

PRACTICE 2: TRACKER



Copyright (c) 2007 Bizintek Innova, S.L.

Permission is granted to copy, distribute and/or modify this document under the terms of the GNU Free Documentation License, Version 1.2 or any later version published by the Free Software Foundation; with no Invariant Sections, no Front-Cover Texts, and no Back-Cover Texts. A copy of the license is included in the section entitled "GNU Free Documentation License".

1. Description

The purpose of this document is to assist users in programming the Moway and perform the various practices.

In this second practice denominated “Tracker” the Moway must (follow) a line drawn on the ground. This program is the basic program to get started in robotics.

2. Strategy

In this practice the robot must make decisions based on the values provided by the line sensors. The strategy will be to follow the left border of the line.

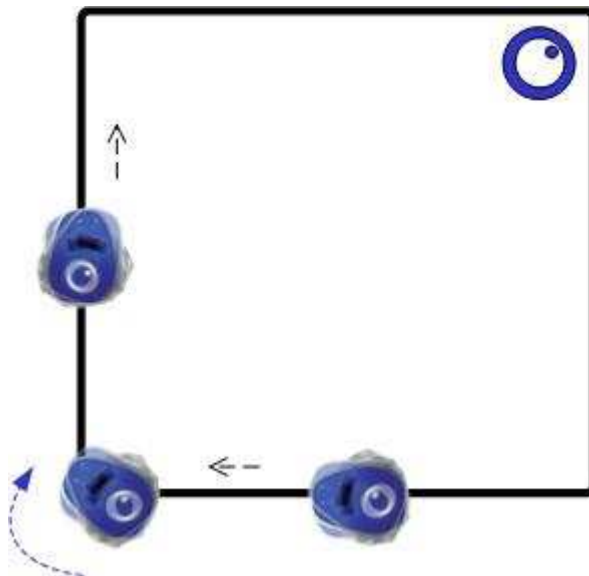


Image 1. Tracker

Depending on the values provided by the line sensors we have four different states and decisions to enable the robot to follow the line in all situations:

Table 1. Possible line sensors status

Right	Left	Decision
0	0	Turn right
0	1	Turn right
1	0	Straight
1	1	Turn left

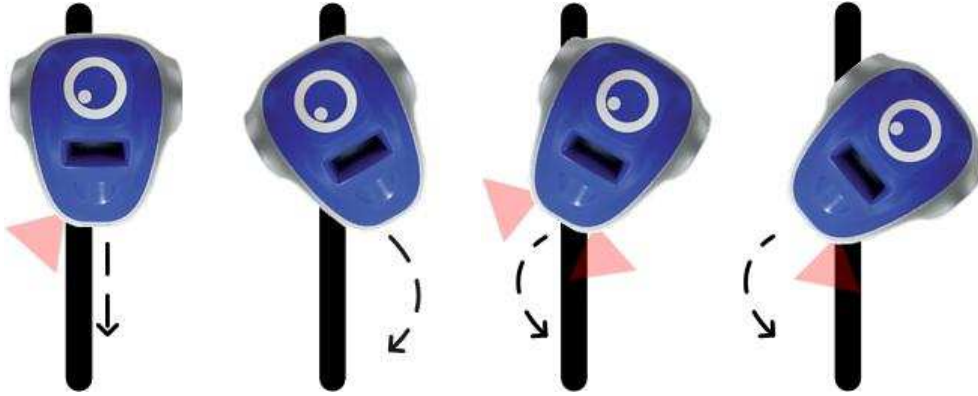


Image 2. Reactions of the robot according to the line location

3. Solution

The complete practice code may be downloaded from Moway's Website: the assembly, the CCS and the Moway GUI versions. The image below displays the program's flow diagram.

1. First we must configure Moway's micro controller in order to enable the use of the sensors and of the drive unit.
2. After this it will start a rotating movement to find the line.
3. From now on the robot will be checking the line sensors continuously and considering the output, make the decisions described in the previous section.
4. With each movement the lower LEDs turn on and off depending on the values sent by the line sensor.

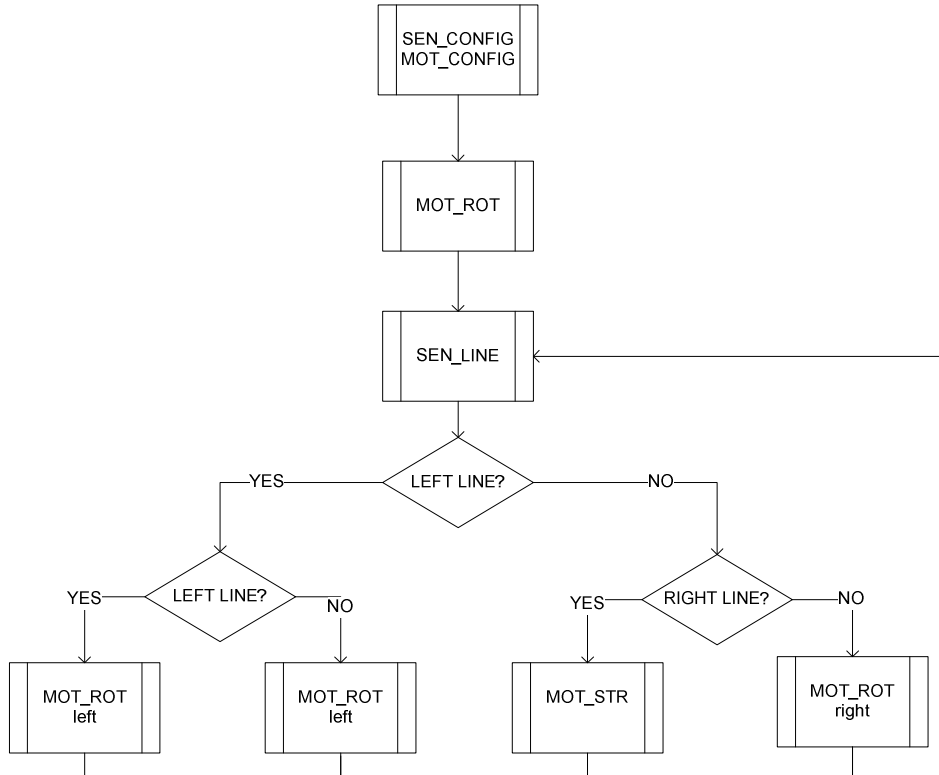


Image 3. Flow Diagram

The image below shows the solution of the MowayGUI practice .

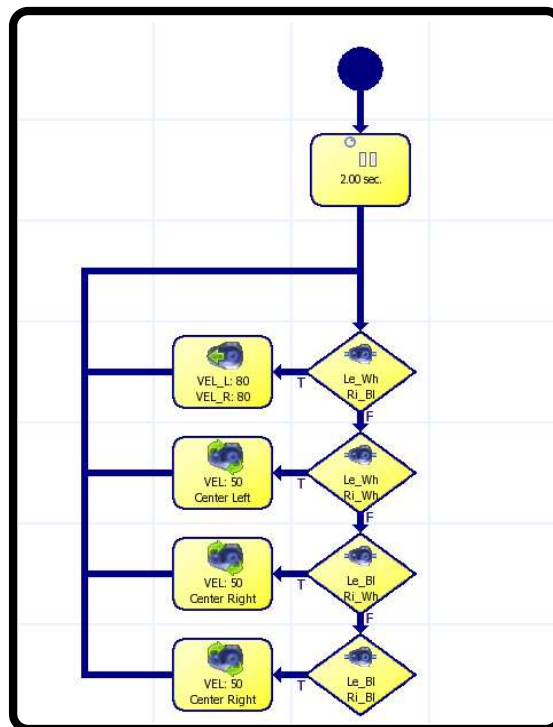


Image 4. MowayGUI Diagram

4. Improvements

To become familiar with robot programming improvements may be introduced in the project:

- Change the speed of movements.
- Modify the movements according to route traveled. For example: slower movements (change the speed of the motors) if the track does not have many curves.
- Modify the program for it so send only one command for each status change, in order to improve the speed control.
- Send commands to the PC via RF.
- Send commands to another Moway so that it may repeat them via RF.

5. Documentation

All the documentation required is available in Moway's website www.moway-robot.com.

Moway Manual

Moway User Manual.pdf

Source Code

mOway_line_track_ASM

mOway_line_track_CCS

mOway_line_track_GUI

User Manual for module RF BZI-RF2GH4

Manual RF.pdf