

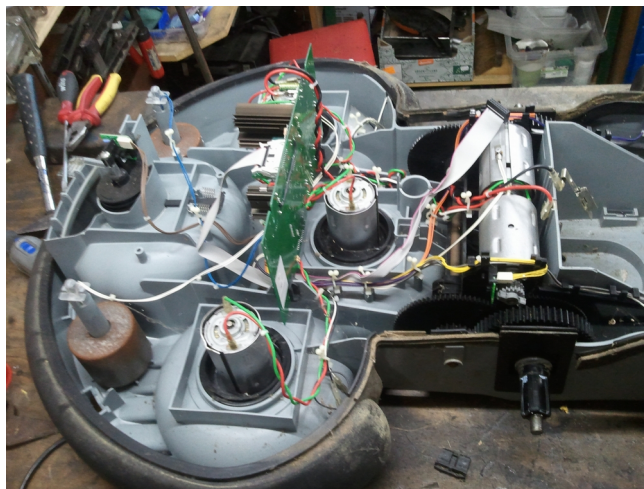
## Snyder2

Snyder2 is a robot project of the Creative Lab in the Lycée Technique des Arts et Métiers, Luxembourg. The idea is to build a modular robot platform that can be easily extended or transformed.

### *Mechanical platform*

Its mechanical parts are mostly extracted from a mowing robot that was found on the waste dump.

This is what the original mowing robot looked like when opened:



Only the motor and the gear were retained.

Some acrylic plates were assembled to form a mechanical support and a first test had to show if battery, motors and the rest of the mechanical parts would work together:



And, yes, it worked!

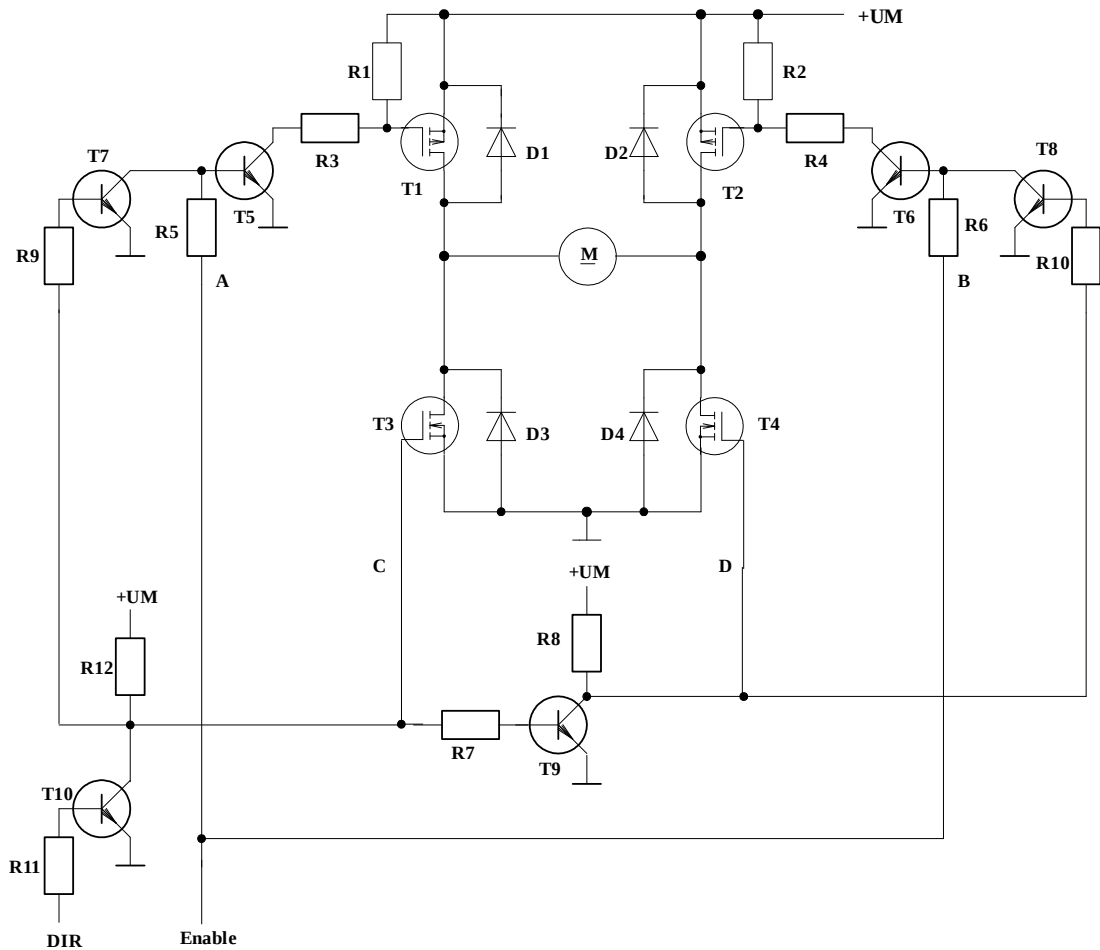
<https://www.facebook.com/creativelab.lu/videos/1489037464507753/>

The test also showed that it was a good idea to put the battery in the front part, to avoid rearing up when the motors start.

## Motor driver

The motors take up to 1-2A at 12V.

So the motor driver must be able to drive a „fat“ load. From our Samalux school project we had some MOSFET drivers left over, a design of our own, without ICs, but with discrete components.



T1, T2 = IRF9Z34N

T3, T4 = IRF530N

T5, T6 = TUN

D1...D4 = internal MOSFET diodes

R1, R2 = 4K7

R3, R4 = 0

R5, R6 = 10K

R7 = 10K

R8 = 1K

R9, R10 = 10K

R11 = 10K

R12 = 1K

DIR	Enable	A	B	C	D	Conducting transistors		Function
1	0	0	0	0	1	T8, T10	T4	off
1	1	1	0	0	1	T8, T10	T1, T4	Turn right
0	0	0	0	1	0	T7, T9	T3	off
0	1	0	1	1	0	T7, T9	T2, T3	Turn left

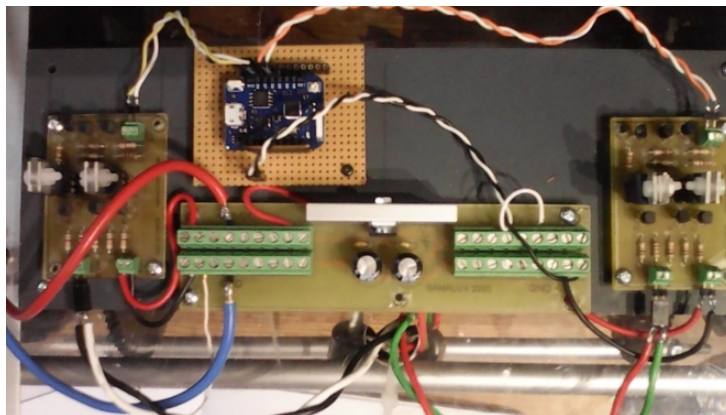
### *Power supply*

A 12V lead accumulator is used for the motors.  
5V for a microcontroller are supplied via an 7805.

### *Microcontroller*

Because of it's versatility a WEMOS ESP-8266 on a small board is used. This clever board is Arduino compatible and can generate a WiFi hotspot. So the robot can be commanded by interacting with a webpage that the WEMOS generates. This can be via a smartphone, a tablet or a Raspberry Pi. There is no need of an external WiFi net.

### *Electronics assembly version 0.1*



Left and right: motor drivers, center bottom: power distribution and 7805, center top: WEMOS controller.

### *Firmware*

This document is for the firmware:  
[staff.ltam.lu/feljc/creativelab/snyder2/snyder2\\_firmware\\_1.pdf](http://staff.ltam.lu/feljc/creativelab/snyder2/snyder2_firmware_1.pdf)

### *Test*

A test in the garden showed that Snyder2 could be commanded by tablet.  
<https://www.facebook.com/creativelab.lu/videos/1508062155938617/>