

MECHANICAL DESCRIPTION OF IRIS ITS STRIKER ROBOT FOR ROBOCUP 2025

1. Main Structure

The main structure of this robot consists of three DC Servo and triple Omni wheel motors as the main drive, a pair of passive rotary encoders, a pair of free wheels, and a capacitor for the solenoid.

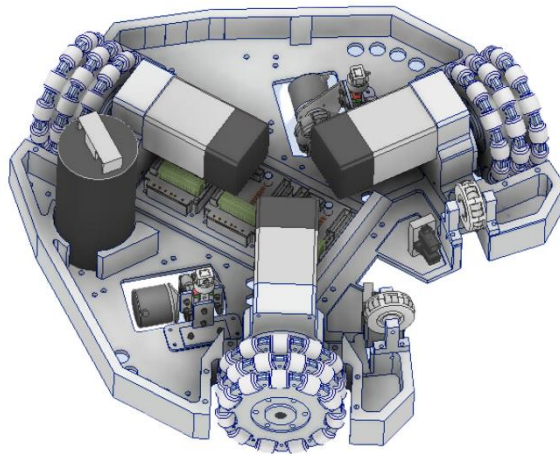


Figure 1. Main Structure

2. Robot Frame

The Robot Frame is the structure of the robot that supports the secondary structure upwards and also the placement of electronic components. This robot structure is designed with several profiles to reduce the weight of the robot and increase the flexibility of electronic component placement in case of component design changes and cable management.

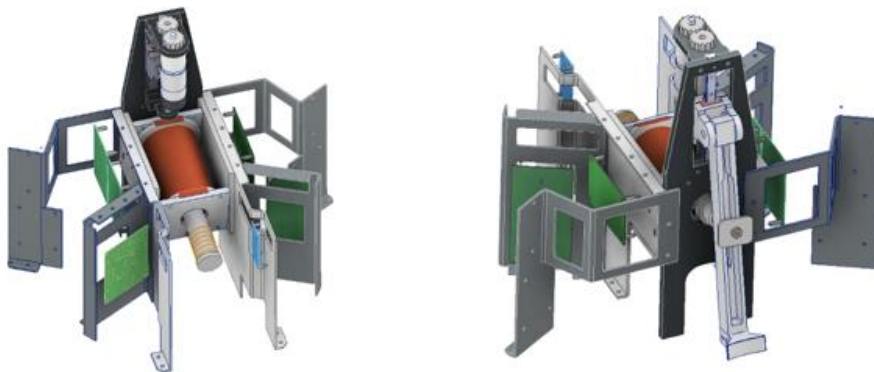


Figure 2. Robot structure

3. Ball Handlers

Ball Handlers on the striker robot are attached to the main structure. The ball handlers system is integrated with angle sensors and hydraulic dampers to maintain stability in dribbling.

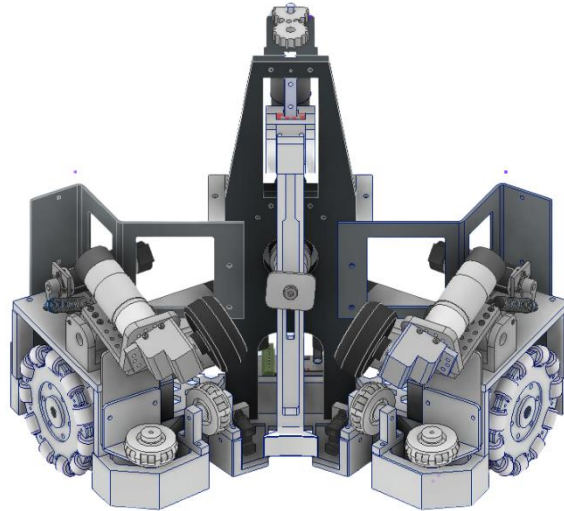


Figure 3. Ball Handlers Mechanism

4. Kicking Mechanism

The kicking mechanism uses a solenoid that is integrated with a lifting mechanism to adjust the height of the ball kick and a return spring to return the plunger to its initial position.

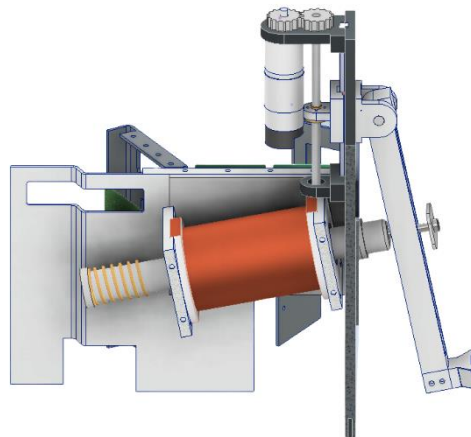


Figure 4. Kicking Mechanism

5. Secondary Structure

The Secondary Structure is designed to have a profile that provides flexibility for cable management of electronic components on our robot. This secondary structure is a platform to place batteries, some electronic components and the lifting kicker mechanism on our robot.



Figure 5. Front view (a), back view (b)

6. Robot Vision

Our striker robot detects the environment using 2 cameras that have their functions. The omnidirectional camera is the main camera and the front camera is the support camera.

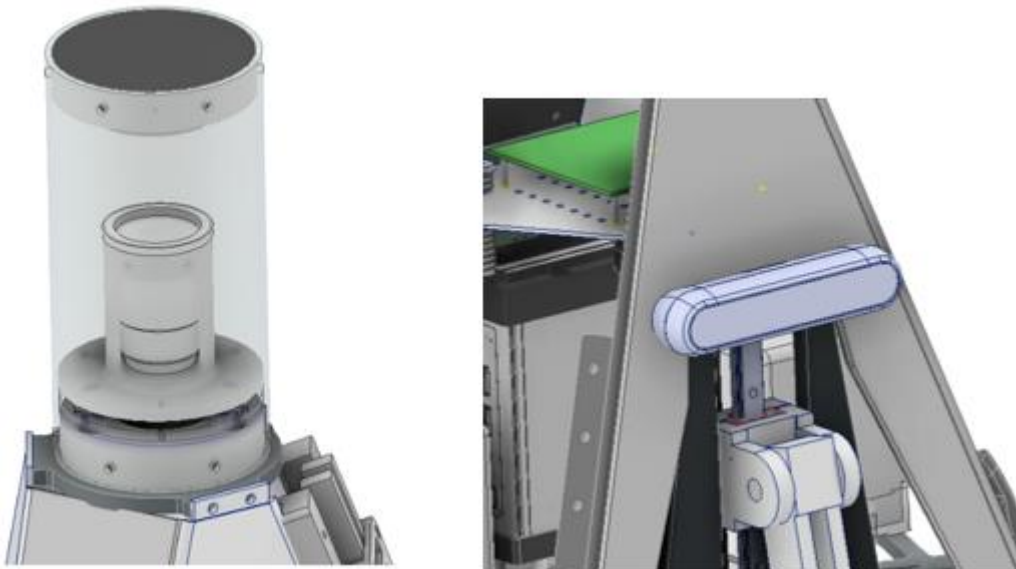


Figure 6. Omnidirectional camera (a), front camera (b)