RoboCup Journal

We are Team SLS 8

Our team consists of our (4) members:

- Alhassan Khaled Farid (The Leader)
- Mohamed Wael Abdelzaher
- Suhil ElKholy
- Youssef Amr

Our Coach:

Ahmed Tarek

Our roles:

- Alhassan Khaled → Head Programming – Mechanical Assistant
- Mohamed Wael → Head Electric - Programming Assistant
- Youssef Amr → Head Mechanical – Electric Assistant
- Suhil ElKholy → Electric Assistant - Programming Assistant

Notes:

→ We had started working on our Robot on Sunday 8/1/2017

→ We had joined this competition before and we are using things that were working properly from the last competition.

→ We are doing our efforts to win this competition

Our Meeting Time:

We had agreed to meet at our school (SLS) every Sunday and Thursday starting from 8/1/2016

Our Tasks and Schedules for every day:

	Tasks	Done From Tasks	Things Bought	Money paid
8/1/2017	-Brain Storming	-Brain Storming	-	-
12/1/2017	-Mechanical Design	-Mechanical Design	-Arduino Mega -2 Dc Motors -Wires -Battery	-200 L.E -250 L.E -15 L.E -180 L.E
15/1/2017	-Trying Mechanical design	-Trying Mechanical design	-Printing Mechanical Design	-30 L.E
19/1/2017	-Assembling the Robot -Starting the program of the Robot (using Arduino)	-Assembling the Robot -Start for the programming	-	-
22/1/2017	-Programming the robot -Searching for errors	-Working on the program	-	-
26/1/2017	-Programming the robot -Searching for errors	-Working on the program	-	-
29/1/2017	-Searching for	-Found an error		

	problems that affects the working of the Robot(Mechanical-Electric-Programming)	which was in the design of the Robot(Mechanical)		
2/2/2017	-New Mechanical Design	-New Mechanical Design	-Printing Mechanical Design	-40 L.E
5/2/2017	- Programming the robot -Searching for errors	-Working on the program	-	-
9/2/2017	-Programming the robot -Searching for errors	-Found an error in the electric connections	-	-
12/2/2017	-Programming the robot -Searching for errors	-Fixed the electric error -Working on the program	-Battery -Arduino Mega	-200 L.E -220 L.E
16/2/2017	-Programming the robot -Searching for errors	-Finished the mission of Line Tracking(The black Line only)	-	-
19/2/2017	-Programming the robot -Searching for errors	-Finished half of the mission of the green mission	-	-
23/2/2017	-Programming the robot -Searching for errors	-Found some problems in programming -Tried to fix the problems -Fixed some problems	-	-

26/2/2017	-Programming the robot -Searching for errors	-Found a better design for the Robot	-	-
2/3/2017	-New Mechanical Design	-New Mechanical Design	-Printing Mechanical Design	-50 L.E
5/3/2017	-Programming the robot -Searching for errors	-Working on the program	-	-
9/3/2017	-Programming the robot -Searching for errors -Making the PCB for the robot	-Found some problems on the green mission -Made the PCB for the robot	-	-
12/3/2017	-Programming the robot -Searching for errors	-Worked on the problems of the green		
16/3/2017	-Programming the robot -Searching for errors	-Found that our line sensor won't done the green mission		
19/3/2017	-Programming the robot -Searching for errors	-Finished the mission of the Inverted Line	-4 Colour sensors	-380 L.E

Explanations of tasks:

Brain Storming→ We met each other to think about ideas related to the Robots as The Robot Design - The things needed to buy - Our meeting times.

Mechanical Design→ the Head and the vice Mechanical were responsible for this design of the Robot which was done by (Solid Works Software).

Trying Mechanical design→ to see if the design meets the Robot's requirements.

Assembling the Robot→ putting everything in its place in the Robot's Design.

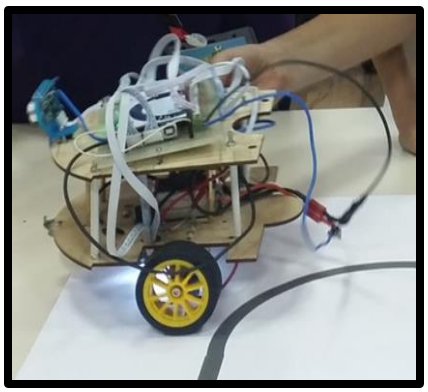
Starting the program of the Robot (using Arduino) → making a code using (Arduino IDE) which makes the requirements of the competition.

Mechanical:

We made many designs and we faced many problems. We solved it from one design to the other. We made a lot of arms but they have been failed.

Finally we made our best design and succeed to build our Robot.

Initial Design:



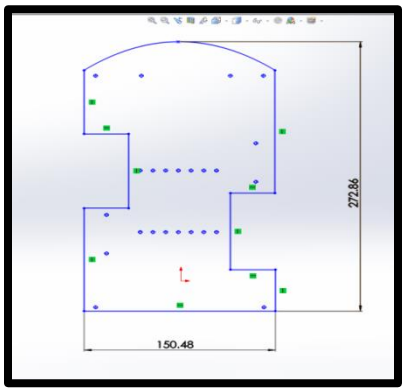
This design was our last year design, Its aim was to collect the ball in the evacuation room very quickly. Our robot consisted of two parts which can be separated. We brought a net with two sticks and put it between these two parts. When the robot enter the evacuation room then the two parts of the robot open and take all the ball. But this idea failed as it was very hard to make.

First design:

Our first design was in April (RoboCup Junior 2016). It was a nice design but it failed because of its width. Its width was very big because the two motors were taking a big place.

Second design:

We made another one with the same idea but we tried to decrease the width. We made this by not putting the motors on the same line. But the robot was not stable in movement. So this idea failed

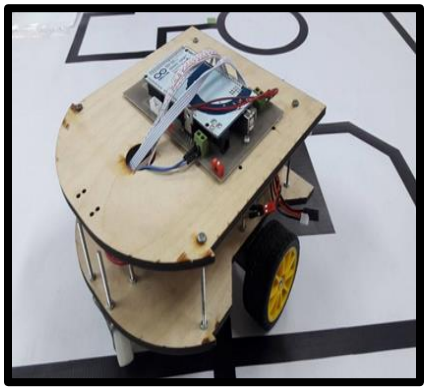


Last design:

We started to made it in January and we finished it in February

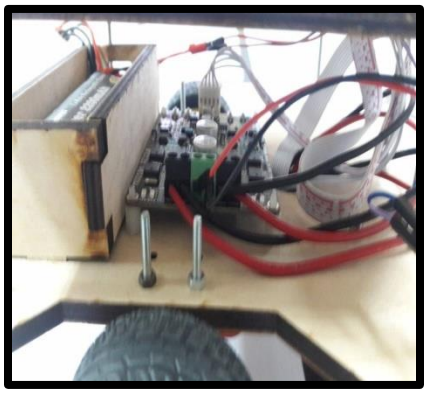
Its idea was:

We put a motor in the front of the body and put a free wheel next to it. In the back we will put the other motor and the wheel



Our new idea depending on the Width and the Arm

The component:

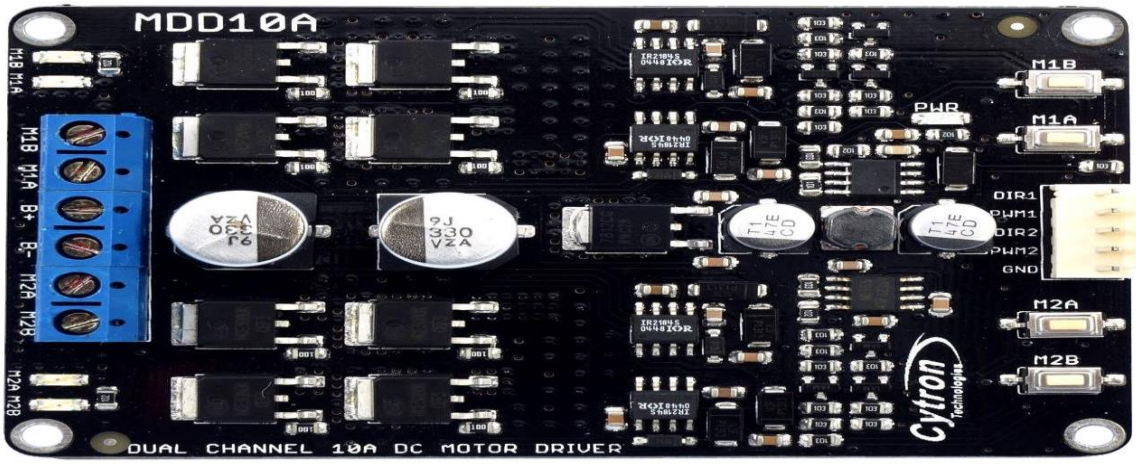


- We put the free wheel at the front of the robot(because of the ramps)
- The IR sensor is behind the free wheel (to take its time when it sees the intersection)
- We put the battery in a box to keep it in a safe place.
- The H-bridge is down to keep it safe.

Electric:

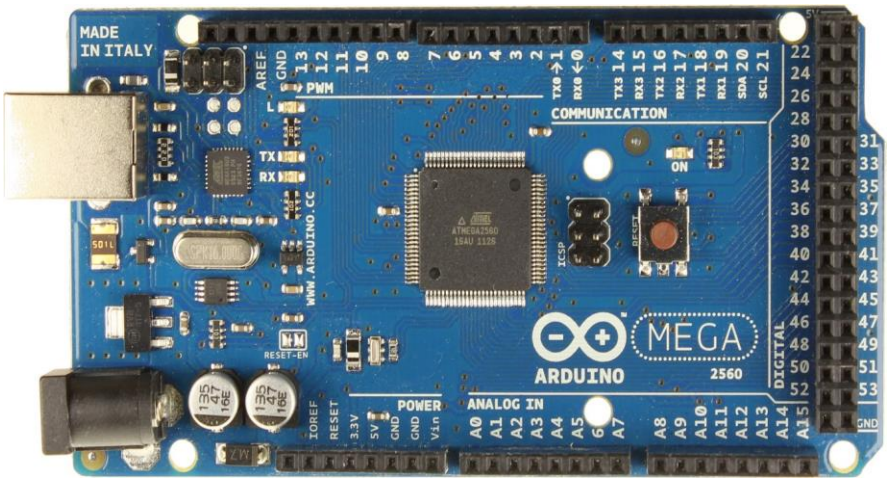
- We have worked so many in electric.

- From 19/1/2017 until 9/3/2017, we have been working with wires and jumpers.
- Starting from 9/3/2017, we have done our PCB and used it in our Robot.
- We have faced some problems in electric works as:
  - Having problems while connecting jumpers and wires.
  - We damaged the battery accidently because of a short circuit.
  - The Arduino was damaged because of a wire that was disconnected from its pin and made a short circuit on the Arduino.
- We have used an H-Bridge (mdd10a)
  Link:
  http://www.robotshop.com/media/files/pdf/user-manual-mdd10a.pdf



- We have used Lithium Polymer Battery (11.1 V, 2200 mAH, 8C)

- We have used Arduino Mega (mdd10a)
  Link:http://www.robotshop.com/media/files/pdf/arduinomega2560datasheet.pdf



Programming:

- Our Robot program is made with Arduino IDE program to make Line Following , Inverted Line Following ,Green Spot And Obstacle Avoiding
- Our Robot program contains 26 Variables 15 functions

Functions explanation:

Line Following: The Line Following Function is used to follow the line by Knowing if it`s ninty degree or not, if it is not it will determine the position of the line with a variable called position in the QTR-8RC Library

Green: When The Sensor Read An Intersection(All Black) The Robot Go Backward until The Sensor See The Last Sensors From Left And Right Are White Then it Stop And Then then the sensor Read The Max Sensor Value And The 2nd Max Sensor See The 2 Sensors Beside The Max And The 2nd Max Then The Robot Turn To The Direction Of The Bigger Sensor Value

Inverted : The Inverted Line Following Function is used to follow the line by Knowing if it`s ninty degree or not, if it is not it will determine the position of the line with a variable called position in the QTR-8RC Library

Sensor Read: it determine the sensor read & the position of the line

Inverted sensor Read: it determine the Inverted sensor read & the position of the Inverted line

Right, left, forward, backward & stop: they are the functions who moves the robot

Printt: prints sensors values