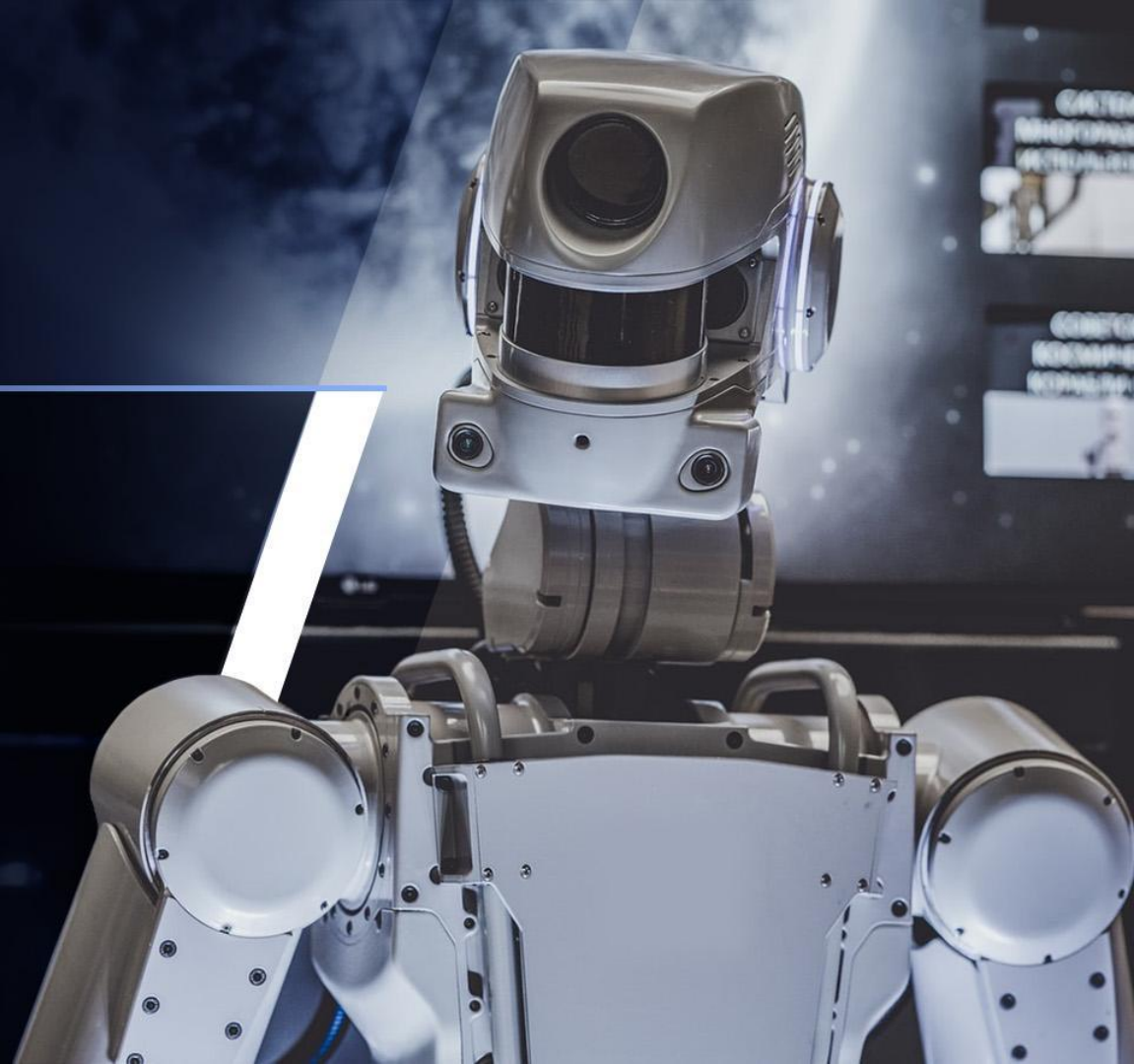
# BLIND CHECK

*The Robotic Dog*

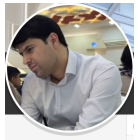
by Salim and Cyrille
DiSc M1 - 2021/2022



# INTRODUCTION - Brainstorming

- Make a robot for good (e.g. wearable devices, …)
- Make a simple robot

# INTRODUCTION - Team



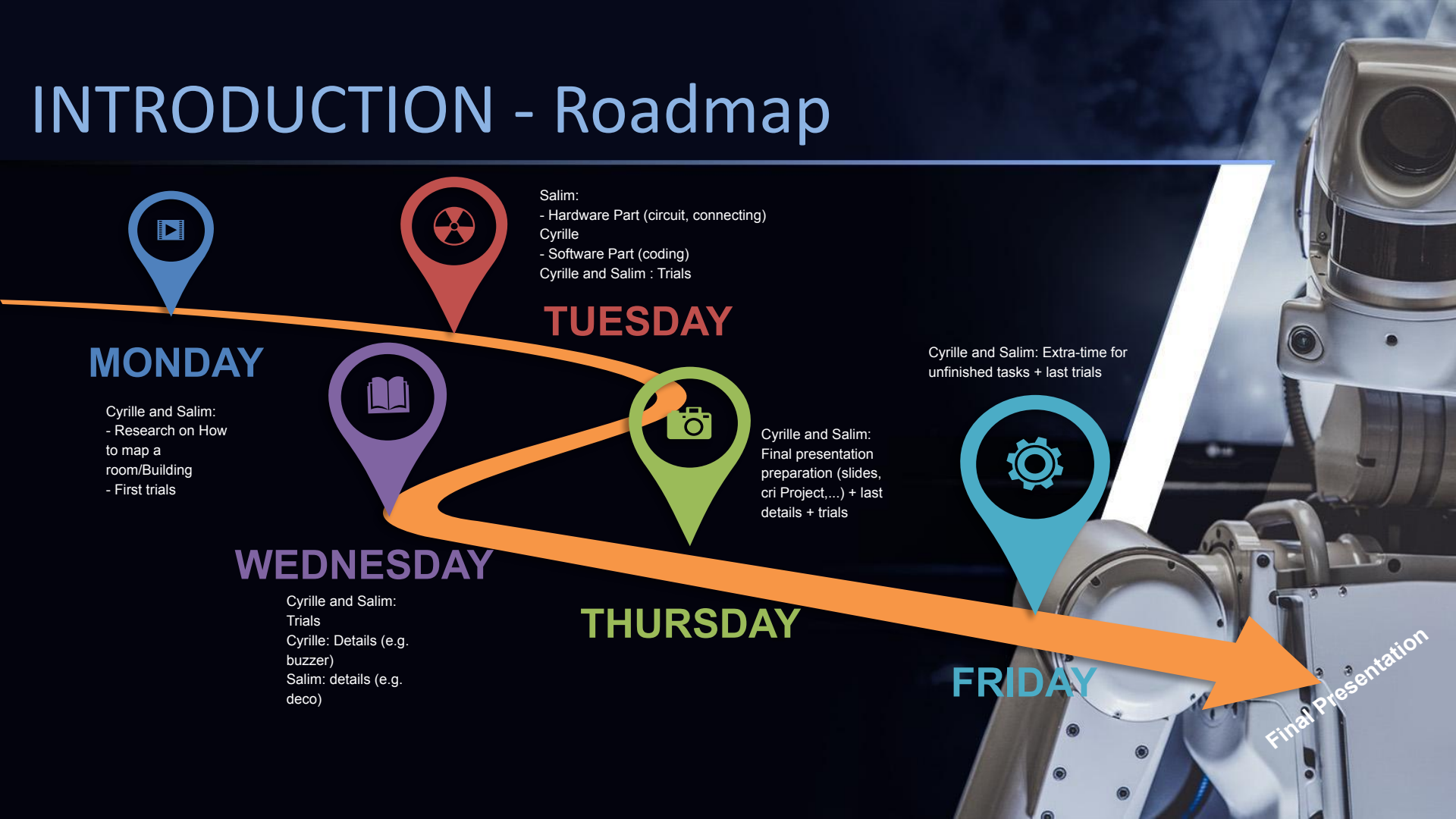
Hi! I'm Salim. I have a background in Electrical and electronics.

For the project, I was in charge of the design, research and development of the robotic dog. I also actively participated in the programming and prototyping.

Hi! I'm Cyrille. I have a background in Health.

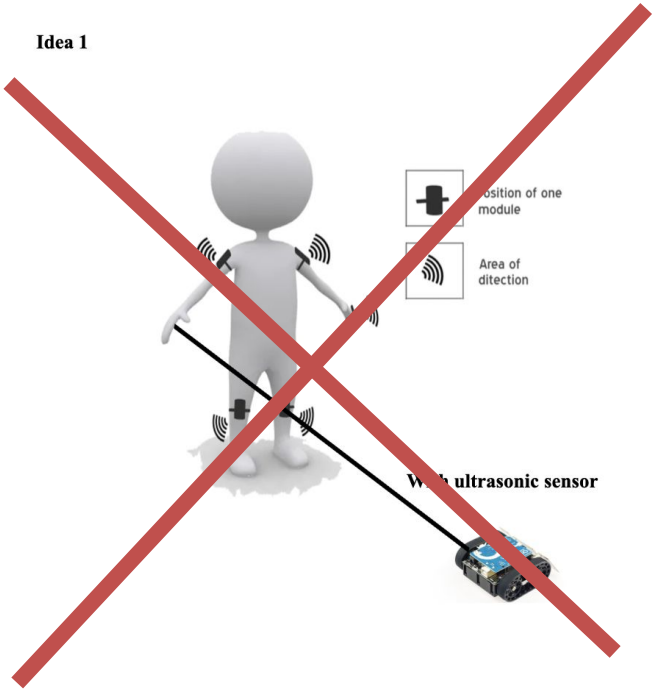
For the project, I was in charge of the electronics, research and development of the robotic dog. I also actively participated in the programming and communication (slides, CRI Project, Video, GitHub,..).

# INTRODUCTION - Roadmap

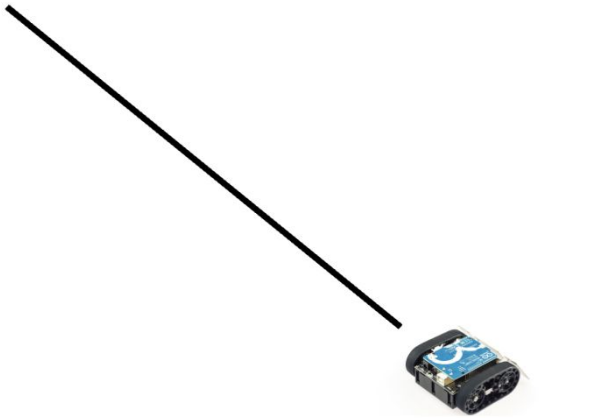


# INTRODUCTION - Project

Idea 1




Idea 2



With ultrasonic sensor

# CHALLENGES

## HOW TO MAP A ROOM ?!

- SOLUTION = PATH REMEMBERING

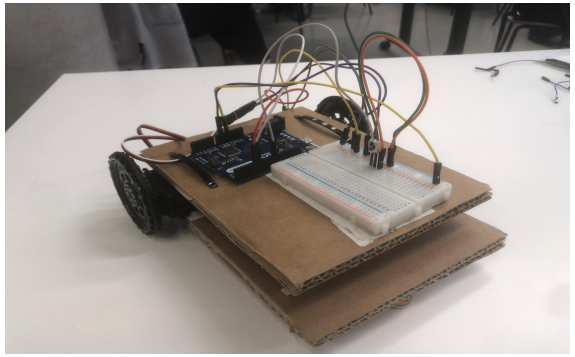
# CHALLENGES - Features/components

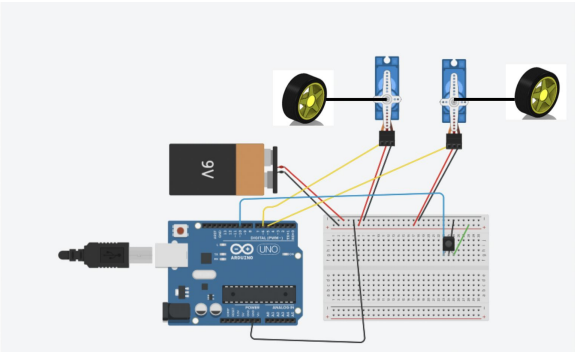
## FEATURES

- Follow a path once by being directed by a remote control
- Remember the path
- Repeat the path in an autonomous way

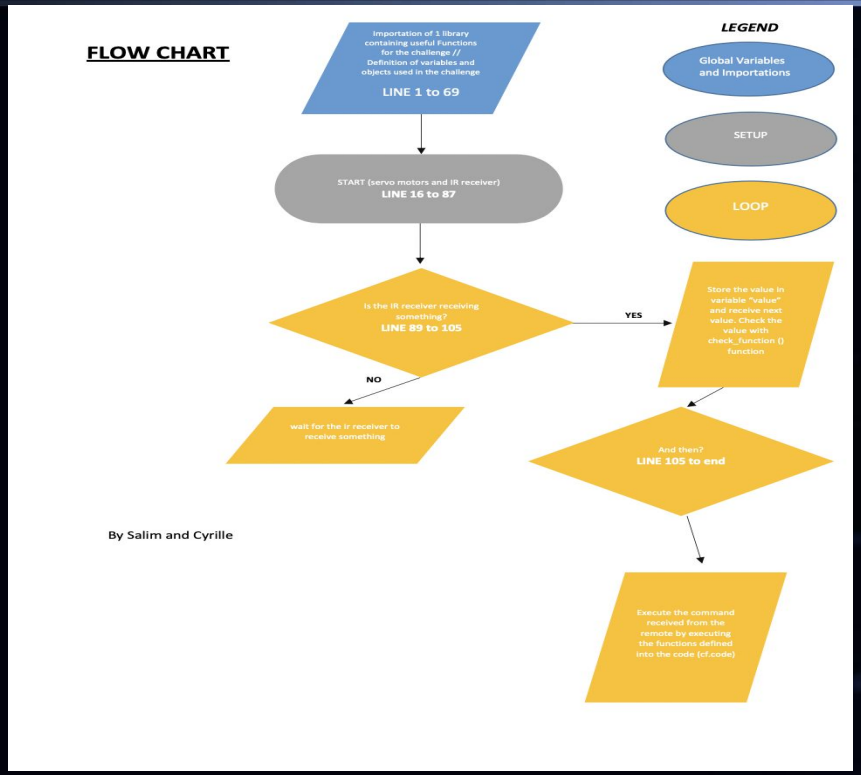
## Components

- IR Receiver
- IR remote controller
- Breadboard
- Arduino Leonardo
- Wires
- 2 servo motors
- 2 wheels
- cardboard
- Arduino Software
- Balance wheel
- others (tapes, …)





# CHALLENGES - Flowchart



# CHALLENGES - EEPROM

## WHAT IS EEPROM ?

| | | |
|---|---|---|
| 0 | 10 | |
| 1 | 111 | Turn Right |
| 2 | 10 | |
| 3 | 222 | Turn Left |
| 4 | 10 | |
| 5 | 111 | |
| 6 | 10 | |
| 7 | 222 | |
| 8 | 255 | empty positions (slots) |
| 9 | 255 | |
| 10 | 255 | |
| 11 | 255 | |
| 12 | 255 | |
| 13 | 255 | |
| 14 | 255 | |

# CHALLENGES - EEPROM

## WHAT IS EEPROM ?

```
void loop()
{
value = EEPROM.read(a);
  if (value == 111){
    motors.setSpeeds(100, -100);
    delay(250);
    }
  else if (value == 222){
    motors.setSpeeds(-100, 100);
    delay(250);
    }
  else if (value == 255){
    motors.setSpeeds(0, 0);
  }
  else{
    rvalue = value * 100;
    motors.setSpeeds(100, 100);
    delay(rvalue);
  }
```

# ACHIEVEMENT - DEMO

MAPPING/REPEAT

CLICK HERE

# ACHIEVEMENT - OVERVIEW

## PROBLEMS ❌

- MORE COMPLEX PATH
- ACCURACY
- STORE “STOP”

# ACHIEVEMENT - OVERVIEW

SUCCESS✅

- PATH REMEMBERING ✅

# PERSONAL VISION

## FUTURE IMPROVEMENT

- INTERACTION
- ENCODERS
- ULTRASONIC SENSORS
- BATTERIES

# PERSONAL VISION

## LEARNINGS

- C programming (e.g. EEPROM)
- Project Management
- Design (e.g. soldering)
- Teamwork
- Research

# BIBLIOGRAPHY

## RESEARCH PAPER


1. Chuang T-K, Wang H-C, Lin N-C, Chen J-S, Hung C-H, Huang Y-W, et al. Deep Trail-Following Robotic Guide Dog in Pedestrian Environments for People who are Blind and Visually Impaired - Learning from Virtual and Real Worlds. In: 2018 IEEE International Conference on Robotics and Automation (ICRA) [Internet]. Brisbane, QLD: IEEE; 2018 [cité 17 déc 2021]. p. 5849-55. Disponible sur: https://ieeexplore.ieee.org/document/8460994/

2. Sharkey P, éditeur. The 2nd European Conference on Disability, Virtual Reality and Associated Technologies: proceedings; 10,11 of September, 1998 Mount Billingen, Skövde, Sweden. Reading: Univ. of Reading; 1998. 268 p.


## OTHERS SIMILAR PROJECT

https://create.arduino.cc/projecthub/saiyam/vision-a-torch-for-the-visually-impaired-6e205c

https://create.arduino.cc/projecthub/muhammedazhar/third-eye-for-the-blind-8c246d?ref=platform&ref_id=424_trending___&offset=2