Fight Robot Documentation

1-Operation:

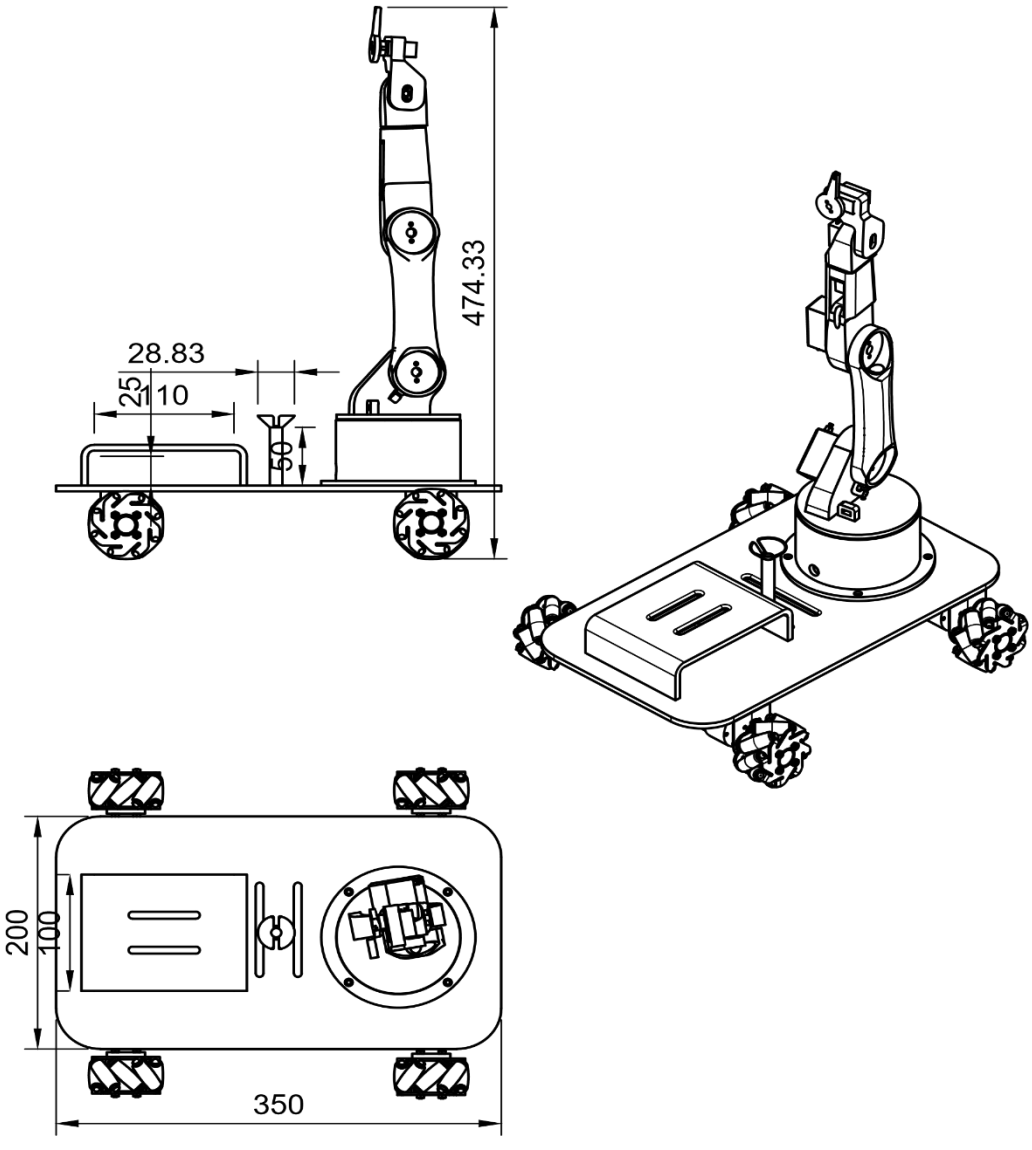
1.1- Robot Dimensions:

The robot dimensions are showed in the figure:

Maximum height= 475 mm (highest position of the arm)

Maximum length= 650 mm (longest position of the arm)

Maximum width= 500 mm (widest position of the arm)



unit: mm

1.2- Arena Dimensions:

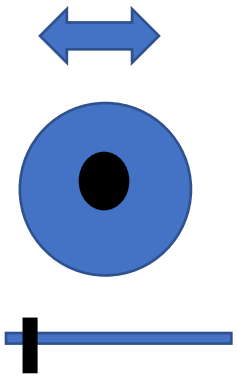
The arena is circular to provide additional freedom and prevent being stuck at the corner. To achieve full circular translation of one robot about its competitor the arena requires 1.5-meter diameter, but to offer more freedom 1.6-meter diameter is preferred. The diameter calculation done by using simple comparation using CAD software of the robot designed by our team. The diameter may be modified depending on the competitor robot dimensions.

1.3- competition rules:

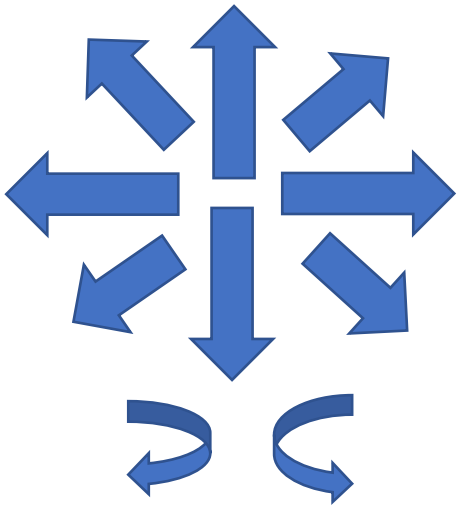
1- The wining objective is to bomb the competitor balloon.
2- Controlling the robot remotely over the internet.
3- Shooting objects is prohibited.
4- The initial position of the robots will be at the edge of the arena facing each other.

1.4- Control interface:

To control the base, 10 arrows can be used as shown. For the arm, joystick, sliders, or arrows can be used. Depending on the user preference.



Servo control options



Car control directions

1.5- Operation description:

When the robot start, it will move the robot arm to the starting position and the robot will be placed on its starting position at the arena. The same starting position data of the arm stored in a database on a web server. To move the robot, a command from the control interface web page will be send to the database, the robot controller will read the command, convert it into electrical signal to move the motors and send the new position to the data base. The new position data will replace the previous position.

2- testing:

1- Each unit must be tested individually to avoid installing defective parts.
2- The robot arm needs to be tested before installing it on the car to insure the free movement on the available movement range.
3- The car needs to be tested before the arm installation to insure the free movement on the available movement range.
4- Test the robot control offline.
5- Test the robot connection to the internet.
6- Insure internet stability.
7- Insure server stability.
8- Test the control interface web page functionality.
9- Check the database after the previous step.
10- Test the full range of the robot movement by controlling it over the internet.
11- Check the data again in the database.
12- Repeat any step after any modification or fixing procedure during the test.

3- Tolerance:

1- Internet connection.
2- Server stability.
3- Servo motor stability (shaking or slipping).
4- Wheels slipping.
5- Motors slipping.
6- Controller stability.

7- Electrical connection failure (insecure connections cut due to the movement).
8- Mistaken movement by the used.
9- Server failure due to overload.

4- Used manual:

4.1- in-site user:

Before putting the robot in the arena, operate the robot and give it time to move the arm to its initial position. Prepare the balloon and secure it to the balloon holder. Be carful of the sharp edge on the end-effector.

4.2- online controlled user:

Make sure to use stable internet connection. Use the arrows to control the car and preferred arm control method to control the arm. The speed of the car can be adjusted by the slider under the arrows. You can use your keyboard arrows to control the car movement.

5- Warranty:

Subject to the limitations provided below, Fight robot arm, car, and controllers are warranted against defects in materials and workmanship, under normal use. Smartmethods liability for such warranty is limited to:
100% of the parts necessary to repair the covered defect. Technical support by telephone, e-mail, fax or other means of correspondence during the warranty period for issues covered by warranty is provided at no charge for covered defects. If the problem was not solved by remote technical support, free of charge on site reparation in Riyadh and Makkah cities in Saudi Arabia. On site reparation charge travel expenses in any other locations.
The following are specifically not covered by warranty:

1- failure due to abuse and neglect and/or improper operating environment (including, but not limited to, improper power supply, temperature, humidity, and environmental conditions).
2- down time and related costs due to failure.
3- items such as batteries and consumables.
4- Un-updated Software.