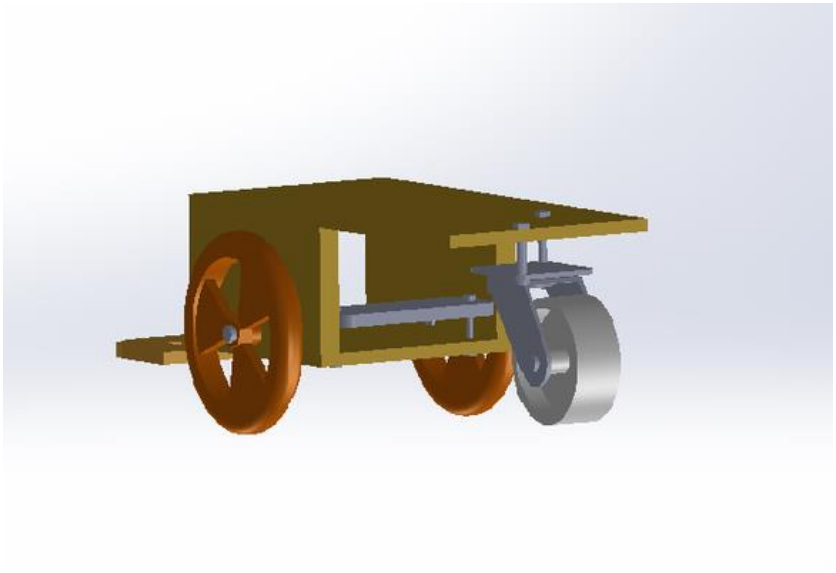
Technical file of « Heisenberg »



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Contents

1. Description :

Our robot, named "Heisenberg", is a medium-sized vehicle with three wheels, two main and one secondary, activated by two geared motors. It is autonomous, having a programmable electronic card to which can be added a module to adjust the engines and it knows its way thanks to three color sensors.

And like any line follower robot, it has a horizontal main plate where we will locate the various electronic components.

"Heisenberg" will be able to finish the path in an ideal time.

2. Electronic part :

a. Electronic components :

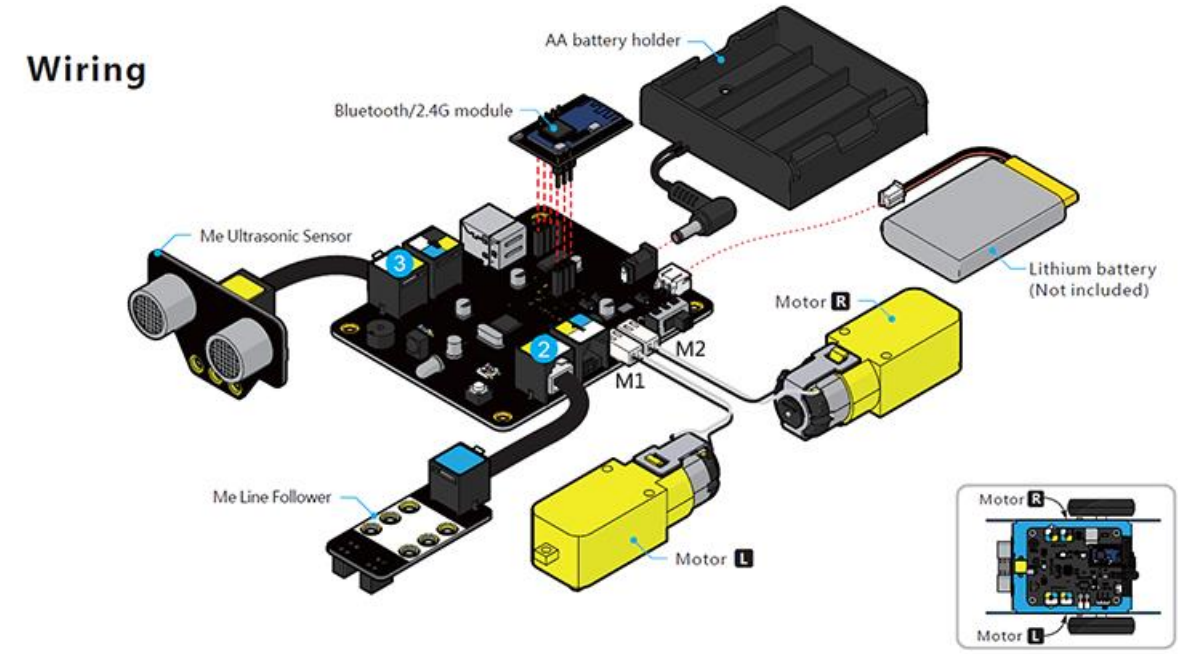
The table below lists the various electronic components used throughout the preparation of the robot:

Component name	Component function	Component figure
Arduino Uno board	Program the electrical circuit	
Power board	Control the engines	
1 free wheel	Keep the balance of the vehicle	
2 wheels with tires	Fix the vehicle on the ground	
3 color sensors	Guide the vehicle	

Power Bank	Power the Arduino board and the power board	

b. Electrical circuit :

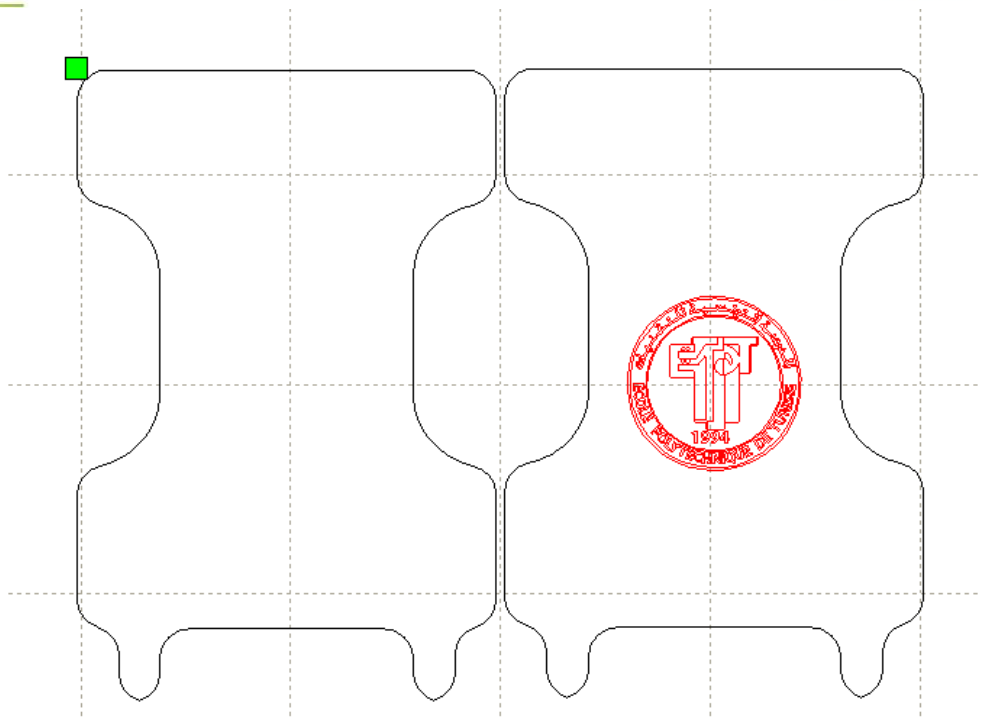
We modeled the electric circuit of our robot:



3. Mechanical part :

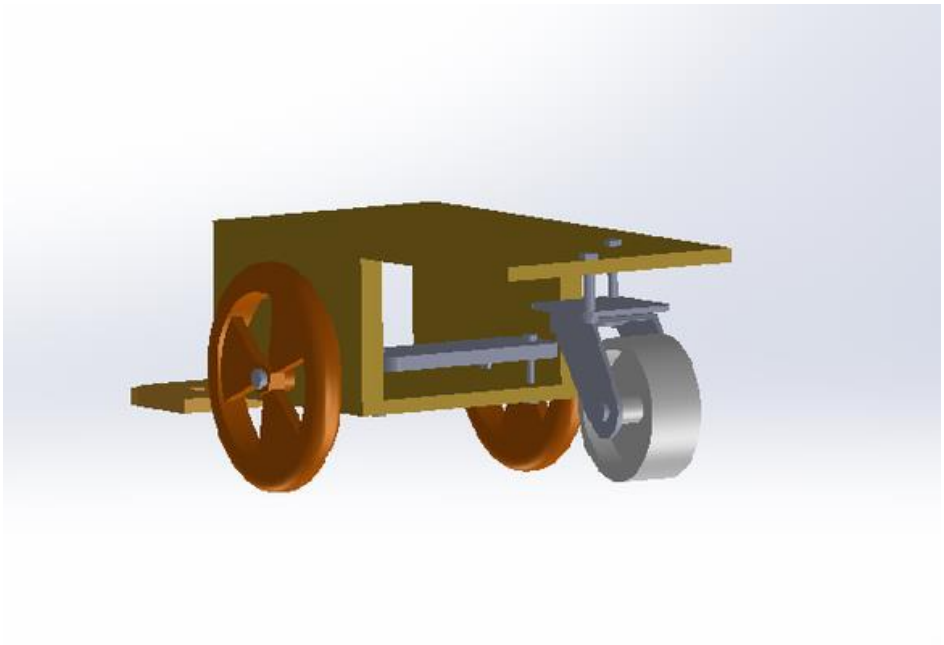
a. Material used :

To guarantee the stability of our robot, and to make a beautiful design, we wanted to use a laser cutter to make the following model, but we had problems at FabLab:



b. Mechanical concept* :

We made the mechanical model of our robot thanks to the SolidWorks software:



*The model was planned to be like that, but the "carpenter" suggested another model.

4. Programming part :

To program the Arduino board, we used the Arduino software provided for this purpose. The code was not difficult to write.

The main program is presented below:

```
void loop()
{
  etatCapteurGauche = digitalRead(SensorLeft);
  etatCapteurCentre = digitalRead(SensorMiddle);
  etatCapteurDroit = digitalRead(SensorRight);
  if(etatCapteurCentre)
  {
    if ((etatCapteurGauche) && (!etatCapteurDroit))
      Serial.println("Tourner à gauche");
    else if ((!etatCapteurGauche) && (etatCapteurDroit))
      Serial.println("Tourner à droite");
    else
      Serial.println("Continuer tout droit");
  else
  {
    if ((etatCapteurGauche) && (!etatCapteurDroit))
      Serial.println("Tourner à gauche");
    else if ((!etatCapteurGauche) && (etatCapteurDroit))
      Serial.println("Tourner à droite");
    else
      Serial.println("Reculer");
    }
  }
}
```