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Rapport de séance n°10

During this session, we first prepared for the orals.

Then, I decided to resume the programming part of our project, more precisely, the obstacle detection with 2 ultrasound sensors.

The program should be activated when the Lidar didn’t take an obstacle into account (a glass panel for example). If that is the case and the obstacle is within the range of the sensors (at the moment the range is around 10cm but we will make measurement to be more precise later), the robot will move left or right depending on where the obstacle is.

In order to do that, the sensors measure the time an ultrasound take to come back to them after being emitted. Then, I use a formula to convert the time into a length between the sensor and the obstacle. After that, depending on which sensor is the closest, the robot turns left (when it is the right sensor) or right (when it is the left sensor).

The rotation is made with a slight change in the servomotor’s angle that is repeated in the loop to make the movement smooth instead of sudden.

If there is no obstacle, the servomotors return to their starting angle.

I encountered a lot of problems with this program, mostly about the return of the servomotors to their original angle. Indeed, the return was done randomly, at first it could go instantly to the starting angle. But, it could chose to not move for some seconds, then go left and right etc.

To correct this, I changed the program from a “while” to a lot of “if”.

In the actual version of this program, if an obstacle is detected on the right, the servomotors’ positions are reduced by 1 degree, and they are increased by 1 if it is on the left.

After that, Mr. Masson told me that the new frame he purchased was not made to be used with servomotors, so we were not going to use this program.

Instead, the rotation was going to be made by changing the CC motors speed from one side.

For example, to turn left, we would reduce the speed of the motors on the left.

So, I made a new program using the old one as reference.

Actually, it is supposed to reduce the speed of the motors on the obstacle side, but I did not have the time nor the means to test it, as we did not have the frame at this time.