“ Manji ”

The dish washer robot

Final Project

Hector Javier Pequeño Chairez
A01246364
Stephanie Denisse Benítez
Cabrera A00820320

Applied Robotics

OK

CONTENT OF THIS PRESENTATION

Here’s what you’ll find in the **Manji project**:

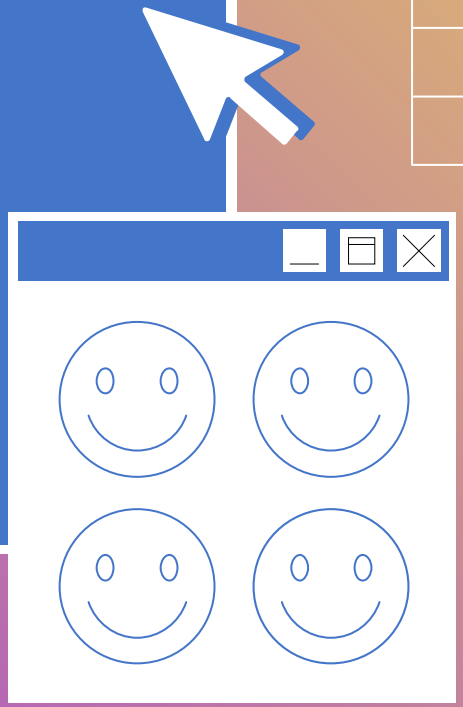
1. Proposal of the project - Introduction.
2. Step by step process.
3. Designed Tools.
4. Full Robot Diagram.
5. **Things we learned in the process**.
6. Final slides with:
    1. Bibliography.
    2. Thanks.

“Robotics are beginning to cross that line from absolutely primitive motion to motion that resembles animal or human behavior.”

—J. J Abrams

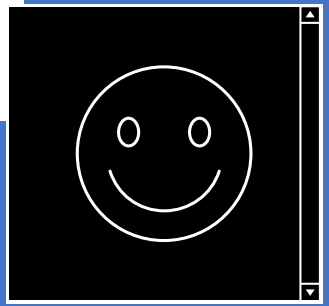
01

Project proposal



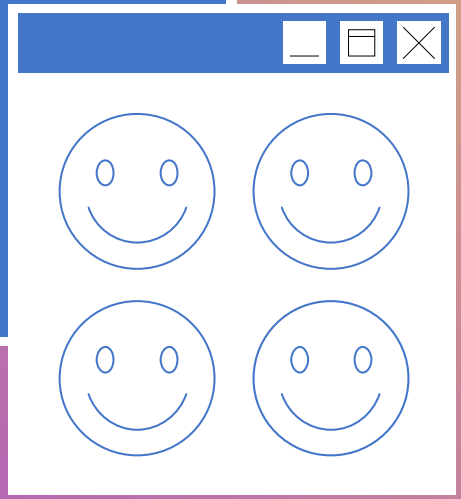
Project proposal

"Maji, the dish-washer robot". Our robot is fully capable of receiving a dish, carrying it, soaking it in water, cleaning it with soap and then drying it, everything in just 15 seconds. It will be a better use for restaurants because the process is faster and they could save budget by having one robot instead of 5 people trying to wash the dishes extra fast and buyings a thousand of them, because they have to make sure they never run out of dishes.



02

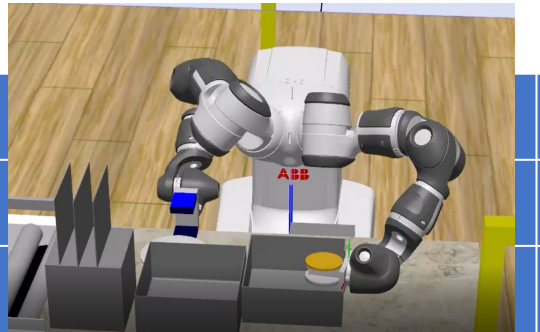
Step by step process



Step by step process

Grabbing the dish

Our first step consists of the robot (Maji) to take the plate from where it is positioned.



Carrying the dish

The plate should be carried by Maji and prepared for it to be soaked in water, while the right arm is diving on soap.

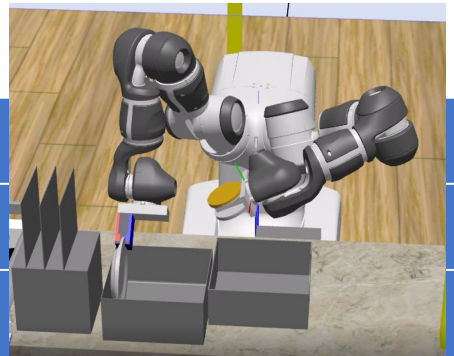
Soaking the dish in water

After Maji carries the dish and positions it over the water container, the dish is soaked into water and prepared for it to be washed with soap.

Step by step process

Wash the plate

Now with the left arm tool covered in soap we can wash the plate.



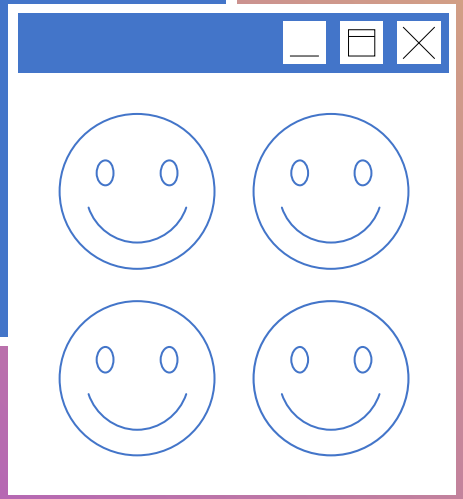
Again, soaking the dish in water

After Maji carries the dish and positions it over the water container, the dish is soaked into water and prepared for it to be dried.

Store the plate

Store plate in the gabinet, and go back to the initial position.

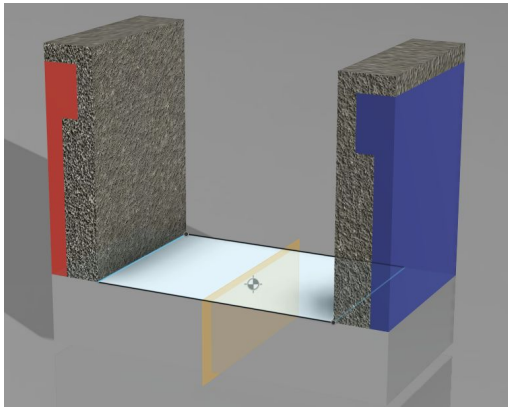
03 Designed tools

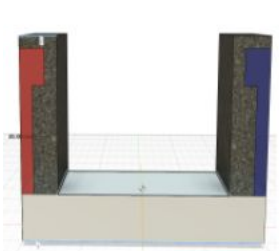


Tools

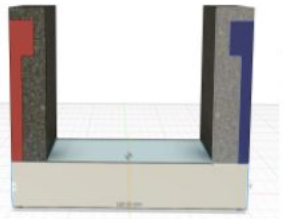
Right tool

Is a grip, to take the plate.

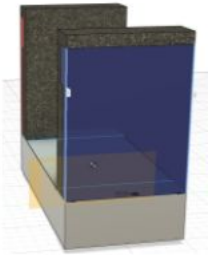




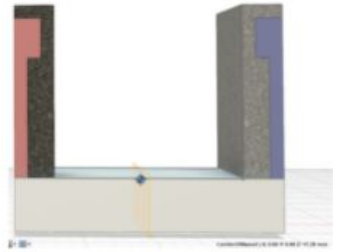
Height 85 mm



Width 100 mm



Depth 50 mm

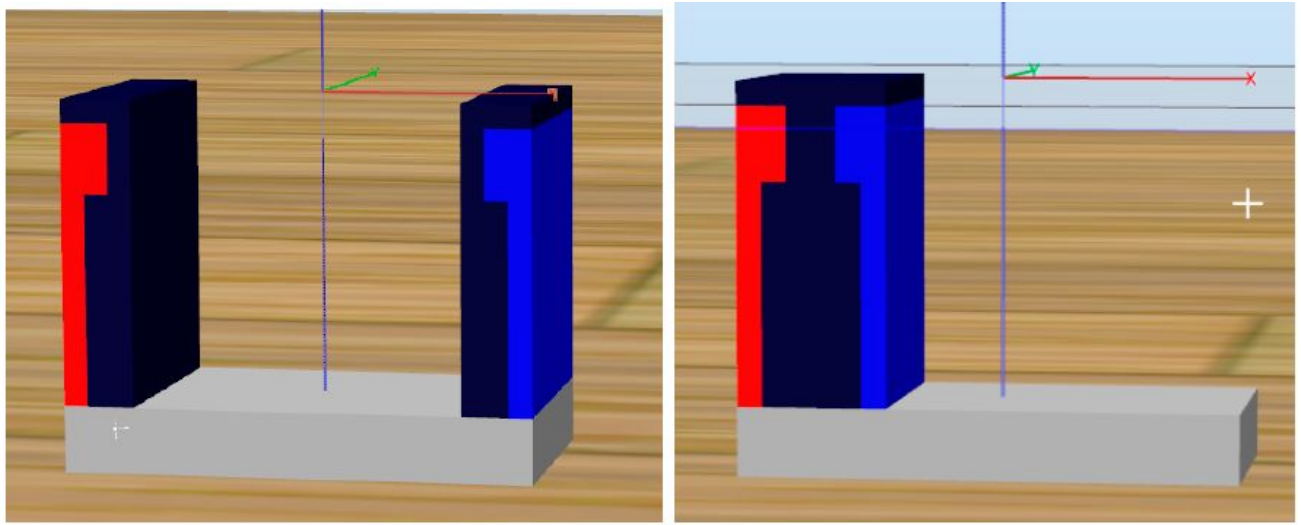


Center of Mass

- Aluminum 6061, Welded: Main construct material of the tool.
- Laminate, Blue, Matte: Decoration for the right part of the grip.
- Laminate, Red, Matte: Decoration for the left part of the grip.
- Polyurethane Foam: Material that protects the plates from the grip when it is taken.

Center of mass at the coordinates (0.00,0.00,17.36) mm
TCP (0.00,0.00, 85.00) mm

Animated Tool

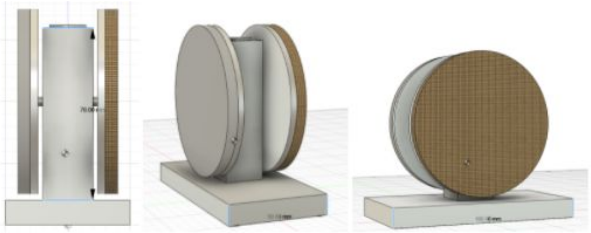


Tools

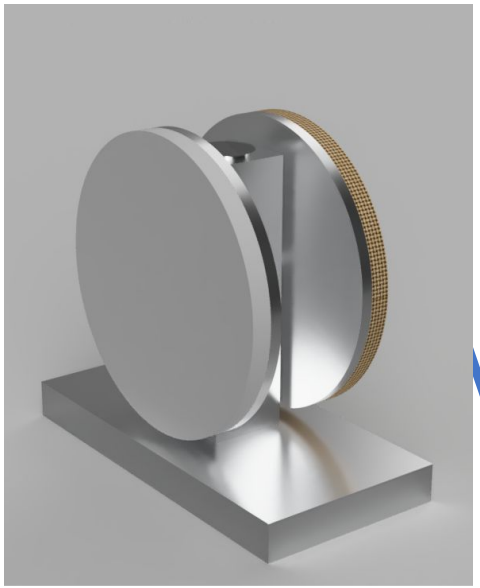
Left tool

Is a tool we design, to wash and dry the plate.

Center of Mass



Height 87 mm Width 50 mm Depth 100 mm

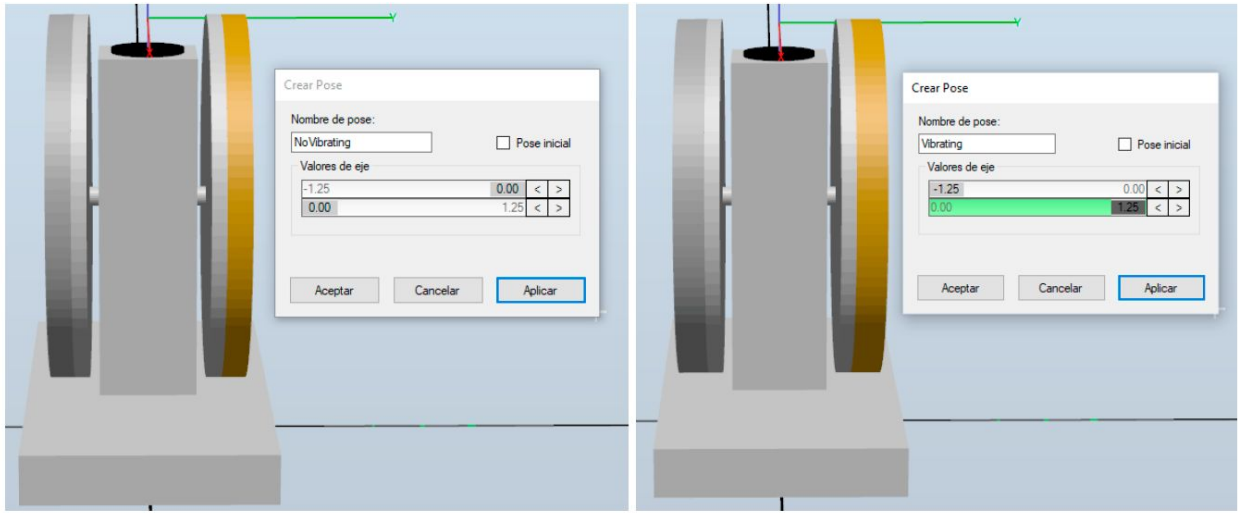


Center of mass at the coordinates (-1.246E-09, -1.009, 28.951) mm

TCP at (0.00, 0.00, 87) mm

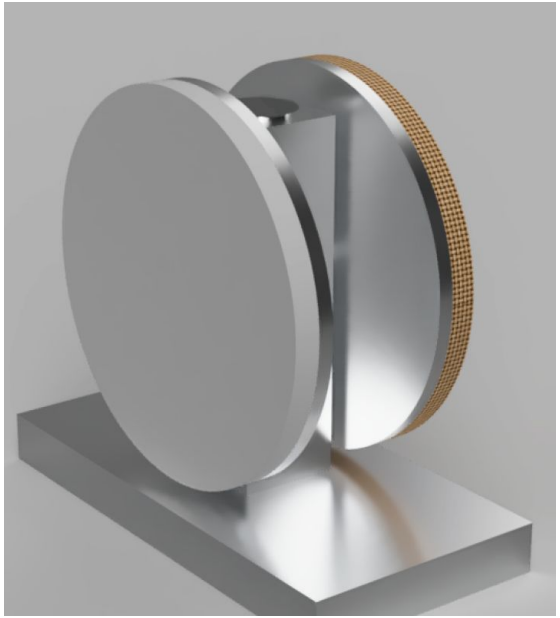
- Aluminum 6061, Welded: Main construct material of the tool.
- Linen, Beige: Material to dry the plates.
- Polyethylene, High Density: This material is the most efficient material for Dishwashing

Animated Tool



The movement is programmed to vibrate, this is just to remove in a better way the food and dust of the plates.

Camera



At the top of the tool, the camera let us to analyse, if the plate stills dirty to repeat the cleaning procedure.

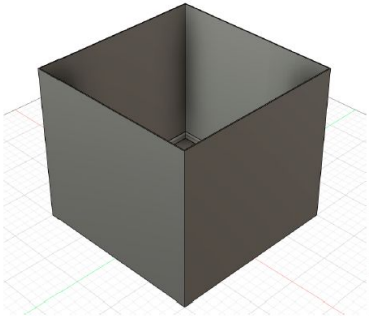
Tools

Plates

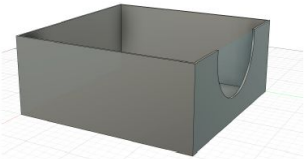
This plate it is made of plastic, and has a radius of 75 mm and a weight of 231.229 g

Sink

Emulate the zone where the water is.



Clean Water Sink

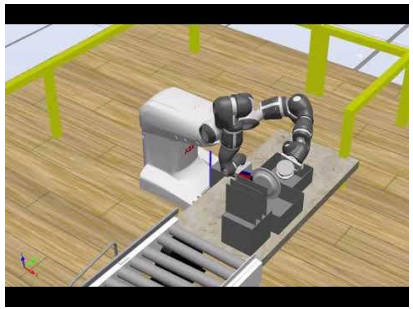


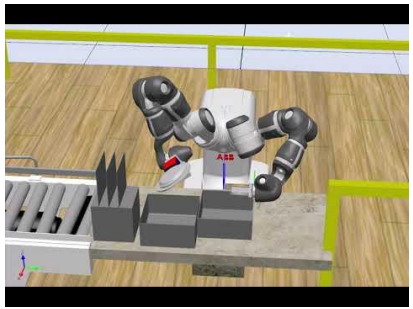
Water with Soap

Workspace

Safety and workflow

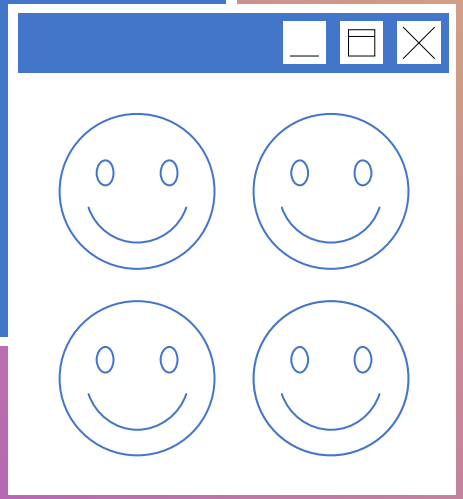
The area is prepared to the robot receive the plates and work without human interaction, the area is covered by a fence, and after the work is done, the plate is put it into a gabinet.





04

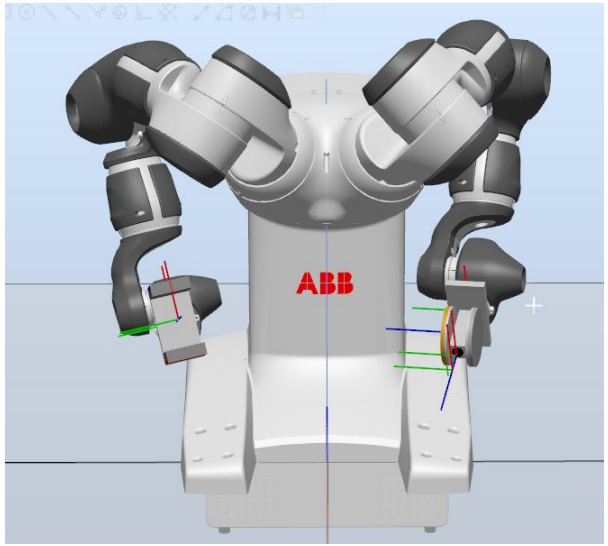
Full robot diagram



Full body robot

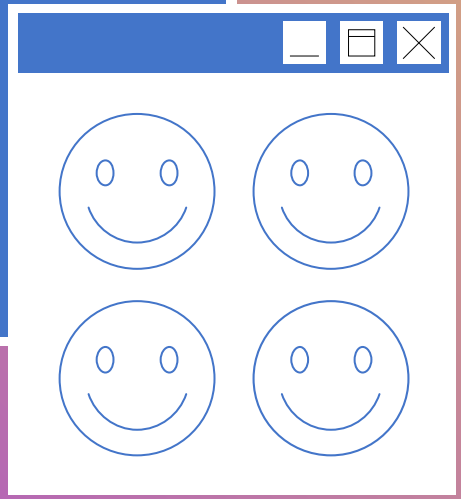
Diagram

This image has the two tools on each arm of the robot.



04

Things we learned in the process



What we learned in the process

Conclusion

We really learned about robotics, about calculating movements from scratch and how important it is robotics in the present and will be in the future. We also realized how used are humans to robotics and how simple they can think it is to have everything in the palm of their hands.

We also learned to develop and perform the design of the tools and the robot, the use of Fusion 360 CAD and Robot Studio.

THANKS