

# Test Project

Module F Robot Environment Interaction

*Autonomous Mobile Robotics*

Independent Test Project Designer: Derek Murphy, James Taylor

Independent Test Project Validator: Johan Benade

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## Introduction

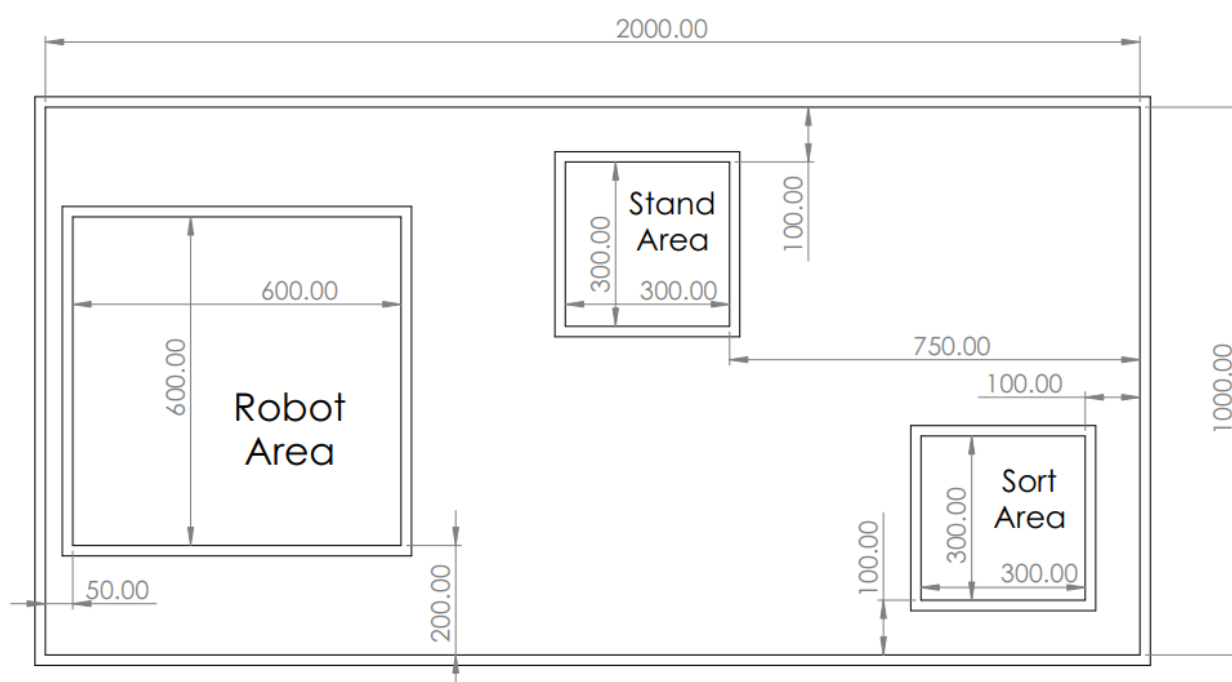
Increasing a robot's adaptability and flexibility to its environment is possible through modifications in its software. Properly chosen algorithms that predict and respond to changes in the surroundings can significantly enhance the adaptability of the robot.

It's also possible to raise the flexibility of robots through structural changes. The use of components, materials, and elements that can assume different shapes and positions can increase their functionality, facilitate their adaptation to the environment, and improve the efficiency of performing new tasks.

## Description of project and tasks

Robot Environment Interaction will be completed in **two hour** time block. The assessment will take place in the individual testing rooms (Same rooms used for Vision/Testing and Fault Finding). Teams will be provided with their prototypes and objects at the start of their preparation time. Just before their test run a period of 15 minutes, each team will have a 15-minute period of exclusive access to the assessment court for final testing before the evaluation.

The Competitors will use the three sized objects from the prototype module and the components that they built during the module. The Competitor robot will begin in the Robot Area and will deliver the three objects from the stand located in the Stand Area to the prototype sorter located in the Sort Area.



## Instructions to the Competitor

Your robot must start the task completely (all components) inside the interior lines of the Robot Area. The robot can be placed by the Competitors in any orientation.

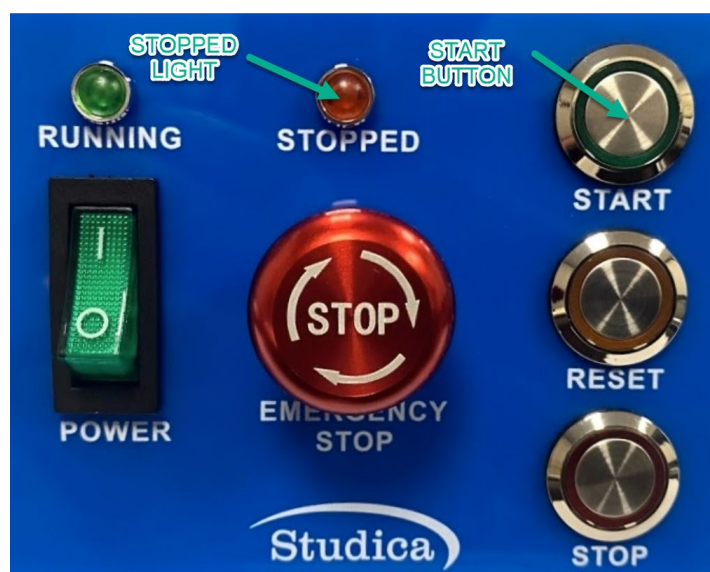
The stand that was created in the prototyping module must be placed by the Competitors in any orientation within the Stand Area (Inside edge of lines) and one of each sized objects will be placed by the Competitors onto the stand. Objects can only be placed once, if the robot knocks of an object, it can no longer be used.

The sorting prototype must be placed by the Competitors in any orientation withing the Sort Area (it must completely fit with the inside edge of the lines and stay within the lines during the test run) It can be placed in any orientation.

The robot must start in the Robot Area (Inside edge of the lines) and be started via the start button on the control panel. The robot must move to the stand area and retrieve each (one of each size) object from the stand and deliver each object to the holding area on the sorter. The robot can only be in possession of one object at one time.

After an object is placed on the holding area on the sorter it can be removed by one of the Competitors so that the area is ready for the next placement. After the 3<sup>rd</sup> object is placed the robot must return the start area and stop completely inside that area (inside edge of the lines).

**The robot must stop and show a flashing red stopped light.**



## Other

Each team will have 15 minutes in the court to run the evaluation, immediately following the 15 minutes of practice. All other preparation and practice must take place in the Competitor area.