Music-Bot

2IO75 Embedded systems

Department of Computer Science

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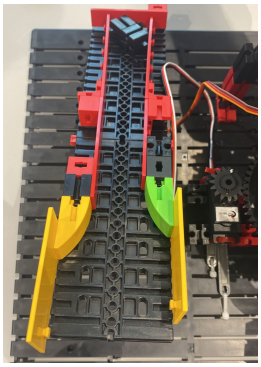
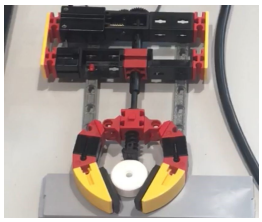
In this Poster the music-bot a color-recognition sorting robot will be presented.The idea behind this robot is that it stores the color of different disks and generates a binary number based on the sequence. After that, it generates a melody. The system can be divided into the pusher mechanism, the buffer zone, the robot arm and the visualization slide.

Mechanics and functionality

The mechanics of the robot consists of a pusher with a sensor that detects a passing disk and pushes it of the belt into a so called "buffer zone". Here the disk awaits for the gripper, it picks the disk and turns with help of the mechanical arm it is connected to towards the slide. When the arm and gripper are in right position the gripper opens up and lets the disk fall into the slide. All disks will be stored in the slide. With the help of color sensors the black and white disks will be distinguished. Based on the color sequence there will play a melody out of the buzzer that is placed in the robot.



Slide



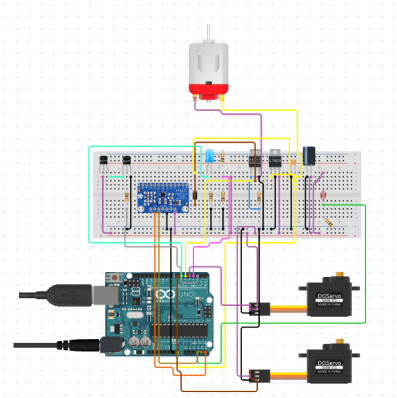
Gripper

Arm

Buffer Zone

Circuit design and electronics

The circuit design is shown below. The electronics used are the Arduino Uno, Adafruit motorshield, a dc motor, 2 servos, a buzzer, several sensor, light dependent resistors.



Code

The code is written in C language and in the Arduino interface. The color sequence is stored in a binary sequence and then translated into the associated melody.

Error detection

When errors occur this is visualised. There are several errors that will be visualised. This will be visualised with a led and the sound of the buzzer. The errors that will be visualised are: no color detection, sensors blocked, pusher stuck, gripper stuck, buffer zone full.

Conclusion

The robot will collect the disks and will play based on the color sequence several melodies.