**Moco\_RCCar\_Server**

Repo for Motion Control RCCar Server

***!!!please be careful and protect the car from falling!!!***

**Installation:**

install opencv: pip install opencv-contrib-python

install Qt6: pip install PySide6

**Getting Started:**

1-conncet your camera to the computer

2-find and replace the CamSelect in Configuration

3-measure the table and replace the TrackWidth and TrackHeight in Configuration

4-make sure your firewall is disabled

5-connect your Wi-Fi with the esp (name: "rccar", password: "123456789")

6-run "Server"

7-open the setting tab and click the "Reset Corners" button (do this everytime you change the cam position!)

8-if the program finds the corners, it will display the current path

9-click the "start car" button to start the car

10-you can change the speed in setting tab with the speed slider

11-click the "stop car" button the stop the car

12-you can switch the path by clicking the "park", "continue" or "short round" in the main tab

13-open the path tab for creating new paths

14-click "create new path" button to see the path creating window

15-draw the path by clicking on the creating window

16-you can draw again by clicking the "clear path" button

17-click "save path" to replace the old path

18-click "lock in path" to switch to the control car state and press start

**Aruco:**

You can generate ArUco in <https://chev.me/arucogen/>.

The app is currently using "Original arUco" Dictionary.

tagID\_topLeft = 65

tagID\_topRight = 85

tagID\_bottomRight = 0

tagID\_bottomLeft = 63

tagID\_car = 21

The corner ids can be changed in State\_CornerDetection.py/on\_enter and car id in State\_ControlCar.py/run.

**Car setup:**

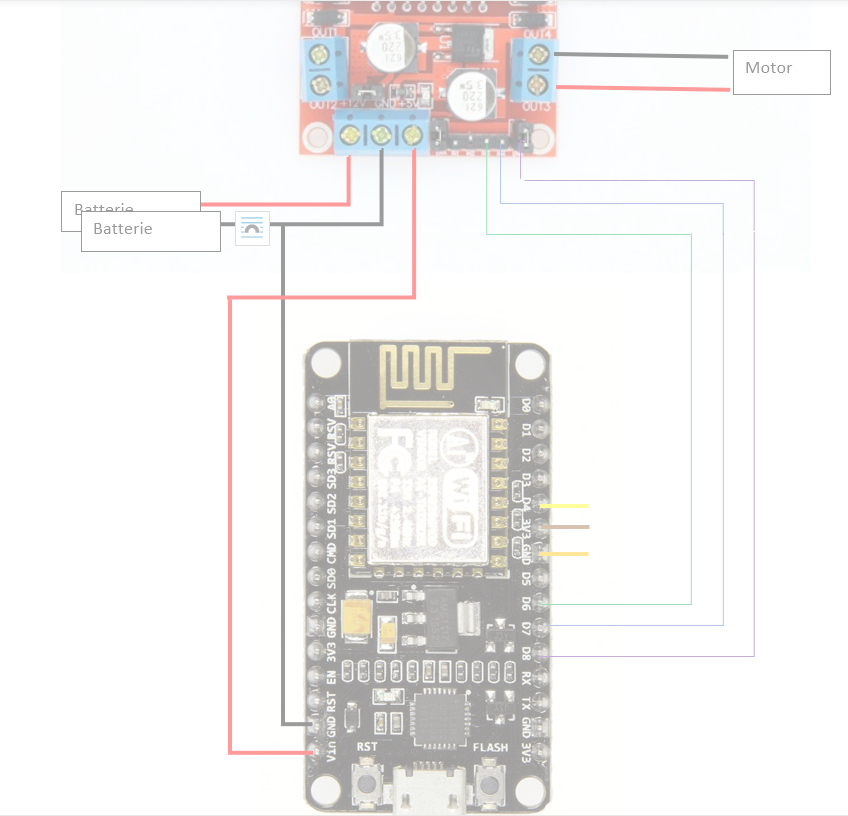
[Moto Driver](file:///\\https:\joy-it.net\de\products\SBC-Motodriver2)

Li-Ion battery

7.4V, 1500mAh, 11.1Wh, discharge rate: 15C, max charge current: 5A

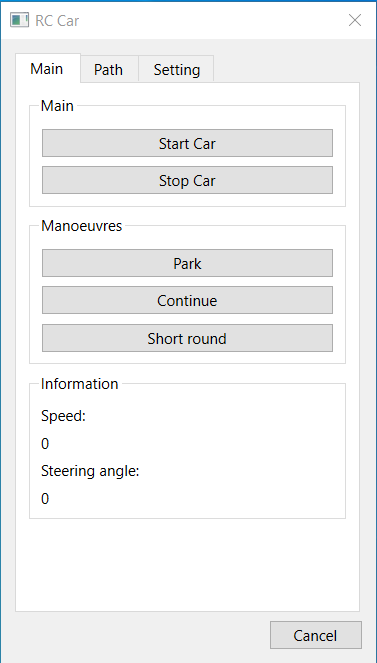
max discharge current: 20A

[ESP8266 NodeMCU](https://components101.com/sites/default/files/component_datasheet/ESP8266-NodeMCU-Datasheet.pdf)

**Connection**

## GUI Guide:

### Main:



#### start car:

by clicking this button, the car will first get a start power of 150 and continue with the vehicle\_const\_speed

#### stop car:

by clicking this button, the car will stop

#### park:

by clicking this button, the current path will change to parking path as soon as the car is in the change-path-area and the car will be stopped in the parking area.

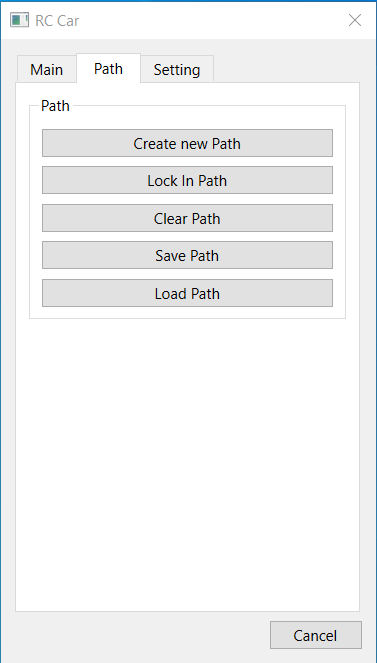
#### continue:

by clicking this button, the current path will change to normal path as soon as the car is in the change-path-area and drive the path again and again.

#### short round:

by clicking this button, the current path will change to half path as soon as the car is in the change-path-area and drive the path again and again.

### Path:



#### create new path:

by clicking this button, the current state will change to State\_pathDetect and a new window will pop up, where you can draw a path by setting points on the window.

#### lock in path:

by clicking this button, the current state will change to the State\_ControlCar.

#### clear path:

by clicking this button, the drawn path will be removed.

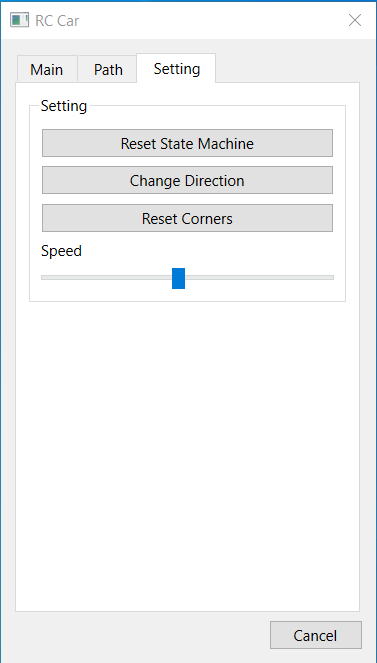
#### save path:

by clicking this button, you can save the drawn path as .trj file

#### load path:

by clicking this button, you can see the .trj file on the draw window

### setting:



#### reset state machine:

by clicking this button your state machine will begin again in the State\_CornerDetection. Note: restart the GUI if it doesn't help, your thread may be stopped due some error.

#### change direction:

by clicking this button, you can change the direction of the path. Note: you must change the path and set it again! please stop the car and turn it to the right direction manually

#### reset corners:

by clicking this button, the corner.trj file will be removed, and the current state will be changed to State\_CornerDetection, and the program try to find the corner ids and save this again.

#### speed slider:

by dragging this slider, you can change the speed. right for accelerate and left for decelerate.

**FAQ:**

**how can I switch the path?**

click the park, continue or short round button to change the path.

attention! the path does change when the car is in the change-path-area.

**how can I change the speed?**

there are two ways:

1-change the initialized speed:

1-open Configuration.py and change the vehicle\_const\_speed

2-change the current speed with the GUI

1-click the setting tab

2-drag the slider to the right to accelerate the car and left to decelerate the car

**how can I create my own path?**

you can only replace the trajectory.

1-click the path tab

2-click the create new path button

3-click draw your own path by setting point on the screen (click clear path to draw again)

4-click save path button

5-replace the old .trj file

6-click lock in path

**how can I set new corners?**

1-click the setting tab

2-click the reset corners button

**how can I change the camera?**

1-open Configuration.py and change the CamSelect

**why does the car not park?**

this issue may be caused due the isStopPoint() function in Trajectory.

1-open the GUI

2-click the path tab

3-click the "create new path" button

4-draw 4 point for your parking-area

5-the coordinates of the points will be printed in python terminal

6-write down the coordinates

7-replace the values in `isStopPoint()` with your new coordinates

**why is the path not changed?**

this issue may be caused due the isChangePoint() function in Trajectory.

1-open the GUI

2-click the path tab

3-click the "create new path" button

4-draw 4 point for your change-path-area

5-the coordinates of the points will be printed in python terminal

6-write down the coordinates

7-replace the values in isChangePoint() with your new coordinates

**why doesn't the car steer?**

1-restart the car and try it again

2-restart the esp and try it again

3-restart the GUI and try it again

4-flash the esp and try it again