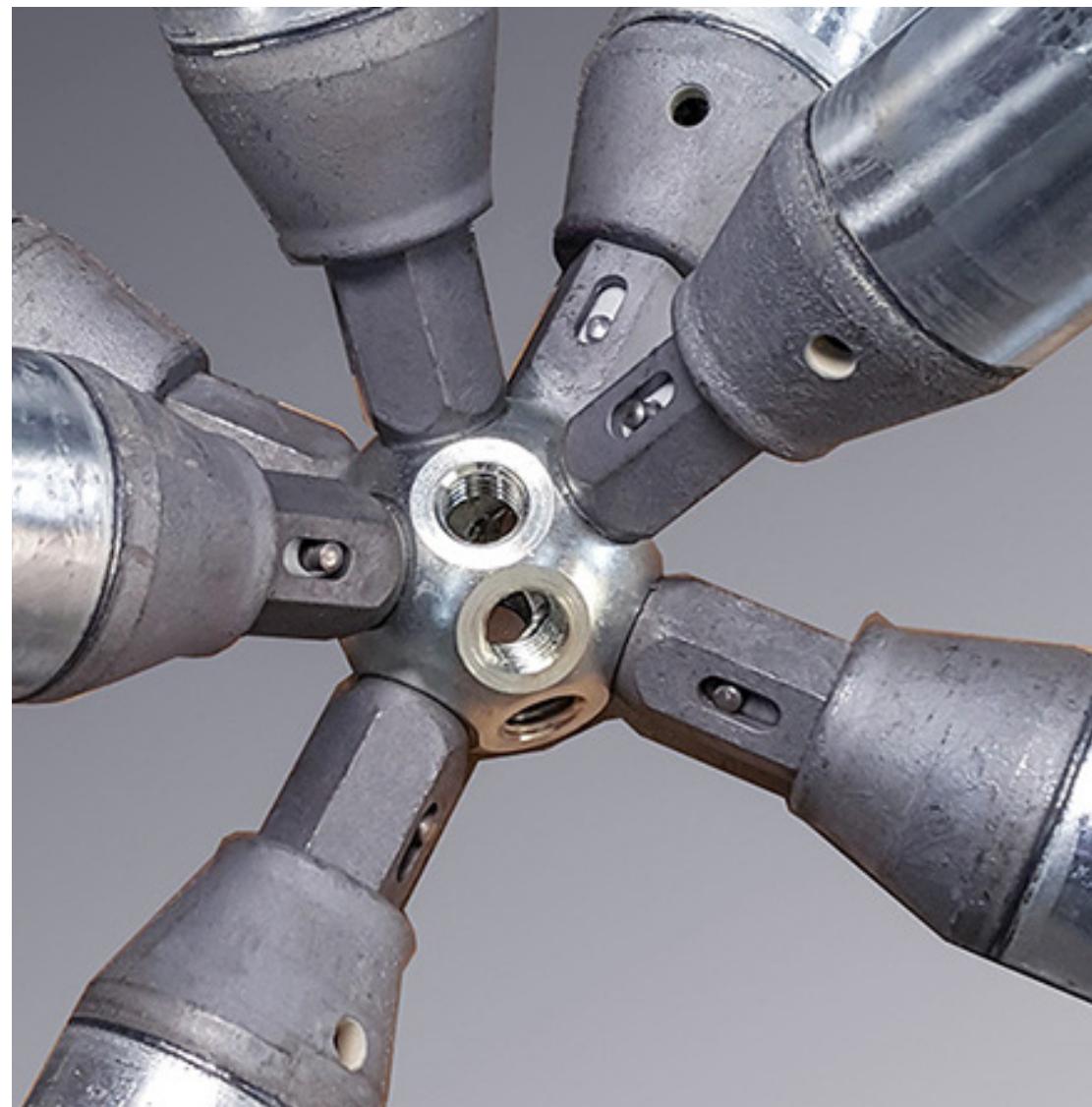
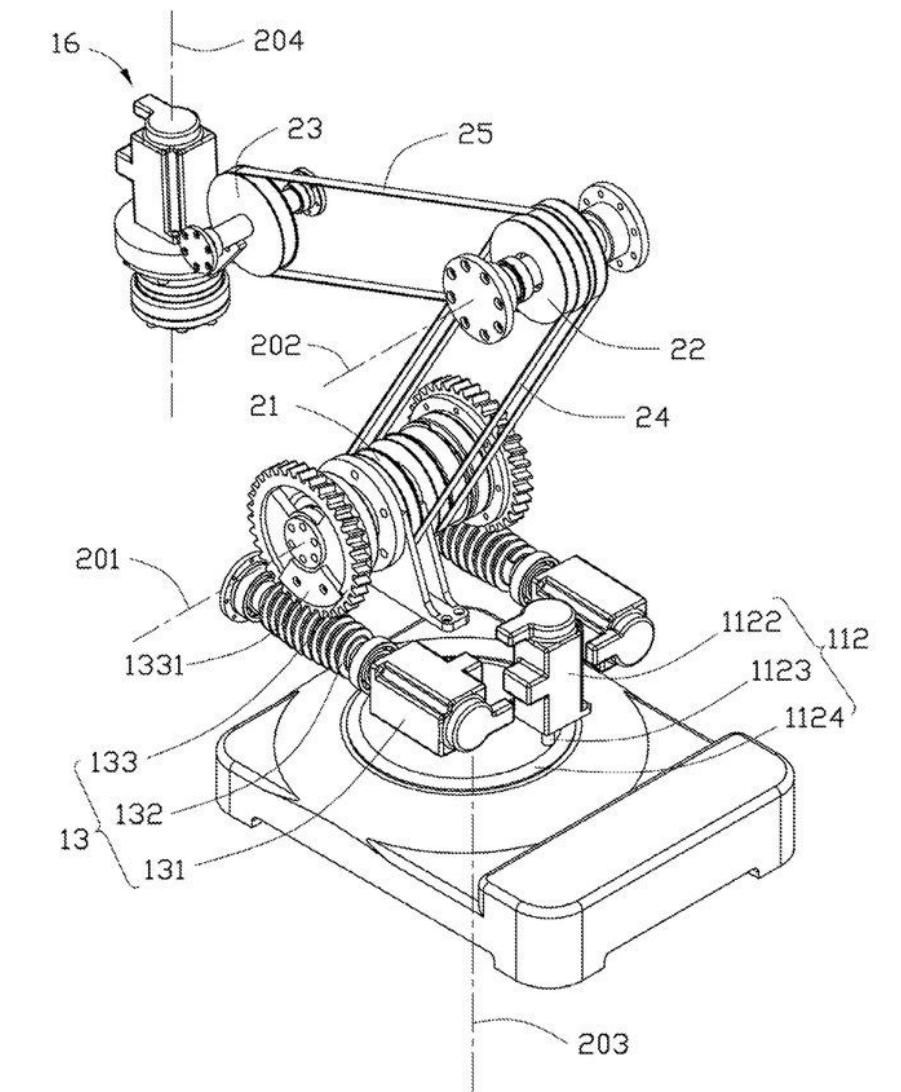


FIG. 35



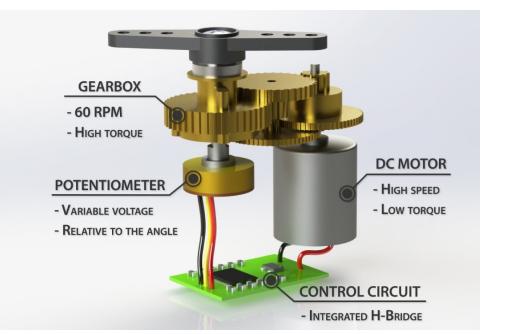
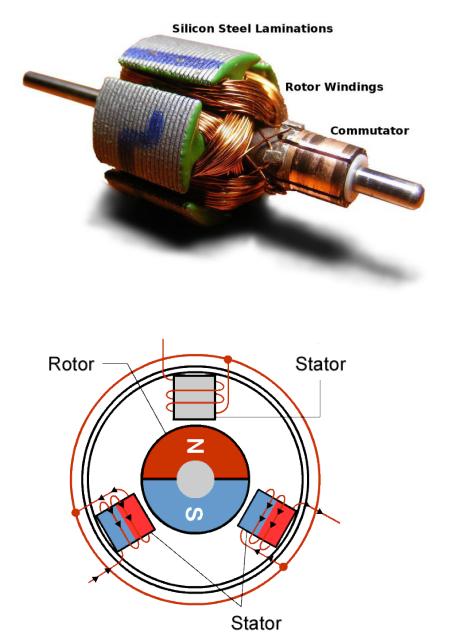
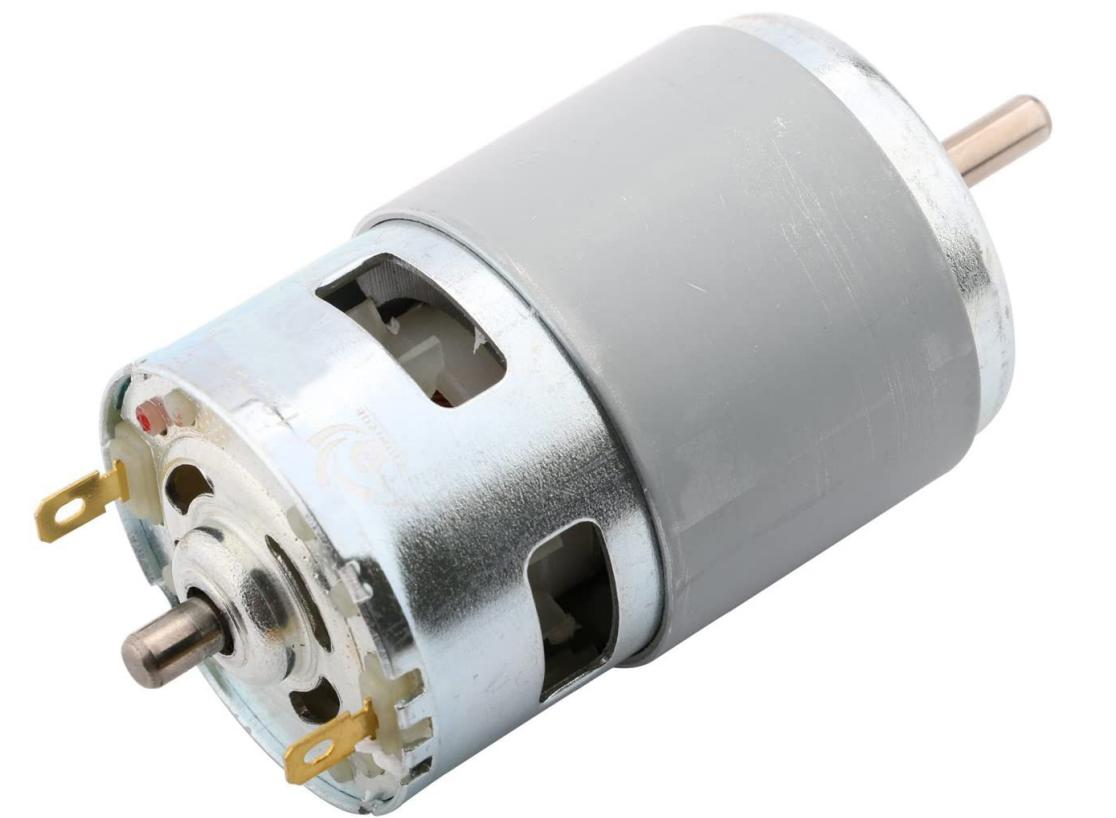
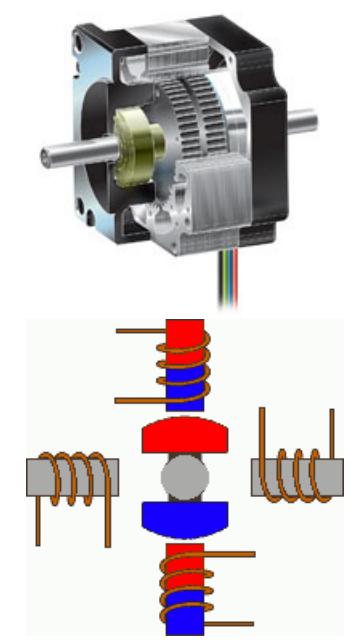
Gears, Belts, Screws, Bolts

Frames, Connection Points

Tension Springs, Ball Joints, Fastners

Motors, Electronics, Power Source, Code

DIFFERENT KINDS OF MOTORS



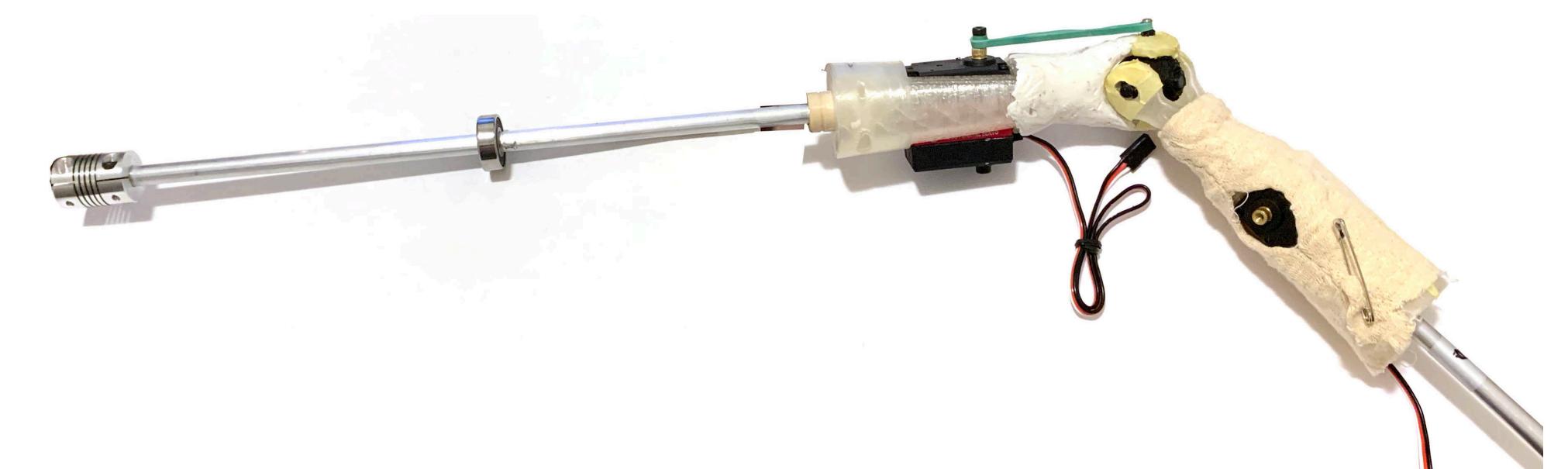
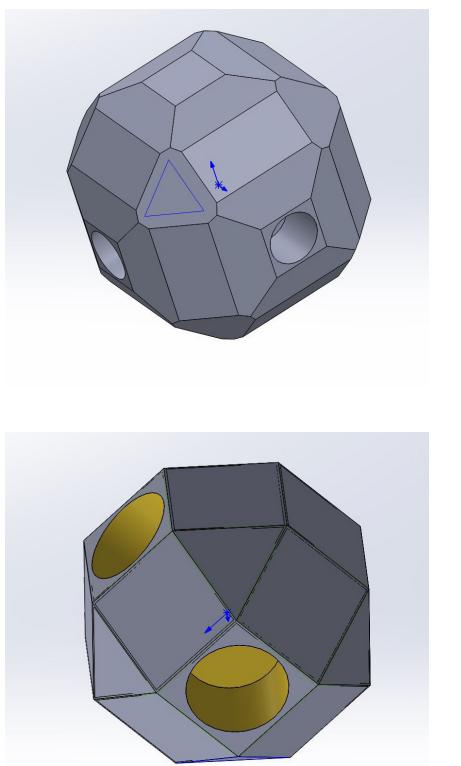
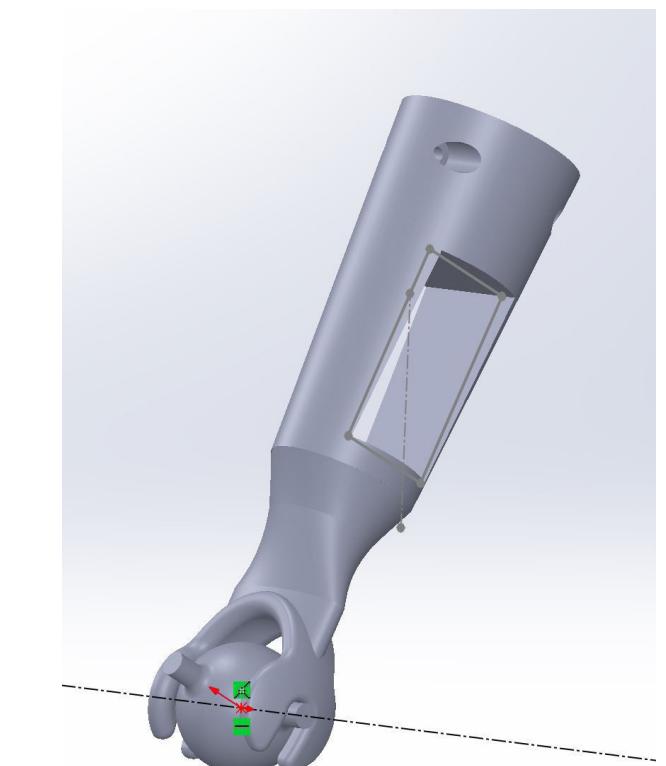
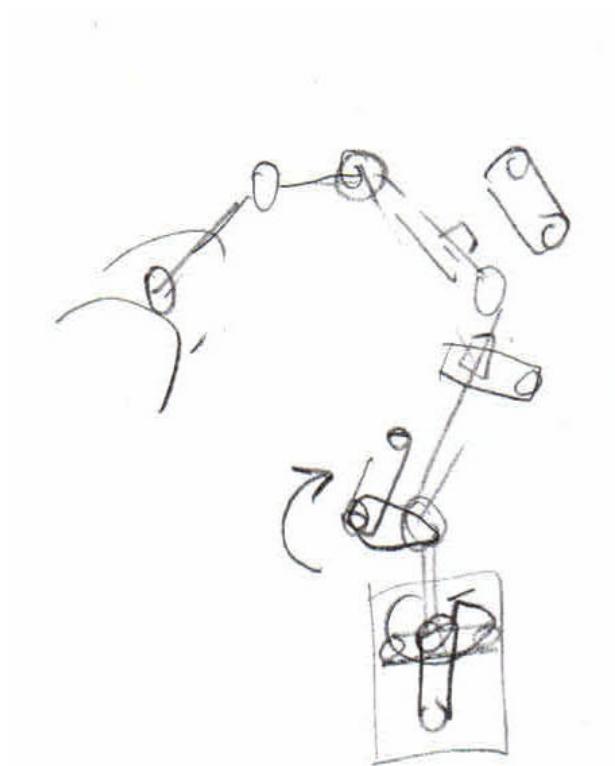
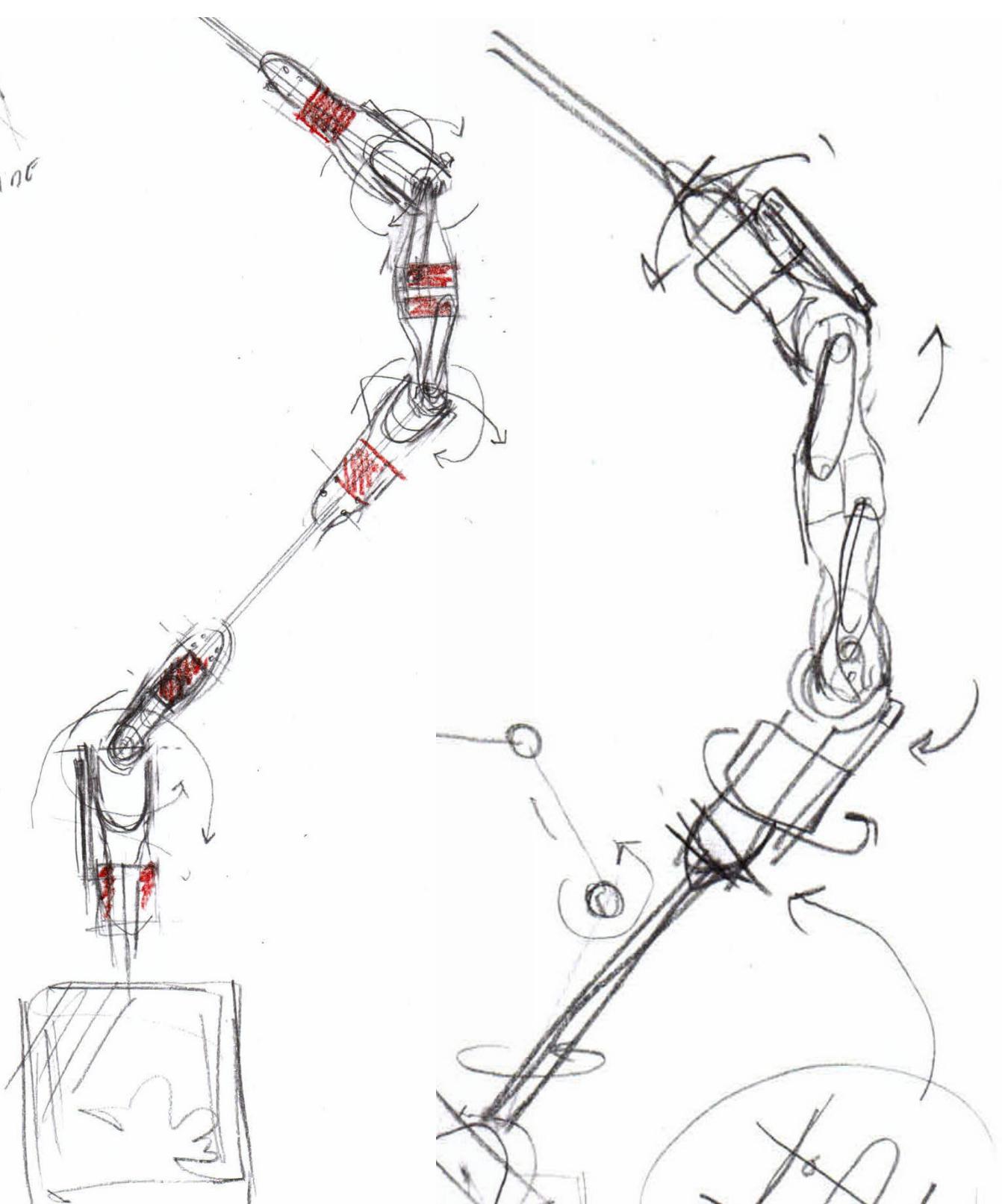
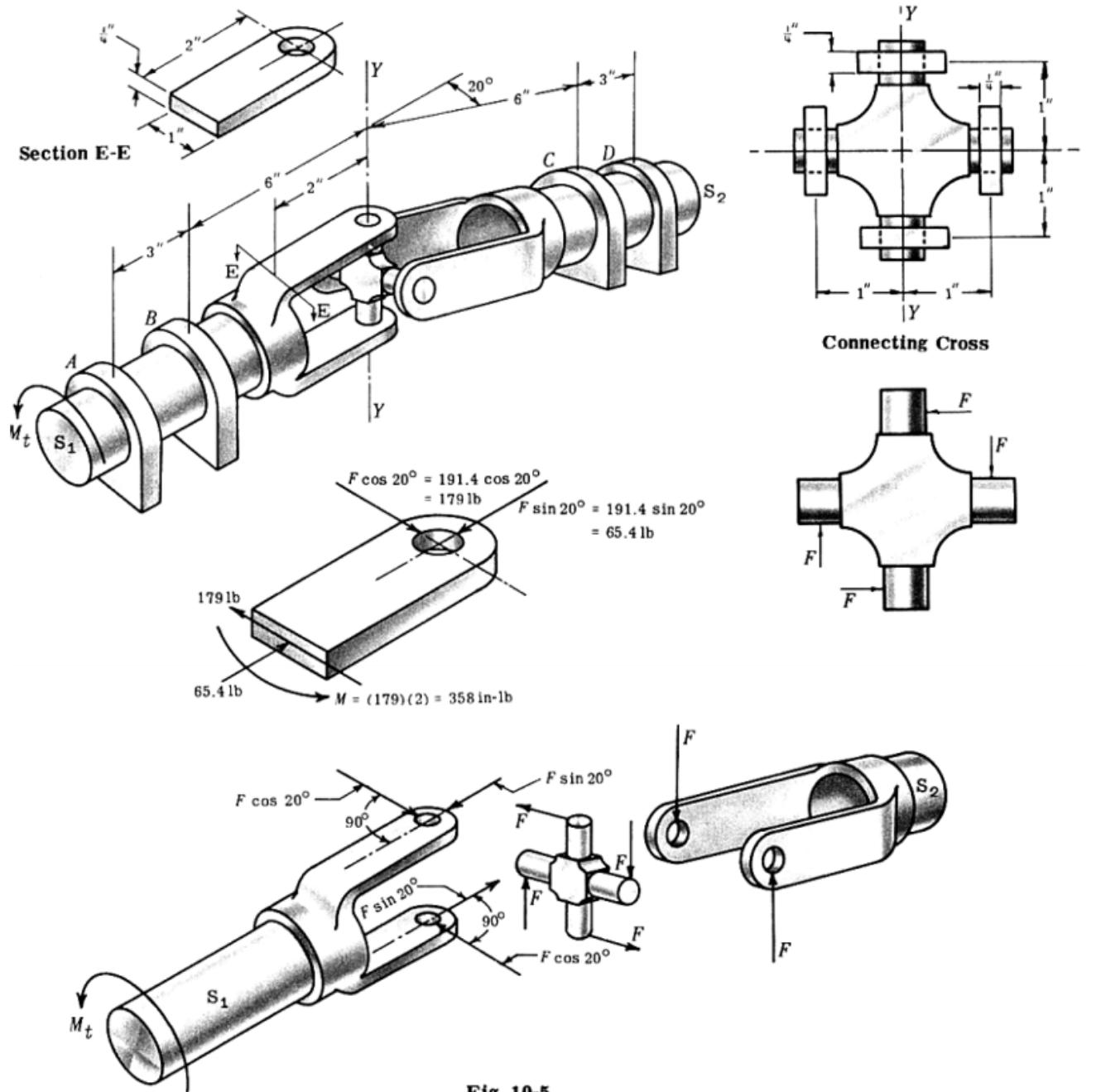
Stepper Motor

DC Motor

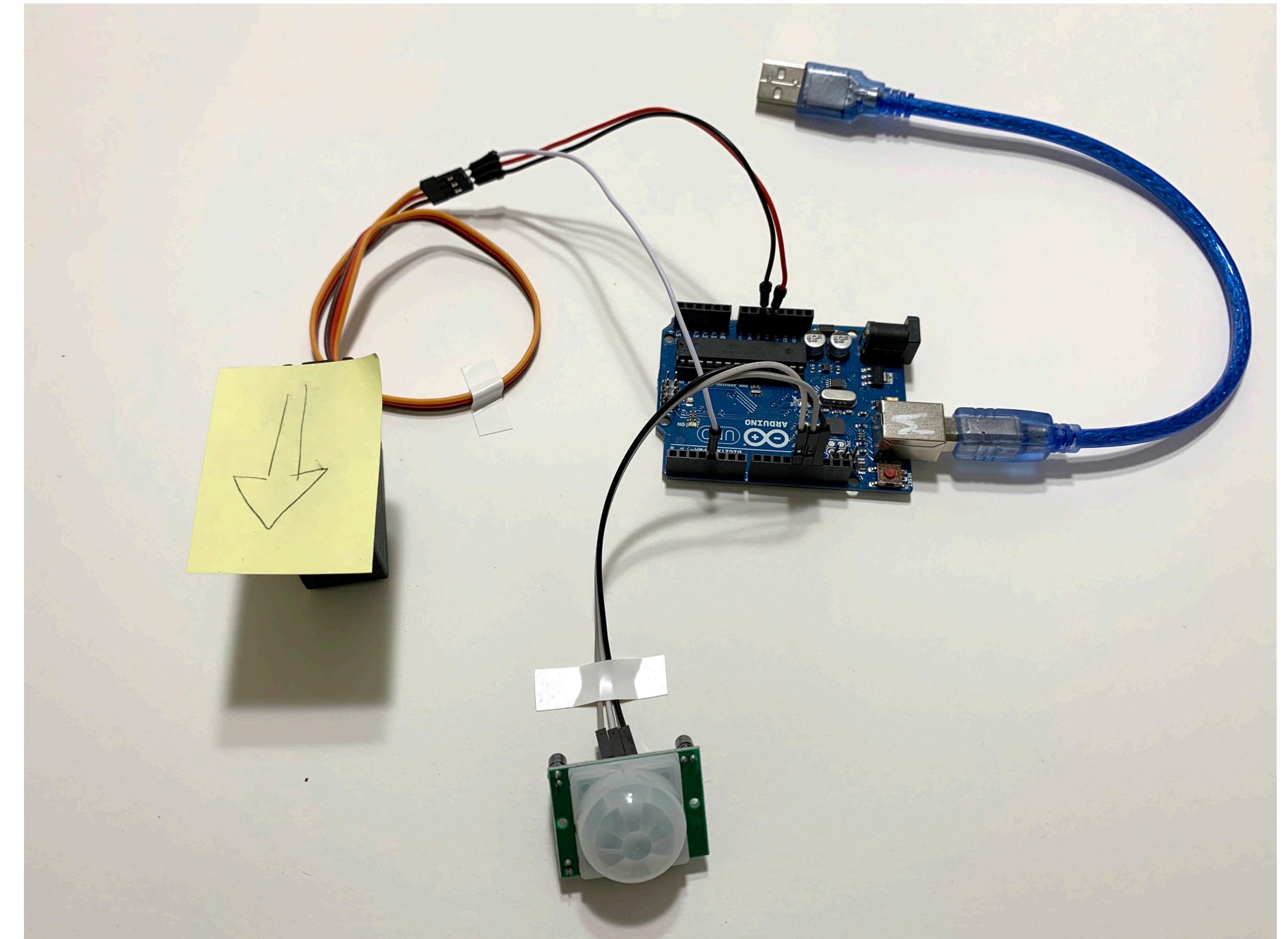
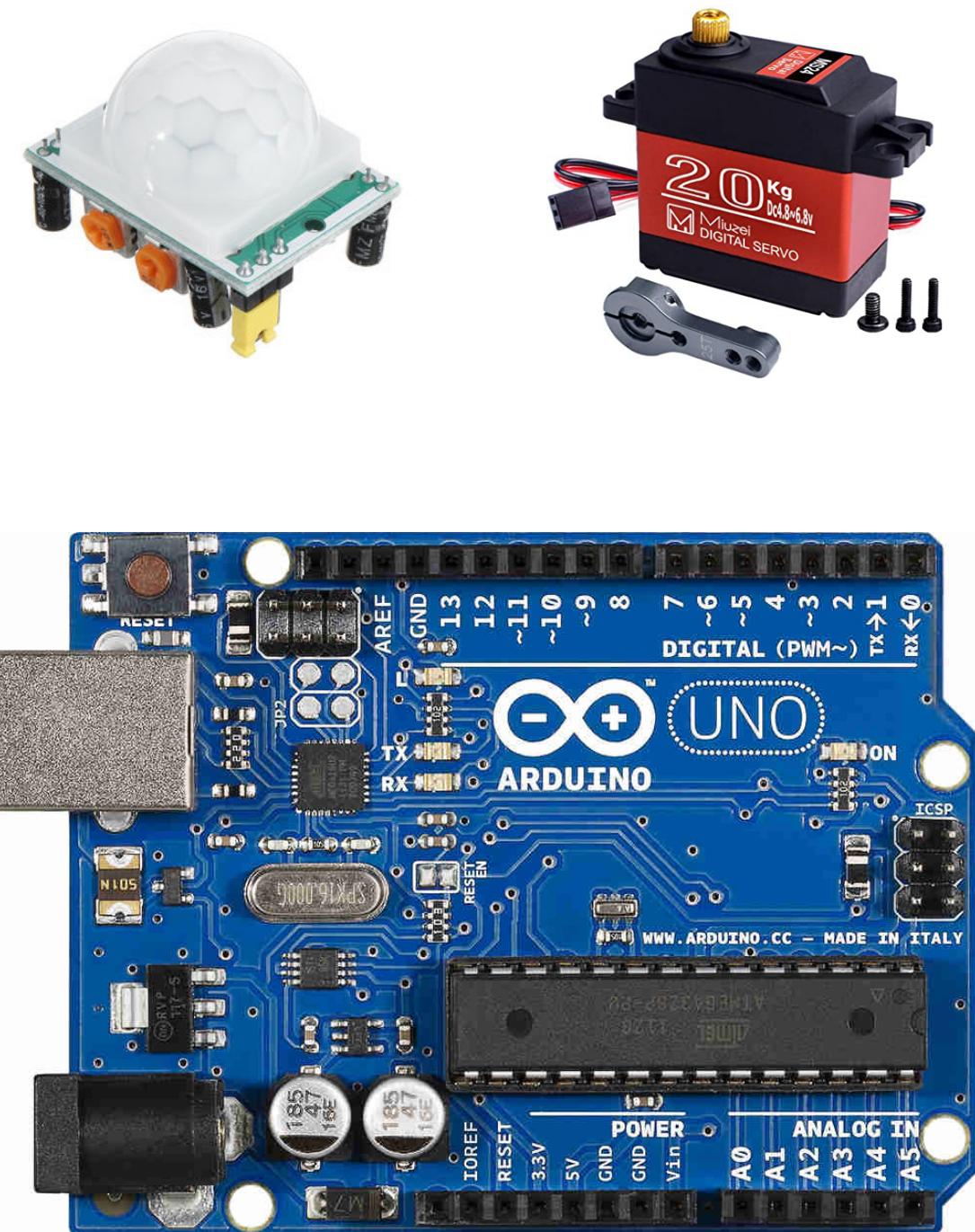
Servo

UNIVERSAL GEARS

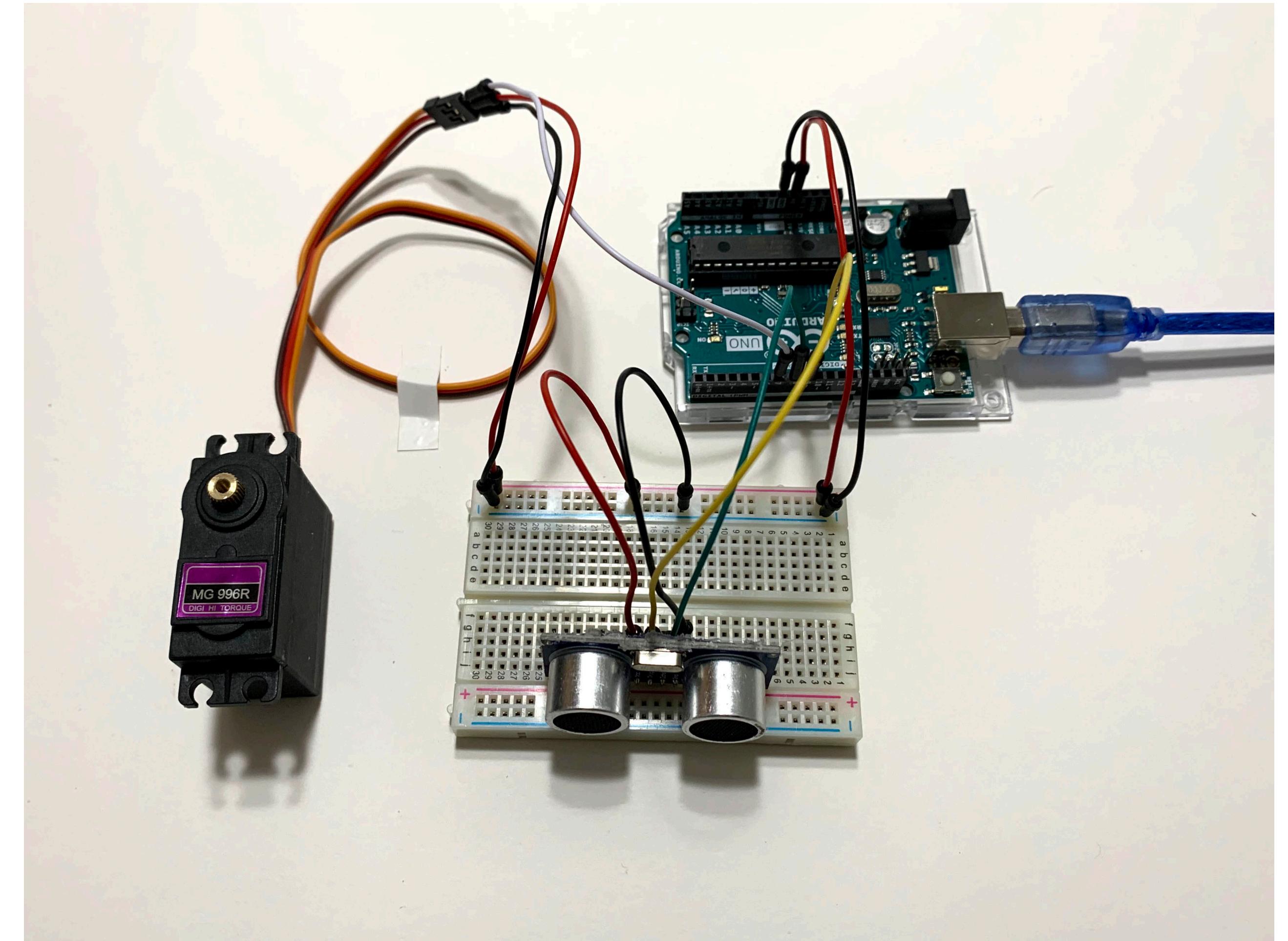
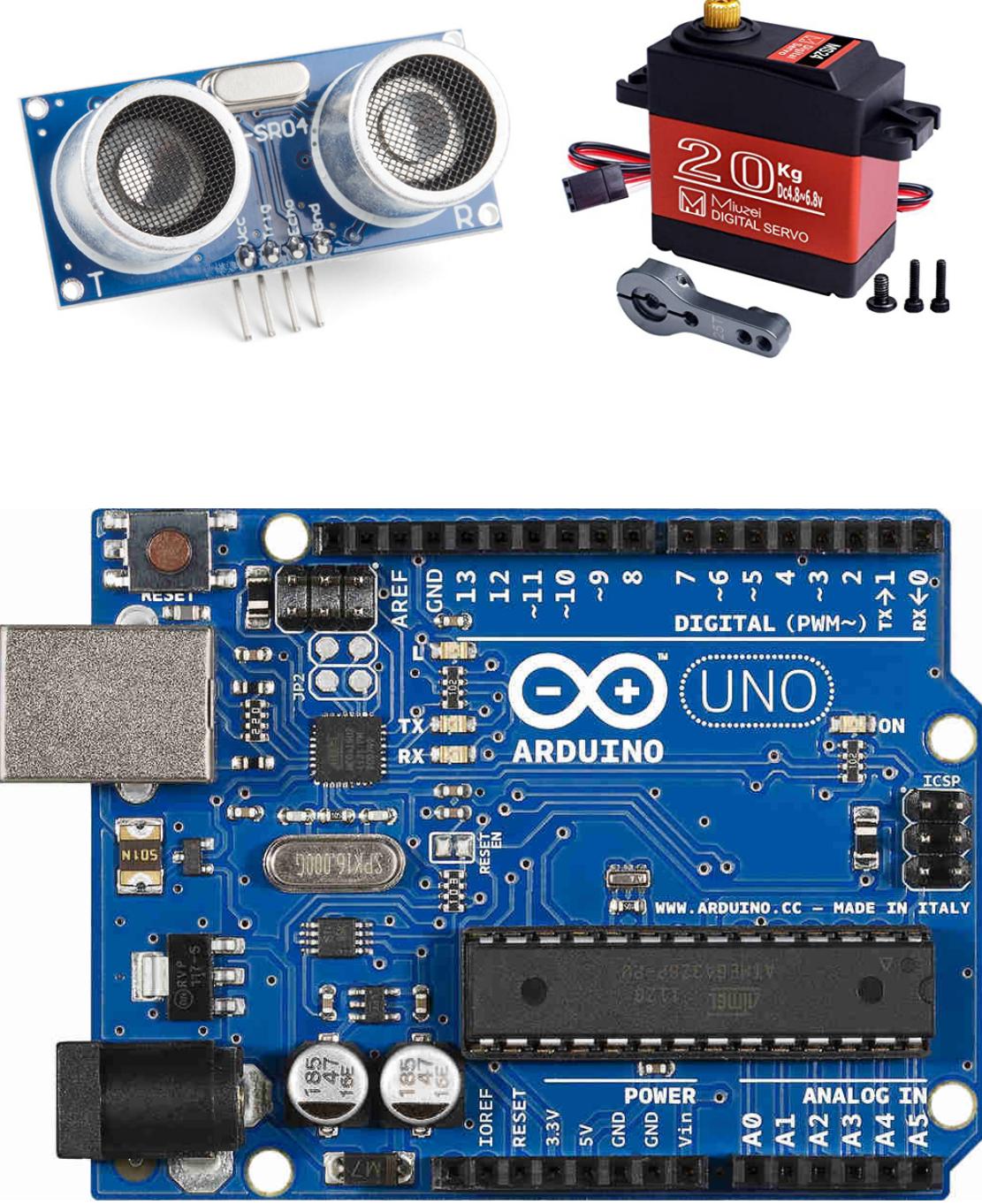
A torque of $M_t = 360$ in-lb is applied to shaft S_1 of a universal joint. Determine
 (a) the torque on shaft S_2 ,
 (b) the force on the pins of the connecting cross,
 (c) the bearing reactions at A , B , C , and D .
 Refer to Fig. 10-5 and rotate shaft S_1 90° from that shown.



PIR SENSOR + SERVO



ULTRASONIC + SERVO



POTENTIOMETER + SERVO

