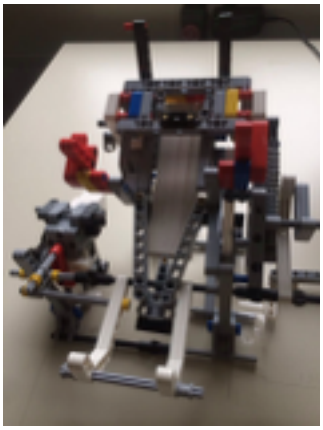
User Manual

Lego Mindstorm Skittle Sorter

Compositions of product:

A robot with a slider(1), a yellow bowl with a hole at the bottom(2), an EV3 color sensor(3), a Lego EV3 monitor(4), a box of color balls(5) , 2 belts(6) made of lego stock, 2 aprons(7), 4 containers/ plates(8), a power line and a tape. The instruction of the product is in http://www.lego.com/en-us/mindstorms/products/mindstorms-ev3-31313.



(1)

(2)

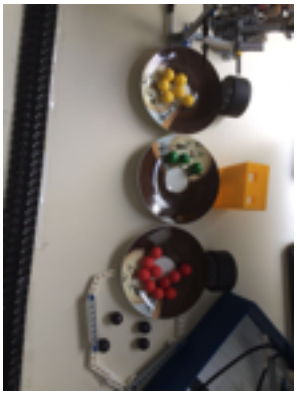
(3)

(4)

(5)

(6)

(7)

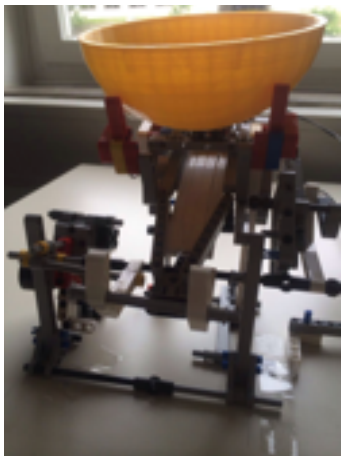


(8)

Overview of the Function:

This Lego Mindstorm is used for identifying different candy colors and sorting them into different containers.

Steps of using this product:

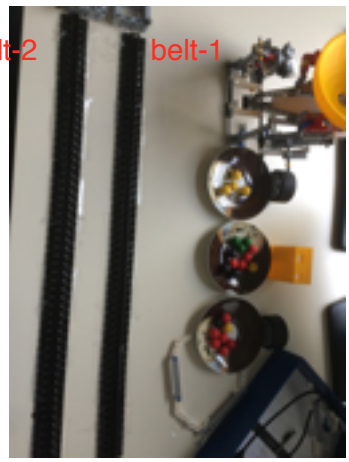


(8)

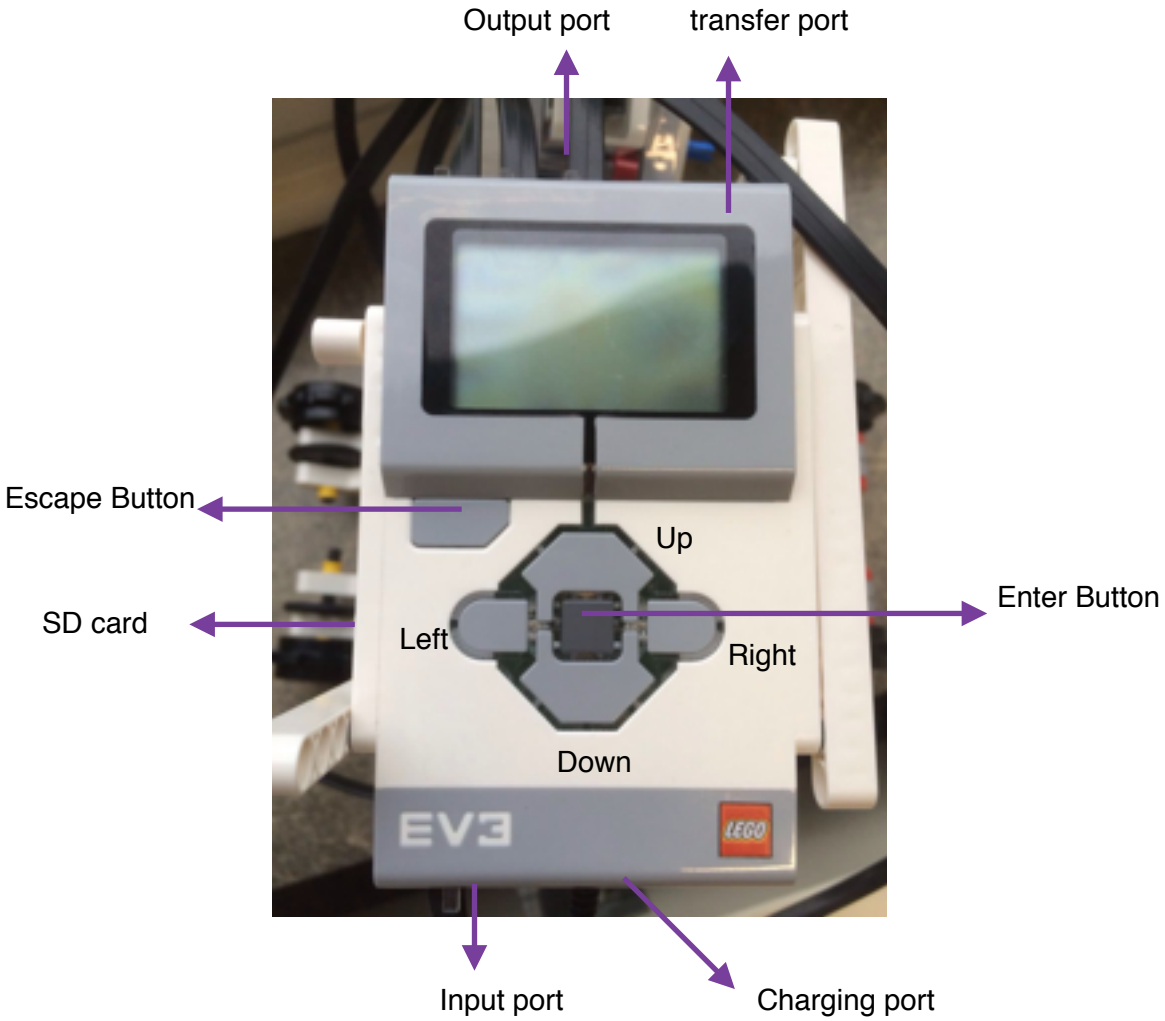
1.Before using the robot, please make sure you have charged the monitor.

2.If the system(slider, container, belts and aprons) has been fixed on the table or some other places, please go directly to the step 3, otherwise keep reading.
To assemble the system:
1) put the yellow bowl on the slider ,keep the hole empty without any block and assemble the bowl and the slider together, then fix the slider at a certain place with the tape. The result should be like picture (8).
2) stick belt-1 15cm away from the slider. And place belt-2 10 cm from belt-1 as in picture (9).
3) put the robot on the belts so that the direction of the hand is heading to the side of the plates, don't forget to make sure the 4 wheels should be fit into the railway composed of the two belts.
4) move the robot 28cm from the aprons(start position). Start the test program: Detect.jar

Next step is about how to start this program.

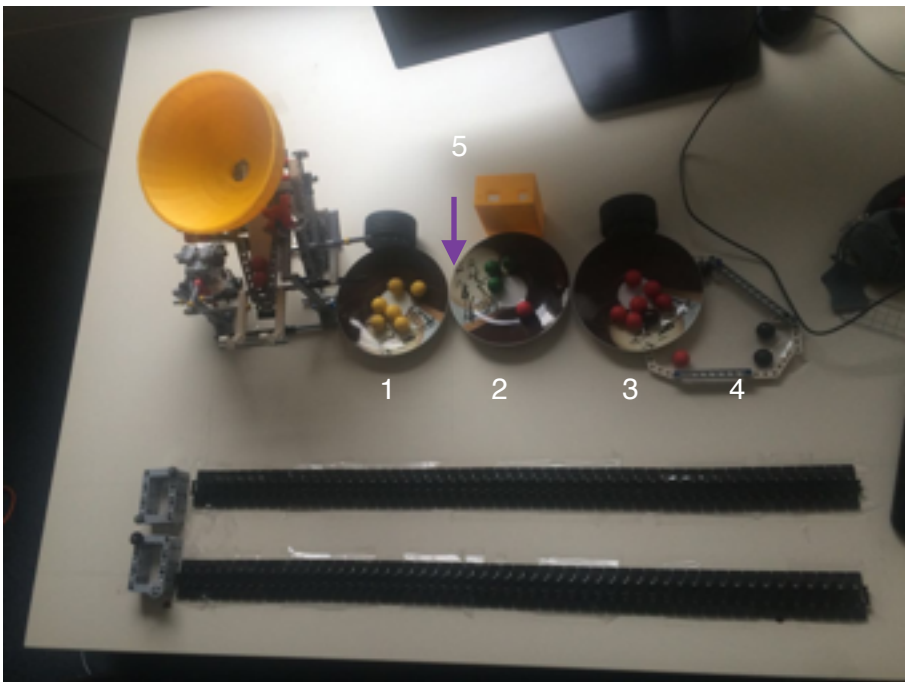


(9)



3. Test the color sensor with the program Detect.jar (There are 3 files stored in the EV3 monitor: Detect.jar, FivePosition.jar, Sorting.jar.):

1) start the monitor: press the Enter button until the welcome screen is shown.
2) wait a few seconds until you heard a sound from the robot which means the robot is ready to work.
3) press the direction buttons on the monitor to select the file Detect.jar on the screen under the path “Program->Detect.jar”.
4) move the robot 28cm from the aprons(start position). Press the Enter button and the robot will show on its screen “Do you want to load Detect.jar?”, choose the hook. After the file is loaded, you should check wether the color detection function of the robot could work properly by testing with some balls of different colors: Each time you put a ball in the hand of the robot, then the ball will be scanned by the robot, this procedure ends with a sound and you can easily compare the color of the ball with the result shown on the screen, after that you should take the ball away from the hand of the robot.If the detect result is not matched, that means the light is not enough and you need to move them to a much lighter place. Escape Button is use for stop the program.



4. Check wether all the containers are well placed by using the program FivePosition.jar as described in step 3. After starting this program with the robot on the start position, the robot will move and wait at 5 positions of the railway, you should check wether the hand of the robot is headed to the center of a container(plate) while it is waiting. The start position is the same like position 5(the position is marked as the pink arrow in the picture above).
5. Put some color balls or candies in the bowl and the robot at the start position, then run the working program “Sorting.jar” as described in step 3. Escape Button is use for stop the program.

Addition

Here is some Demo Videos:

https://www.youtube.com/watch?v=Vpi2q6Jw9CY
https://youtu.be/5od8_5nkdng
https://youtu.be/MhimBU-TiyY

If you have any questions or suggestions, please contact with me:
wang.lin@tu-clausthal.de