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PROJECT THEME: Detector	PROJECT GROUP: 5

Brunel University London: College of Engineering, Design and Physical Sciences

LEVEL 1 ROBOTICS GROUP PROJECT INDIVIDUAL REPORT – 2021/2022

How to prepare your report

You **must** use this RGP individual report form, writing your report in the text box below. Your report **must** fit within the text box. This report form has been specifically designed such that it is not possible to change the formatting of the text (Arial, font size 11, single line spacing). Please **do not** make your own version of this report form with modified parameters.

Report submission

This report should be submitted by Wiseflow before the deadline.

Describe your personal contribution to the project and the potential value of your contribution to the success of your project group.

Our group is the forth group. The task of our group is to build an autonomous robot a bottle in the range of 120cm*120cm. If the detector find a bottle,then the vehicle which made of mblock will turn a corner. And in the group, I mainly design the structure of the robot, and in the programming section

At first, we wanted to design a machine with crawler wheels. But when we assembled it according to the crawler structure, we found that the power of our motor was too small to make our machine move. Similarly, we found that another group has the same problems. Then, I visited the website of “ultimate 2.0” and found models related to “makeblock”. I found many models and many different wheel styles, some models use tracks, some models use ordinary wheels, and even some models use a manipulator as a tool for the machine to move forward. Because we only have 2 electric machinery, so I suggested that we can designed a four wheeled machine, just like a car we usualy see, the two rear wheels provide power, and the two front wheels are responsible for steering. When assembling the machine, I specially chose a longer shaft to connect the front wheels, because it turns the machine better and maintains the stability of turning.

Although I am not mainly involved in programming, I have some suggestions in some details.When I see them programmed forward and back, I don't think we should program like this, because our machines can only operate on two coding motors, the machines cannot recognize forward and back and how to turn, so I suggest they only program the coding motors, other modules alone.After this modification, our machine was finally able to follow the instructions, and then the rest of our group for further debugging.During the commissioning process, we want our car to reverse when encountering the water bottle first, and then turn around the boiling water bottle.But we don't know how to adjust the motor to reverse the machine, so when I watched some "mblock" videos on the network, I found that the power of the encoding motor can be set to negative, so we also tried to set the power to negative, and finally found that it succeeded.

The location of the ultrasonic detector is also a problem. If the ultrasonic detector is too high to detect the water bottle, and if the ultrasonic detector is rotated together with the front wheel, it may cause inaccurate detection problems.So after our group discussion and constantly trying to put the position, we finally decided to stick the ultrasonic detector to the front coding motor with rubber band and tape.Finally, the "MegaPi" and the panels should be assembled. At first, our group had different suggestions, and they thought that the two panels could be stacked up and installed.But I observed that the car movement is need a lot of wire connection, and different line length, and fold up the difficulty is too big, also can cause the center of gravity instability, so finally I assembled is "MegaPi" on the front of the car, and panels on the back of the car, so concise and practical.

Finally, from my own point of view, I also have my own advantages and disadvantages. Every time our group organizes to go to the laboratory, I'm never late. I can also participate in the discussion of other people in the group.

But after this group activity, I also found that we also had great shortcomings. First, we didn't have a team leader at the beginning, which led to the lack of leadership and cohesion in the whole activity. In addition, we didn't make a plan before assembling the machine at the beginning, which led us to dismantle and reassemble the machine that was assembled at the beginning. So the next time we have similar group activities, I think we should first select the team leader, then make a general plan and assign tasks, and then start the next activities, which can maximize our efficiency.

Please refer to the Level 1 Robotics Group Project Individual Report Feedback Form for information about the report assessment criteria