Team

**Design**

This is a 4-wheeled robot in an elip shape with 2 body layers:

* The first layer is where the motors are put, and underneath is a tracker detection
* The second layer is where the main control mainboard and motor control are put. At the back is the Ultrasonic sensor put on a servo which can change to different angles to detect.

**Sensor and Algorithm**

There are 2 types of sensors that our team use which are Ultrasonic and Tracker detection. The main function of these 2 sensors in this robot is to detect the different in the distance between the robot and the surface underneath. We decide to use 2 sensors – one in the front and one at the back to fully cover the back-and-forth movement of the robot. Particularly for the Ultrasonic sensor, as is can be put on the servo so we can automatically change the angles from 30o to 1200 to fully detect which way to obstacle to avoid the edges.

For the Algorithm part:

* Because the Tracker detection is in fixed position, the robot will first move right and left in a zic zac direction to detect the change of the surface around the robot.
* Measure distance using an ultrasonic sensor.
* If it's the first time executing, center the servo and move forward if no obstacles are directly in front.
* If the car is grounded, move backward and check for obstacles by rotating the servo to 30° and 150°.
* If obstacles are detected at either angle, adjust direction (right or left).
* If no obstacles are found after checking both angles, begin a new loop.