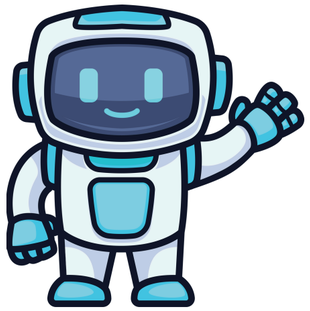
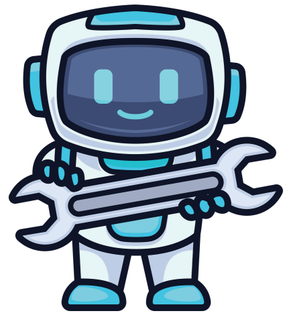
PROJECT 31:

ROBUDDY

A Robot Friend

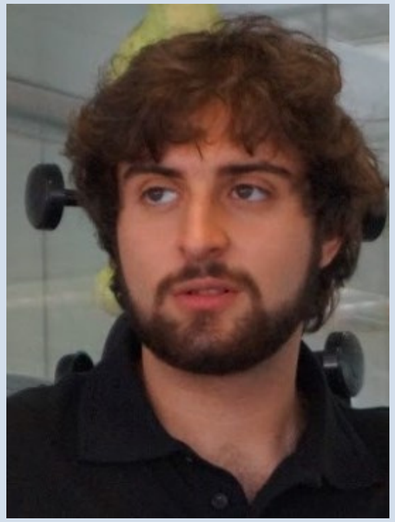
CONTENTS





OUR TEAM

Augusto Azevedo



Duarte Marques

Eduardo Caria

João Eduardo

João Le Coroller

Tiago Abreu

MENTORS

Scientific Advisor & Coordinator

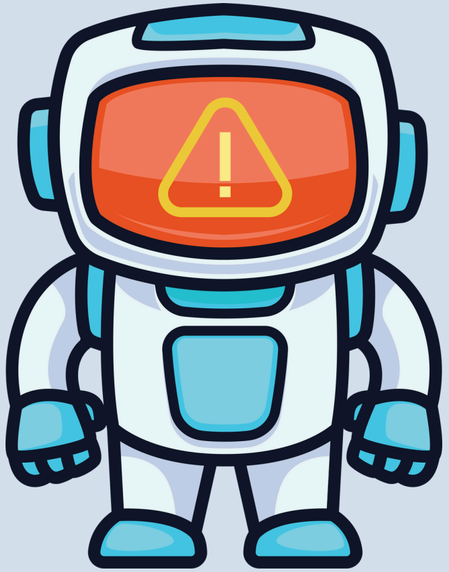
Luís Caldas

Scientific Co-Advisor & Mentor

Rafael Cordeiro

OUR PROBLEM

- There is not an **accessible solution** in the field of electronics and robotics in **school students**.
- Premature course selection for higher education and extremely theoretical and extensive high school curriculum pose significant challenges for Portuguese youth.
- This often leads to misguided and uninformed academic decisions.



THE SOLUTION

ROBUDDY

a robot friend

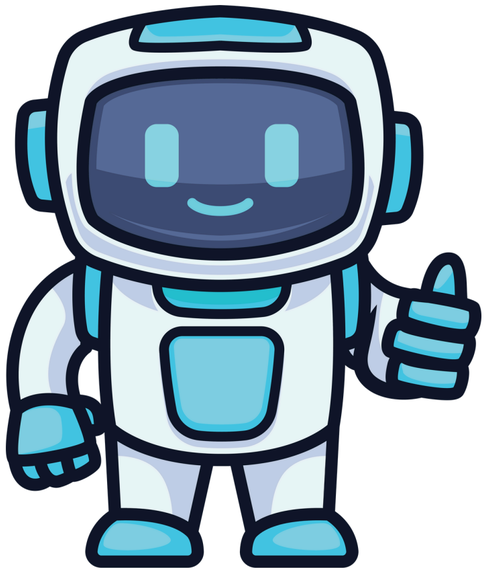
THE SOLUTION

We offer a modular solution to the problem.

Using microcontrollers to teach computational thinking, and programming of sensors and actuators.

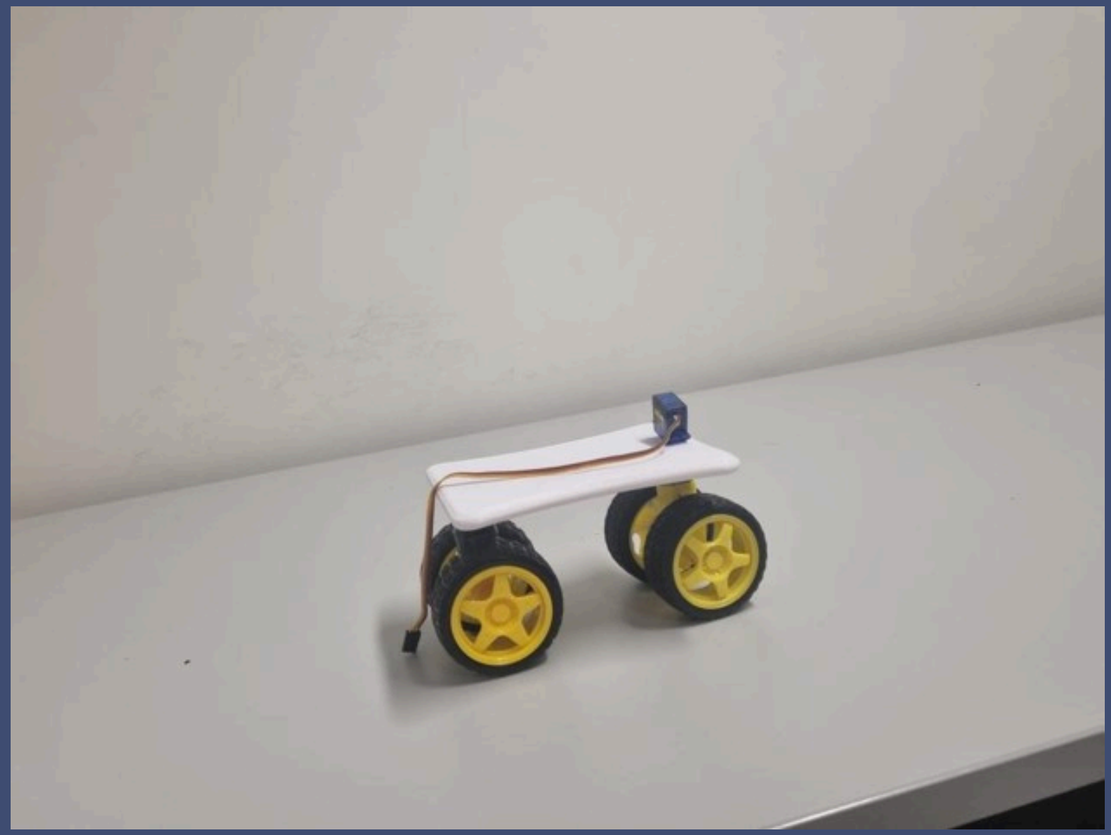
Modular nature allows for quick maintenance and encourages user creativity.

Versatile robotics platform suitable for STEM activities and robotics competitions.



THE SOLUTION

- A functional prototype of the first module (line follower).
- We were able to reuse a few materials and components from the Electronic Engineering Student Organization.



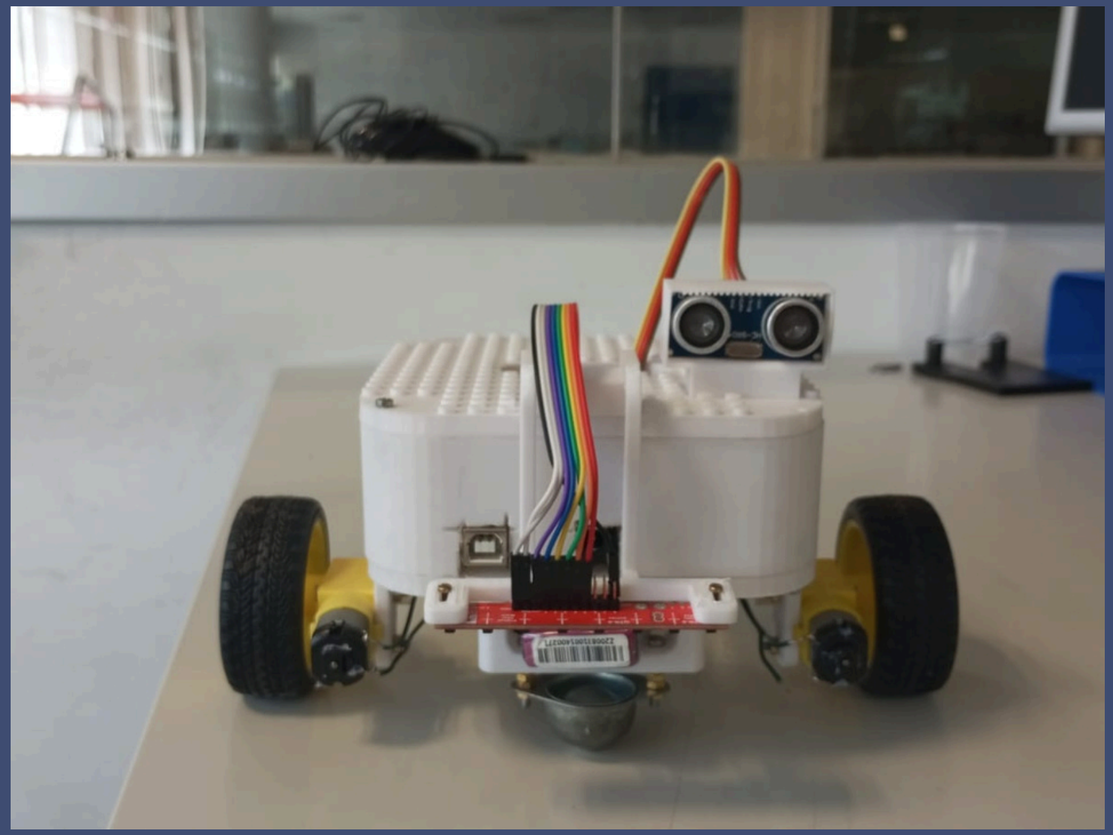
First Prototype

THE SOLUTION

THE SOLUTION

The modules that we created were:

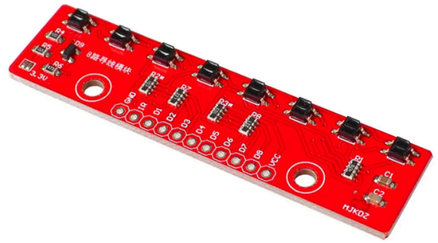
- Follow the line
- Follow the line with ultrasonic sensor to measure distance
- Automated Claw
- LCD with a videogame and audio
- Control of the robot using a controller
- Turtle drawing



Final Prototype

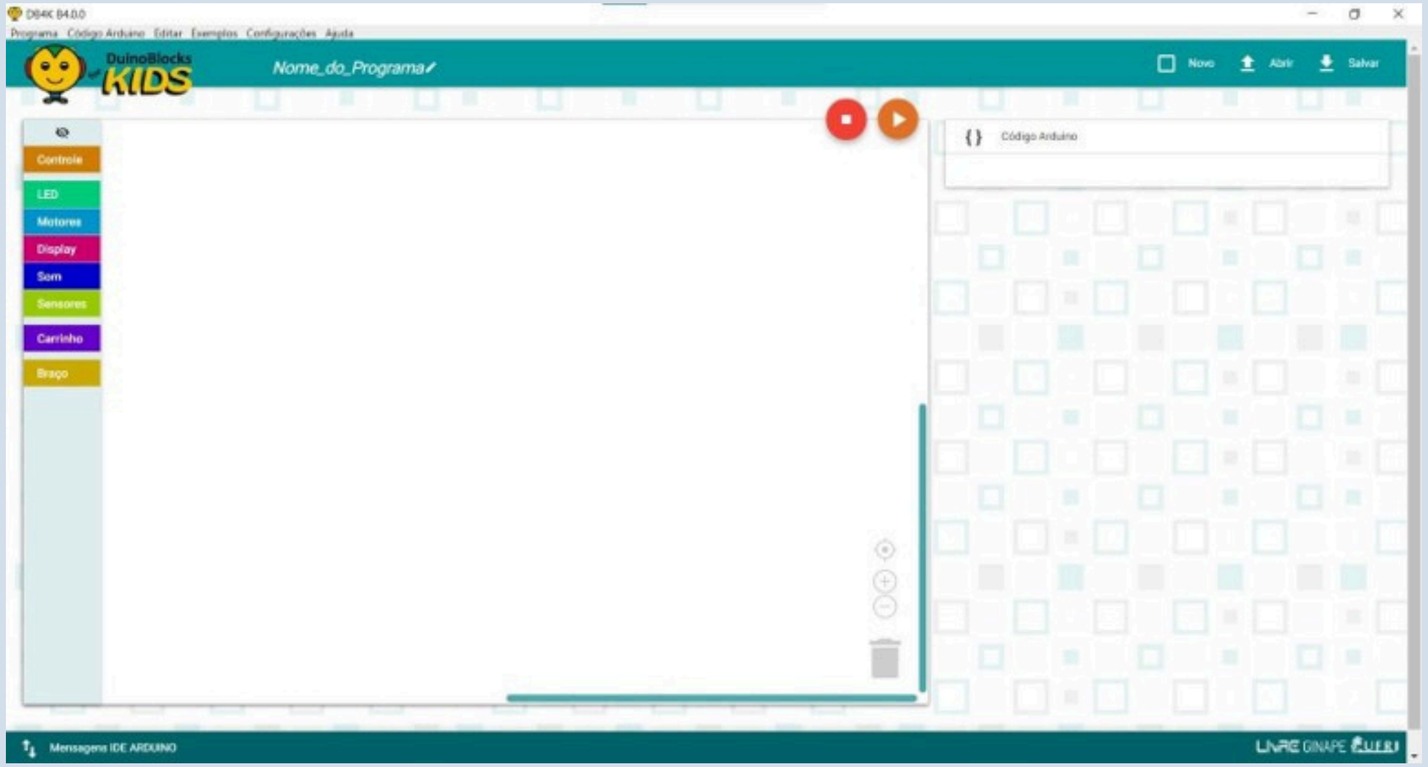
THE SOLUTION

- Modules make it feasible to add or remove components as needed to customize the user experience
- Interactive and hands on
- Mores functionalities can be added in the future



Modules

THE SOLUTION



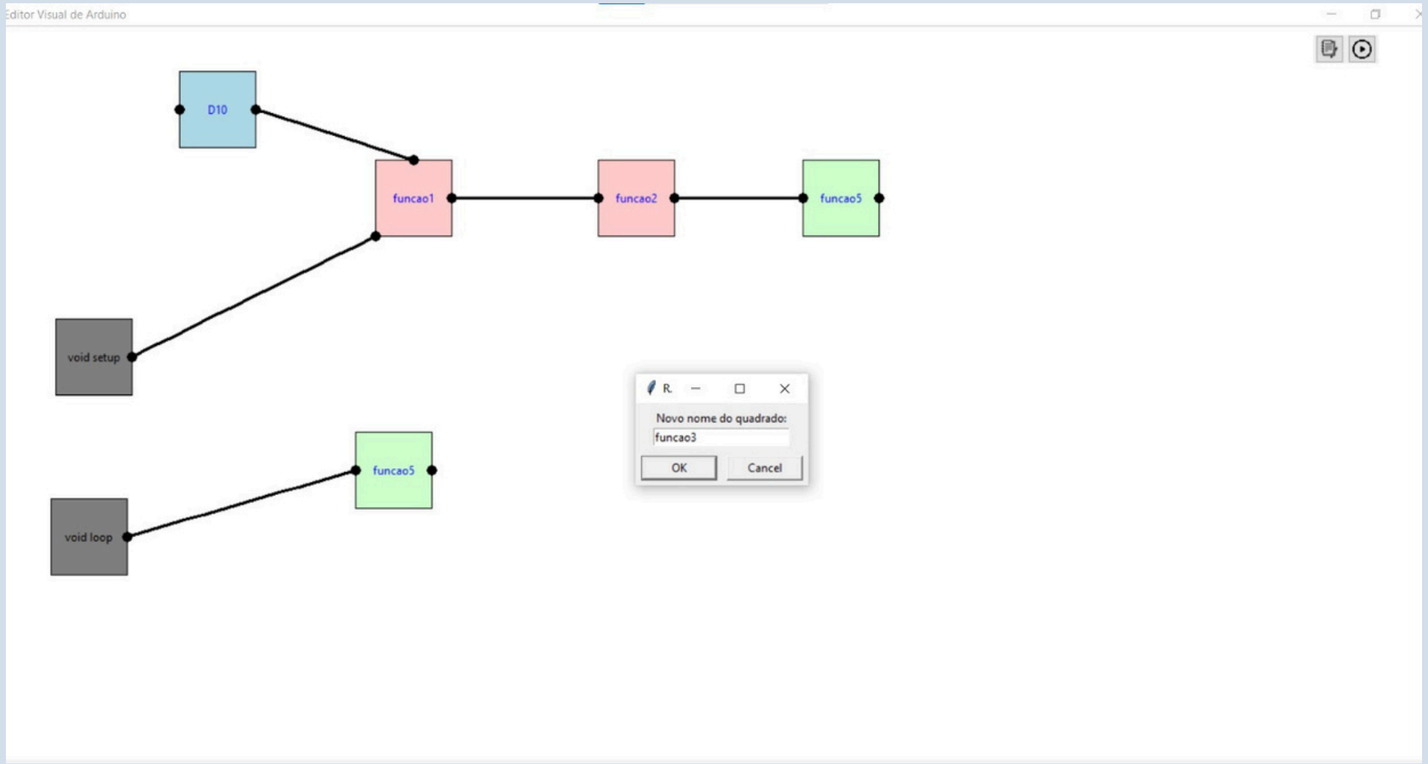
GUI INTERFACE

- The user interface (GUI) is totally adapted to the robot and its modules.
- User friendly and intuitive
- Encourages experimentation and learning

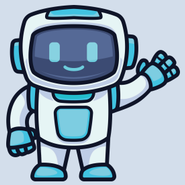
THE SOLUTION

GUI INTERFACES MODULES

THE SOLUTION

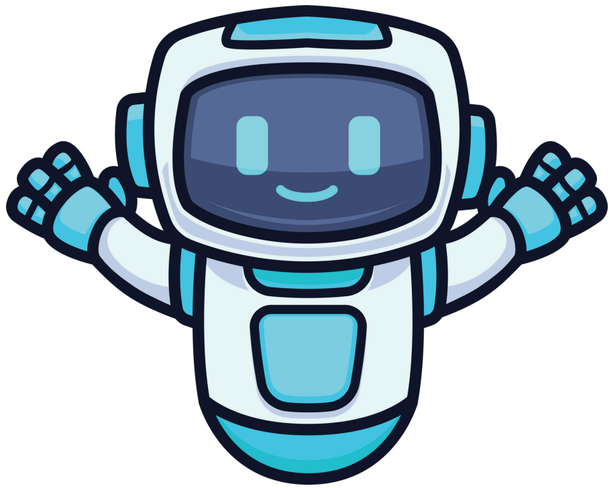


GUI INTERFACE



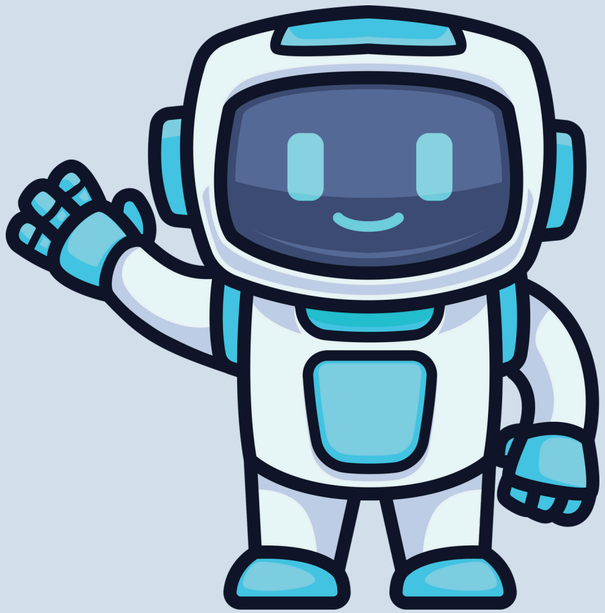
- Two distinct interfaces
- Different levels of difficulty, introducing different challenges
- Fit for a variety of user types

OUR TARGET



- High school students will benefit the most from this product.
- Primary school robotics clubs can also benefit due to the high cost of other solutions.
- Incorporating this product into the essential learning of the API subject benefits education professionals, promoting autonomous work.

COMPETITORS



- Lego NXT; OTTO DIY ; LITTLEBOT
- Previous Works: Micro Bit and options for children's robotics.
- Various companies and projects focused on youth education, as indicated in the partner slide.
- Arduino with visual scripting and Micro Bit are highly utilized in workshops and initiatives in this field.

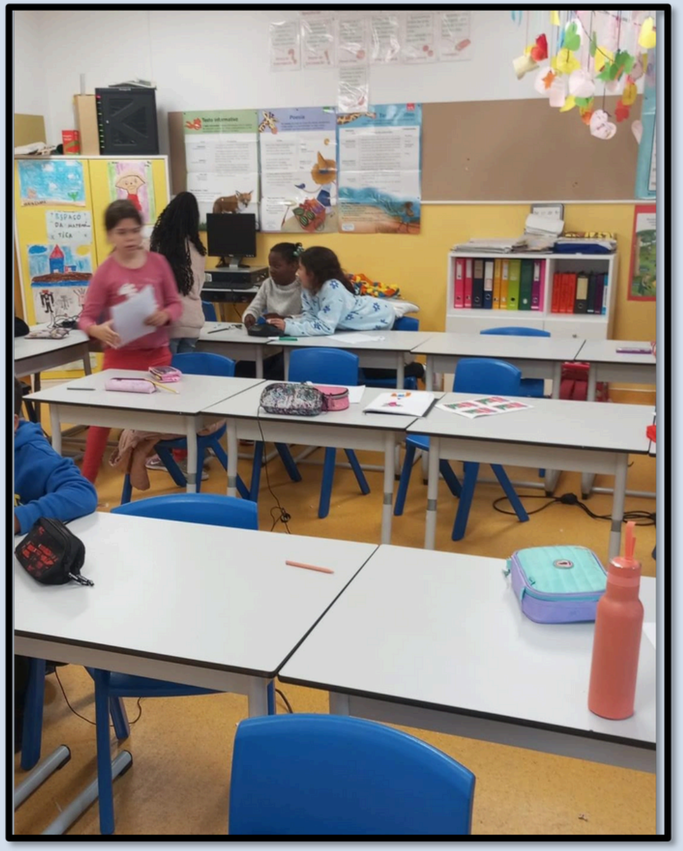
COSTS AND BENEFITS

INOVLABS
Portugal

Núcleo de Estudantes de Engenharia Electrónica - *Instituto Superior Técnico*

- Right now the cost is similar to the products in the market, however the plan is to cut down the cost so that is more affordable to our target schools.
- We have partnerships with Inovlabs and the Tecnico Eletronic Engineering Student Organization

RESULTS



Market Research

- Teachers and students who used the robot gave us positive feedback and praised the product we built.
- We also tested the different parts of our project in two differente situations:
  - -N3E event
  - - Competition
- Check the photos on our website

COMMUNICATION STRATEGY

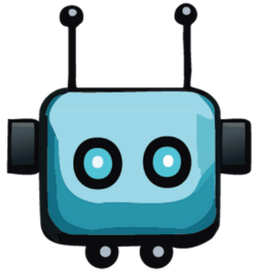
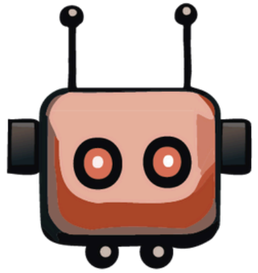
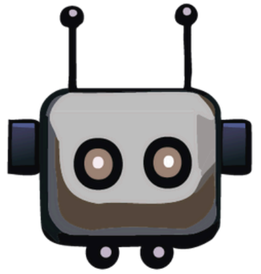
WEBSITE

https://web.tecnico.ulisboa.pt/ist199139/index.html

COMMUNICATION STRATEGY

ROBUDDY

a robot friend

MEMBERS CONTRIBUTION

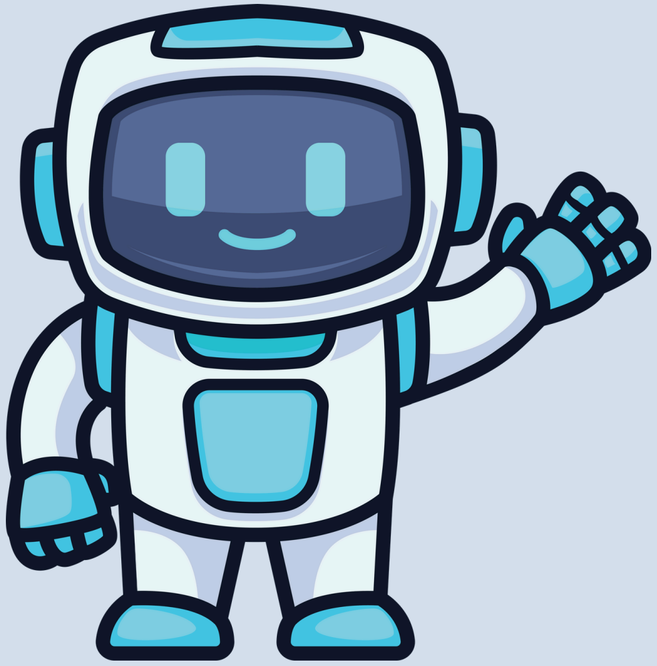
João Eduardo	Duarte Marques	João Le Coroller
Blog	Website development	1st Chassi Prototype
Line follower module development	Line follower module development	Study of ultrasonic sensors and their implementation in the 1st module
Study of ultrasonic sensors and their implementation in the 1st module	GUI Development	Line follower module development
LCD module development	Turtle drawing	Material Research
Poster	Video	Poster

MEMBERS CONTRIBUTION

Eduardo Caria	Augusto Azevedo	Tiago Abreu
1st Chassi prototype	Material testing	3D modulation for modules
Improved chassi development	Development of content and preliminary objectives in terms of theoretical foundations	Improved chassi development
3D modulation for modules	GUI Testing	Poster
Turtle darwing	LCD module development	Pitch Deck
Control of the robot using a controller	Control of the robot using a controller	Video

ROBUDDY

Your Robot Friend



THANK YOU FOR YOUR ATTENTION