

# Computational Design and Digital Fabrication Summer 2025 BILO

**B**inary **I**magination **L**ine **O**perator  
Performing Human Robot Art Collaboration

## Students

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## *Aim*

When **art** meets **technology**,  $3.10\text{e-}4$  hp of pure power for a 200g robot. An unprecedented computing power questioning a **cornerstone of mankind**, the unanswered question of **the emergence of art**.

# Aim

## Human Gesture

"The line is drawn"

An invitation to move  
A suggestion, not a command  
A trace of intention

## Environment

"Obstacles appear"

Resistance  
Physical limits  
Unpredictable influences

## Robotic Autonomy

"The robot interprets"

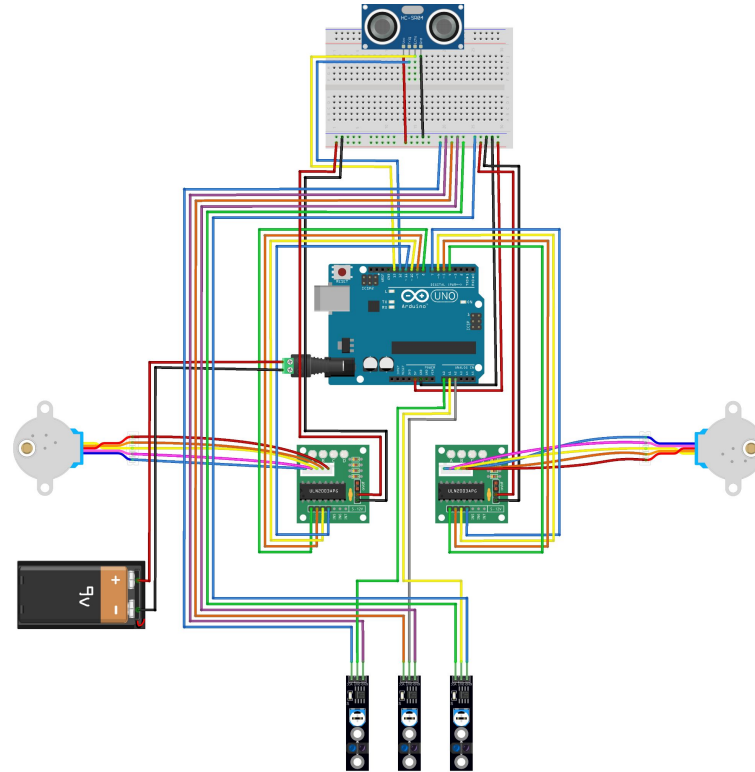
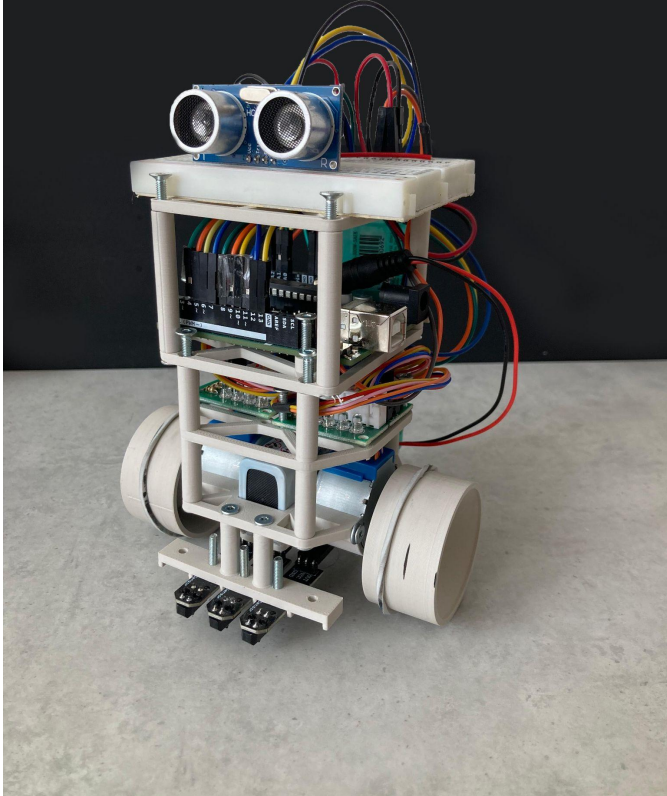
Perceives the line and obstacles  
Reacts, adapts, hesitates  
Makes choices  
Navigates without obeying

## Artistic Outcome

"A trace emerges"

A path shaped by interaction  
Neither fully programmed nor random  
A co-created drawing  
The robot becomes a performer

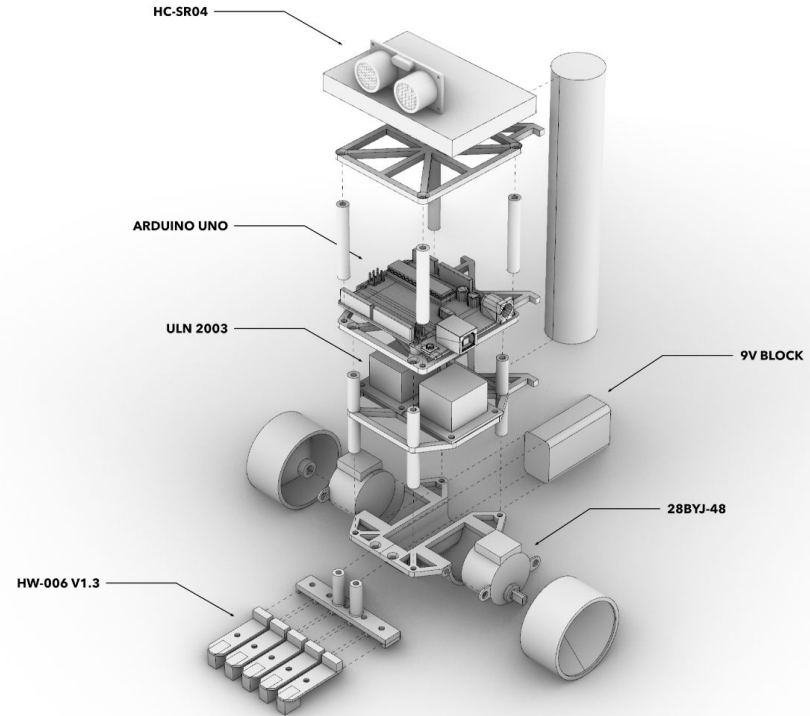
## Circuit diagram



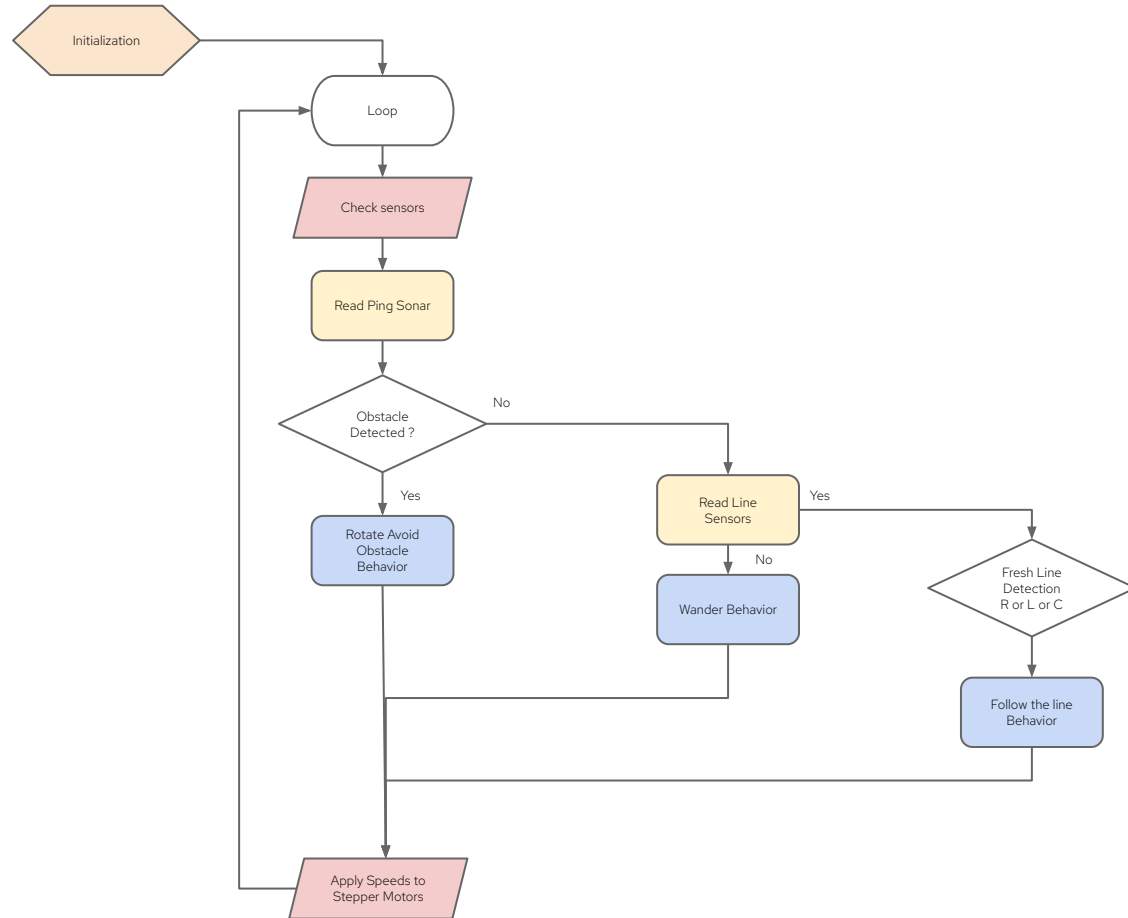
fritzing

## Used Components

- 1** Ultrasonic sensor for obstacle detection : HC-SR04
- 1** Arduino Uno
- 1** 9V block to power the Arduino Uno
- 2** ULN 2003 to control the stepper motors
- 2** stepper motors 28BYJ-48
- 3 to 5** line tracking sensors



# Flowchart



## Human/Robot collaboration

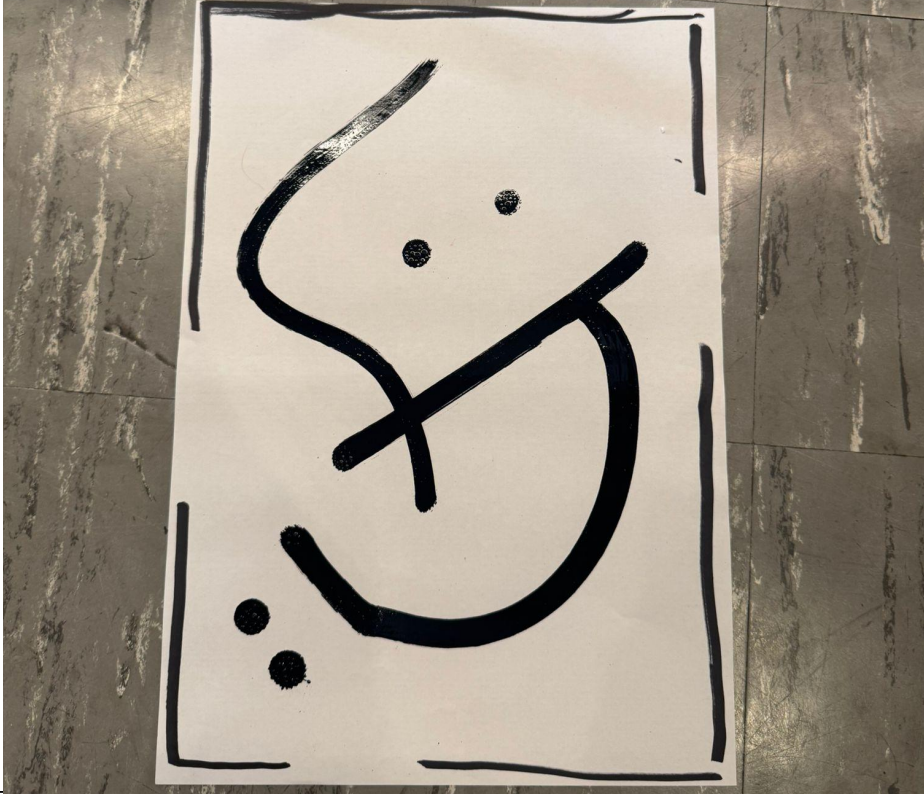
*First runs*



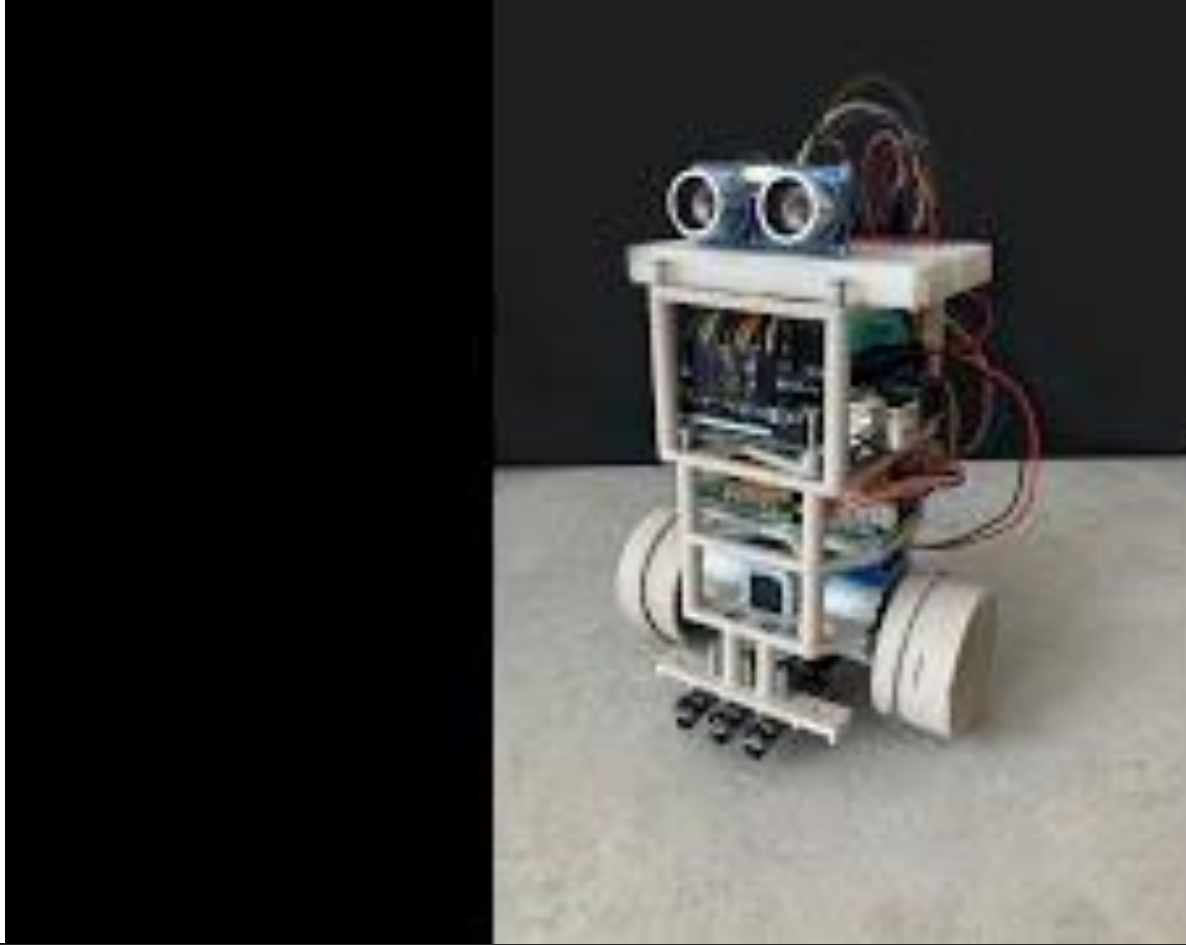


## Human/Robot collaboration

First experiments







[https://docs.google.com/presentation/d/12NfHKEqjC9r7JiI3JP8ekoibSUQ4Xgvds4EldcRrloA/edit?slide=id.g35fe33a2671\\_0\\_0#slide=id.g35fe33a2671\\_0\\_0](https://docs.google.com/presentation/d/12NfHKEqjC9r7JiI3JP8ekoibSUQ4Xgvds4EldcRrloA/edit?slide=id.g35fe33a2671_0_0#slide=id.g35fe33a2671_0_0)