

LINE FOLLOWER ROBOT

GROUP - D(B1)

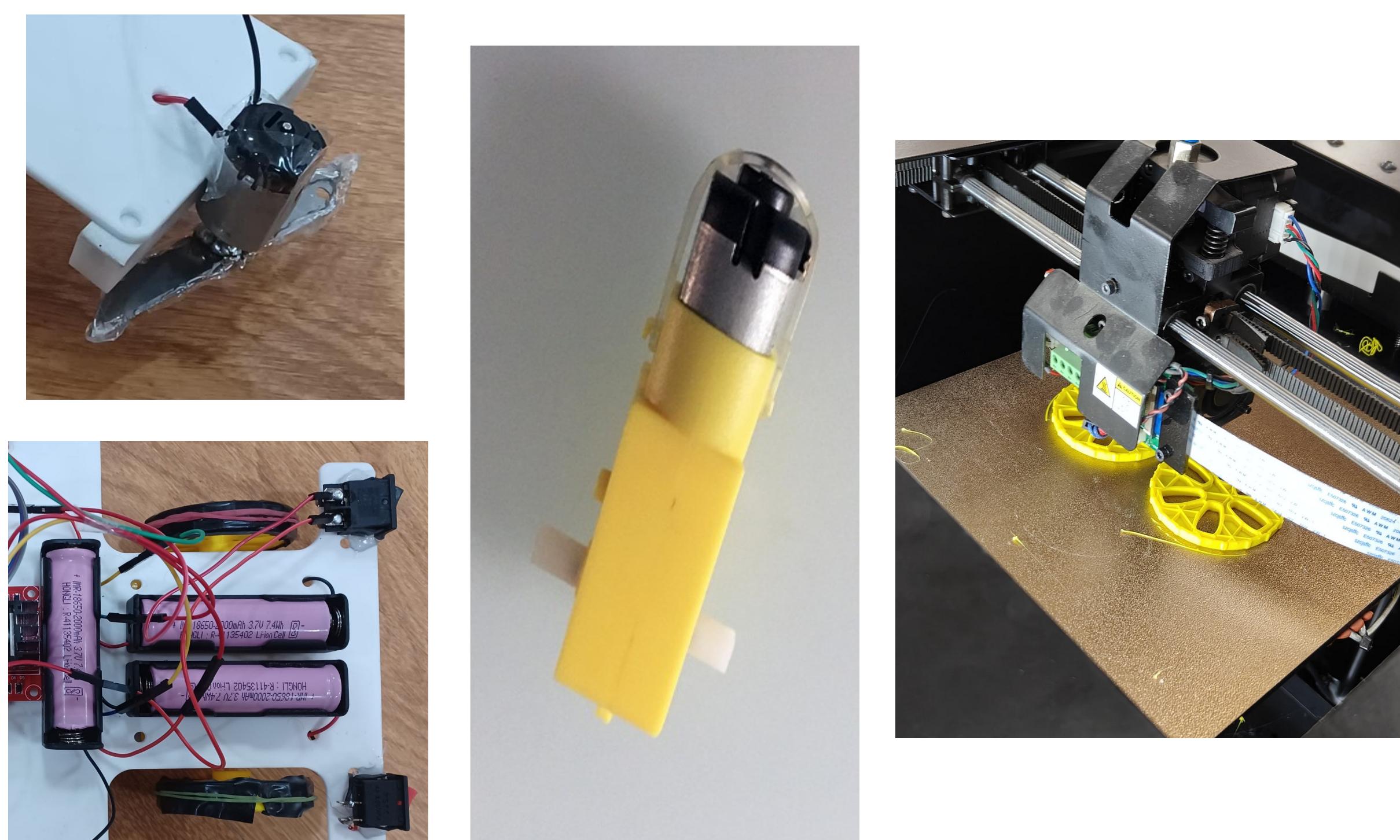
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Introduction of the project

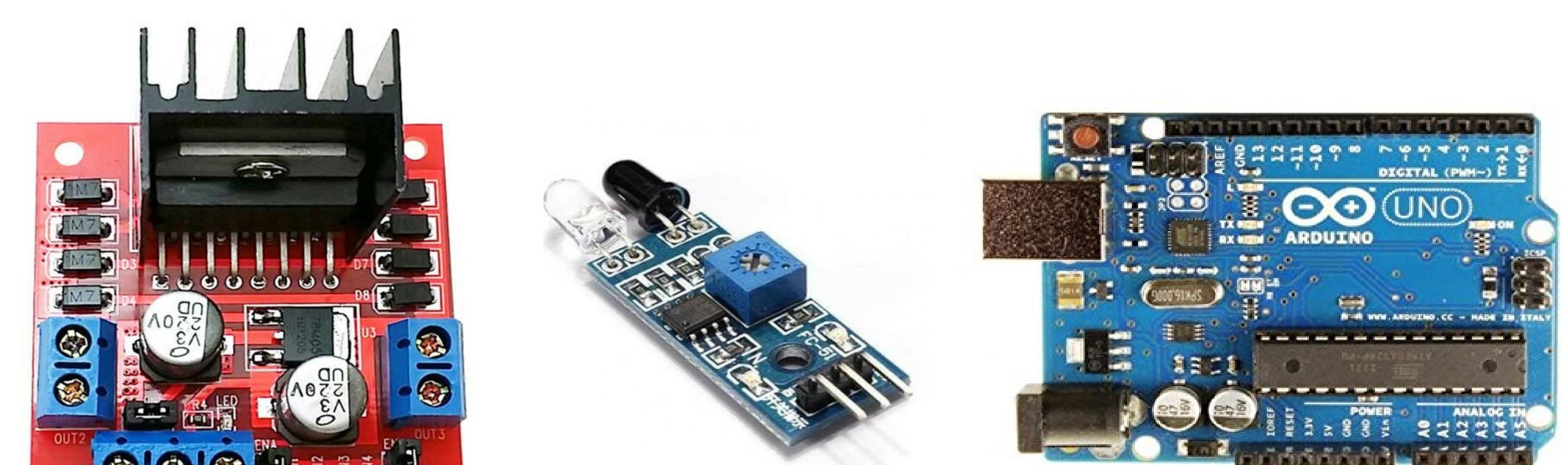
A line follower robot is a type of autonomous robot designed to follow a line or path on the ground. The primary objective of a line follower is to detect and track a visible line, usually in the form of a contrasting color, and navigate its way along that path. We introduce grass cutting as an additional feature. Our innovative design incorporates blades attached to DC motors positioned on the sides, enabling efficient grass cutting along pathways.

Equipment used

- 1 . IR SENSOR
2. ARDUINO SENSOR
3. MOTOR DRIVER
4. GEAR MOTOR
5. JUMPER WIRE
6. LITHIUM BATTERIES
7. BATTERY HOLDER
8. WHEELS
9. SOLDERING IRON
10. BLADES



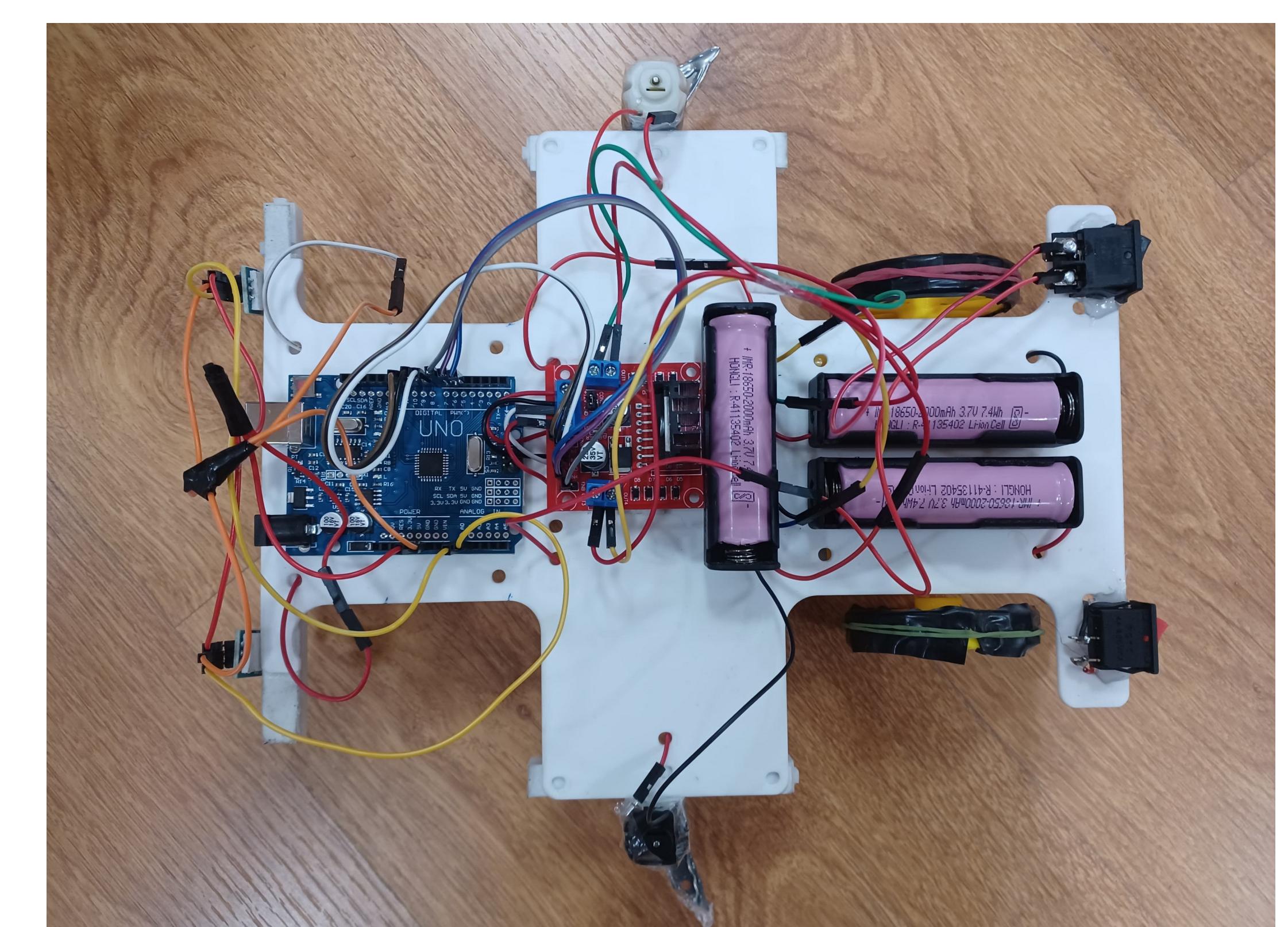
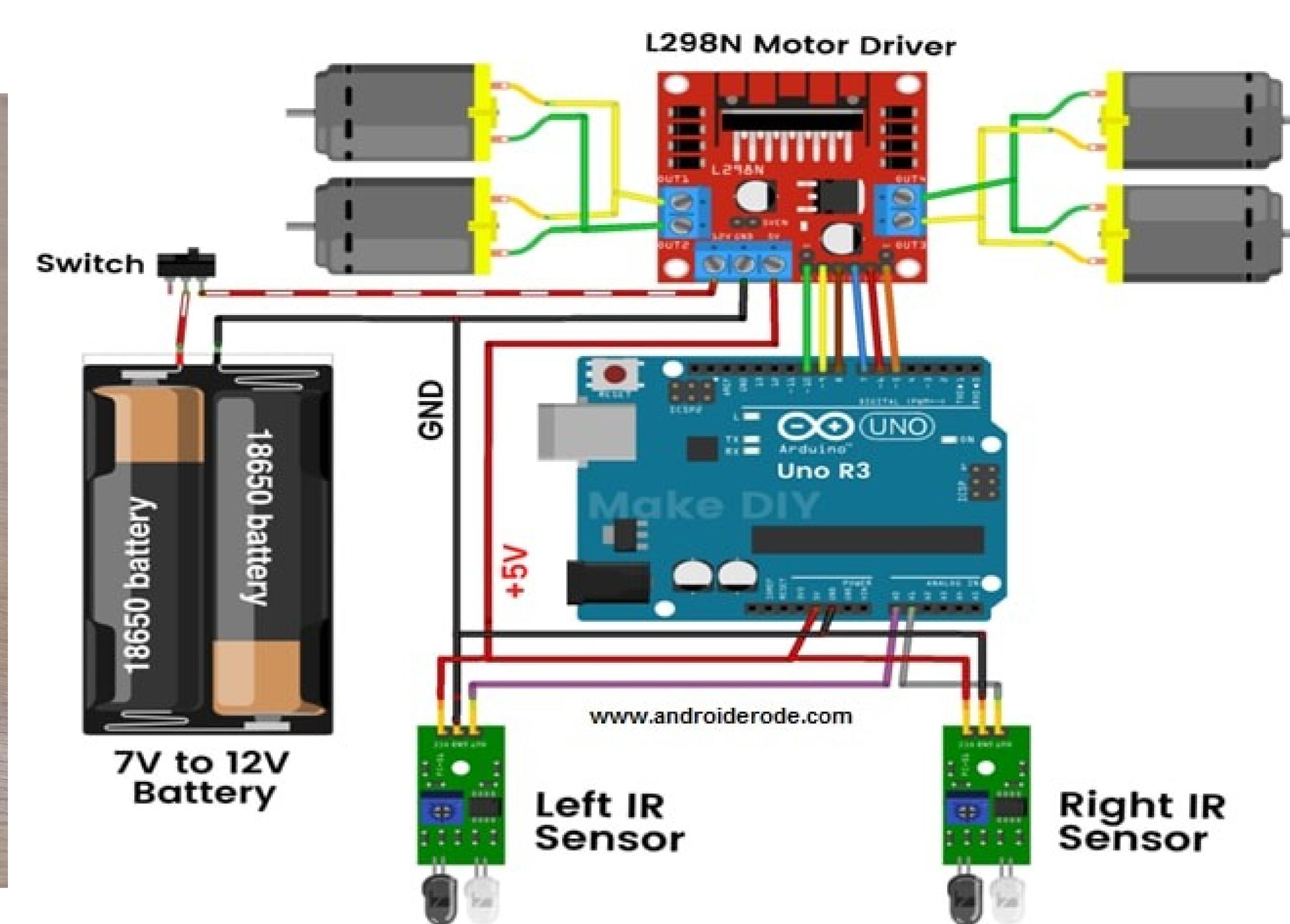
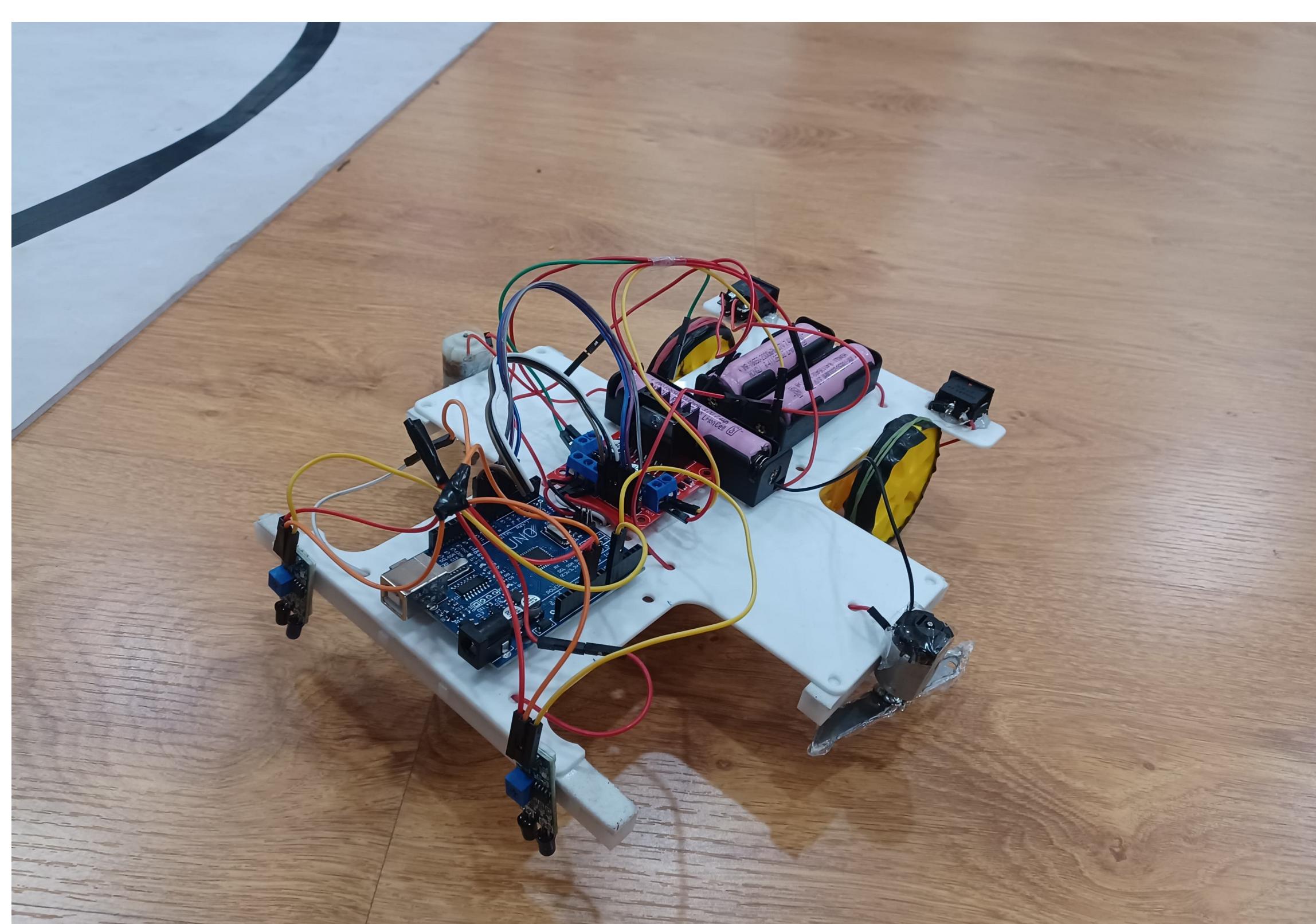
Component drawings



Steps or procedures in executing the project

- Designing Chassis in Fusion 360 and getting it laser cut.
- Designing wheels and piston mechanism in Fusion 360 and 3-D printed them.
- Attach the motors and wheels to the chassis.
- Mount the IR sensors on the front of the robot, facing the ground. Ensure they are spaced apart and close to the ground to detect the line.
- Connect the motor leads and Arduino digital pins to the motor driver. The motor driver will allow you to control the direction and speed of each motor.
- Connect the output pins of the IR sensors to the input pins of the Arduino. Most IR sensors have a digital output that goes high when the sensor detects a line.
- Write a simple program to read the sensor inputs and control the motors. The basic logic involves :
- If both sensors are on the line or off the line, move forward.
- If the left sensor is off the line, turn right.
- If the right sensor is off the line, turn left.
- Attach two DC motors with 3.5cm length blades to the extended arms of the chassis board. Connect these motors in series with a battery and a switch. When the switch is turned on, these blades rotate, efficiently cutting grass along the sides of the path guided by the line follower mechanism.

Component drawing and Pictures of the line follower



Key Learnings from the Project

- We learnt how physical dimensions of a robot plays an important role in its movement and efficiency.
- Better understanding of design process by designing wheels and chassis board. Also was able to work with machines like 3D printer and Laser cutter.
- Usage of electronic components such as Arduino , Motor Driver and IR Sensors. We got learn how different components work and connections involved.
- Being a team project, it's a good experience of team work .