Andreea-Loredana DIEACONU (66963) - Nume proiect

Autorul poate fi contactat la adresa: **Login pentru adresa**

Introducere

Proiectul consta in realizarea unui robotel path follower capabil sa se deplaseze in coordonate carteziene (x, y).

Am ales sa implementez un path follower deoarece ideea de a il face sa se miste m-a fascinat ceva timp
La inceput am inclinat spre line follower, bine-cunoscutul robotel care domina PM fair de ani buni, dar am vrut tot odata sa incerc ceva nou. Cel care mi-a propus acest proiect a fost Dan, caruia ii multumesc pentru minunata idee

PathFollower in motion

Descriere generală

Robotelul se va deplasa intr-un punct dat.
Robotul consta in: roti, driver pentru coordonarea rotilor, microcontrollerul AtMega324A si encodere pentru a calcula distanta parcursa.

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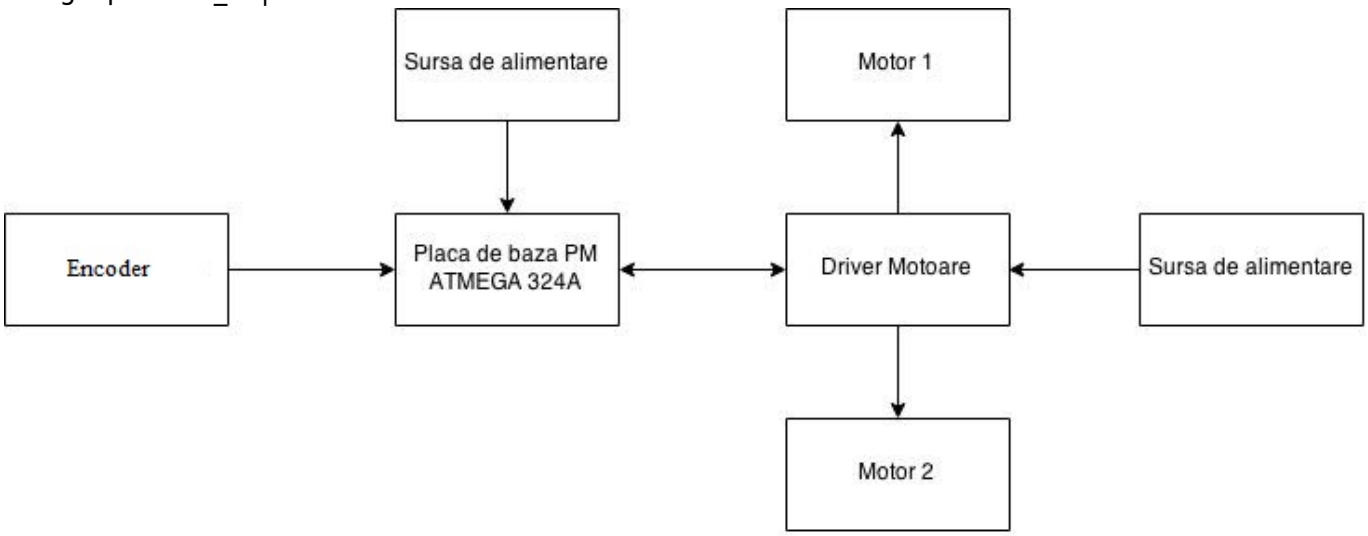


</imgcaption>

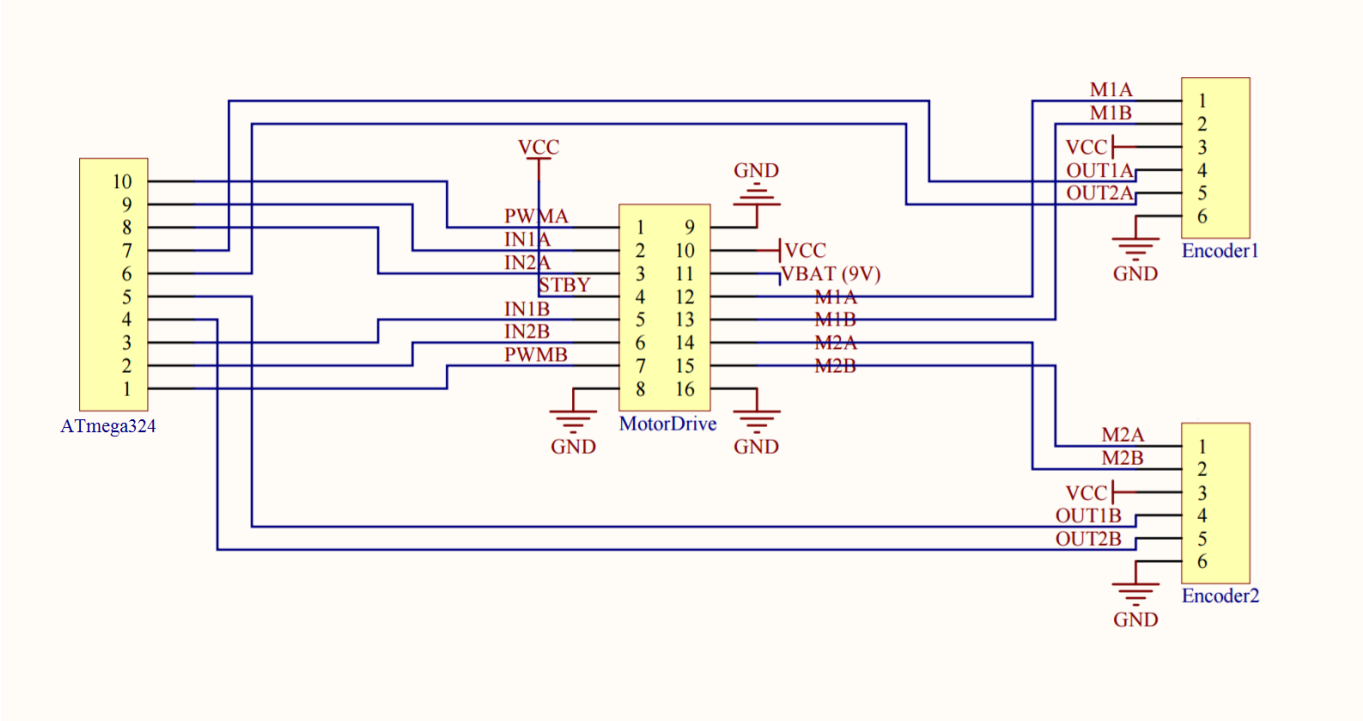
Hardware Design

Listă de piese	
Nume	**Distribuitor**
Placa de baza	Echipa PM
ATMega324A, rezistente, condensatoare etc	Denisa Sandu
Driver Motoare	RoboFun
Motorase	RoboFun
Suport Prinderi Motorase	RoboFun
Encoder	RoboFun
Roti	RoboFun
Ball Caster pentru sustinere Robot	RoboFun

Mediu de dezvoltare:

- Altium - schema electrica

<imgcaption hc_06|Schema electrică>



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Software Design

Mediu de dezvoltare:

- Programmer's Notepad

Algoritmi implementaţi:

- differential kinematics

Biblioteci:

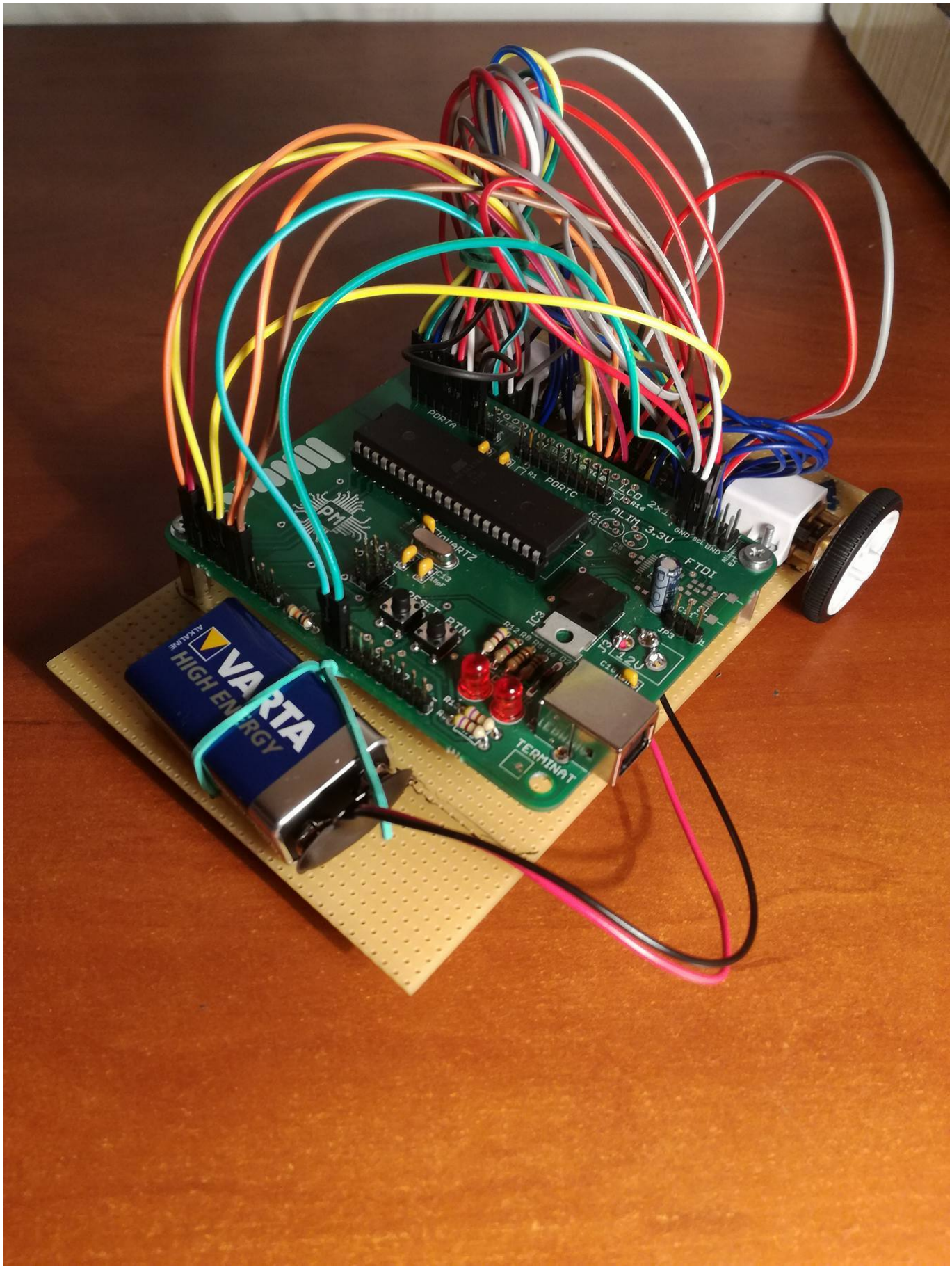
- avr/interrupt.h
- util/delay.h

Rezultate Obţinute

Rezultatele obţinute în urma realizării proiectului:

- stiu sa lipesc componente
- stiu sa citesc un datasheet
- am invatat sa lucrez cu hardware-ul
- robotelul merge!!! (de fapt mergea, dar il repar eu pana la PM fair)
- rezultatul final PathFollower in motion

<imgcaption image1|>


PORTA
PORTC
ALIM 3.3V
FTDI
RESET
RTN
VARTA
HIGH ENERGY
TERMINAT

</imgcaption>

Concluzii

Awesome experience!
Am descoperit ca-mi place destul de mult partea de embedded!!

Ce mi-a placut?
- sa lipesc
- ca am facut ceva practic
- ca am facut noi totul, de la zero, cap coada

Ce am invatat?
- sa citesc un datasheet!!!
- sa lipesc - si mi-a placut foarte mult :D

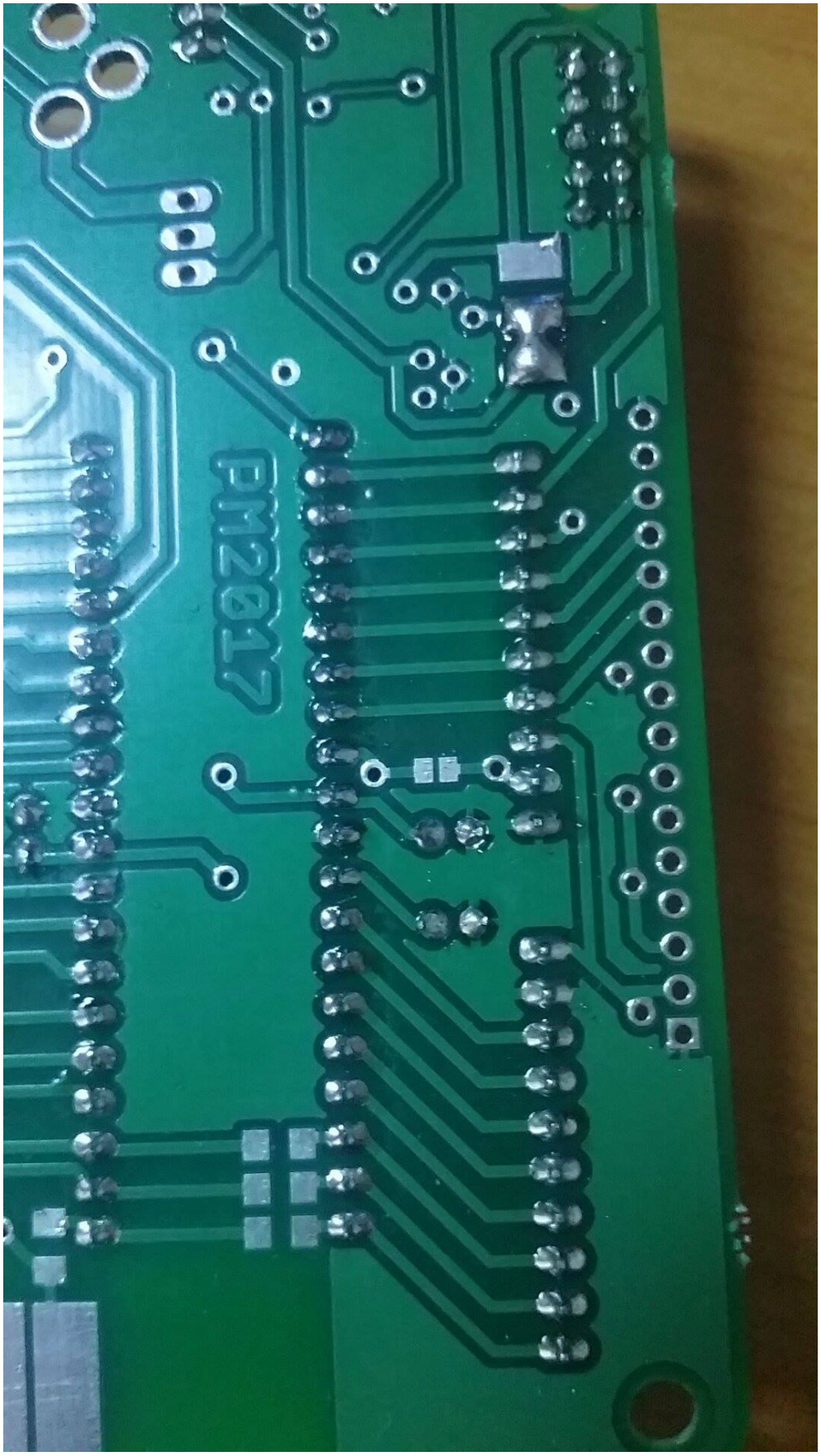
Am avut foarte multe de invatat din acest proiect. A fost prima mea interatiune cu hardware-ul.

Download

Arhiva cod

Jurnal

- 23.04.17 - Creare pagină wiki
- 23.04.17 - Adaugăre schema bloc
- 23.04.17 - Adăugare componente hardware
- 7.05.17 - Finalizare placă de bază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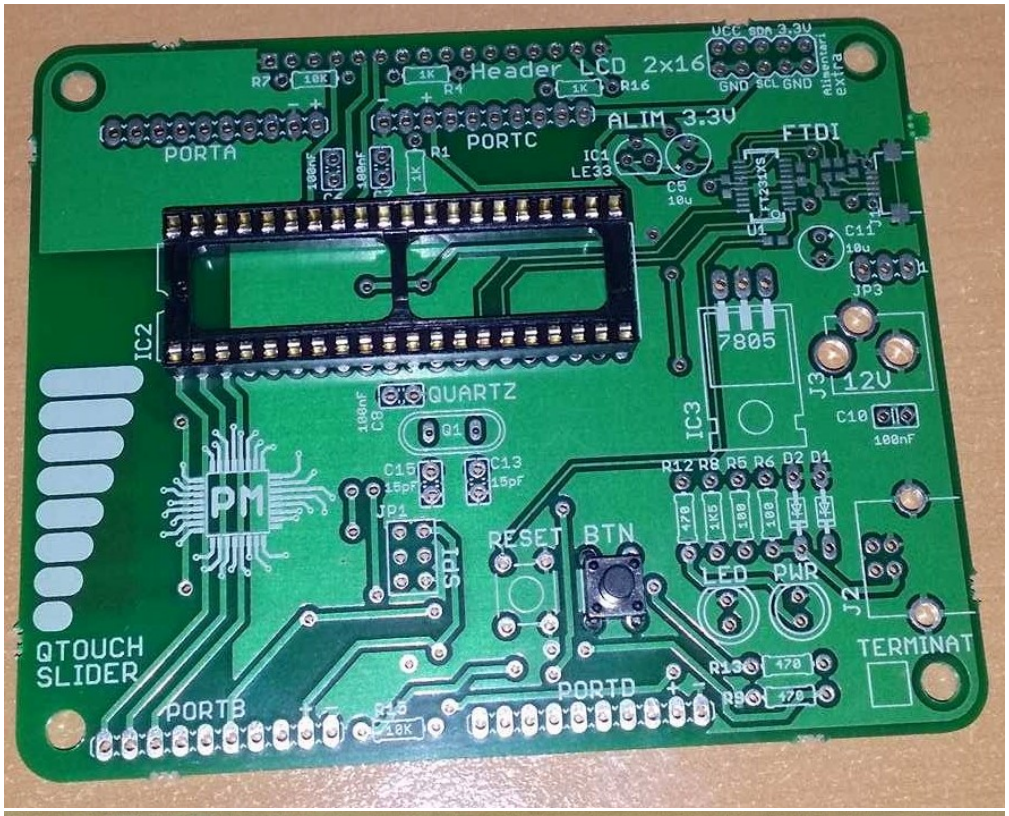
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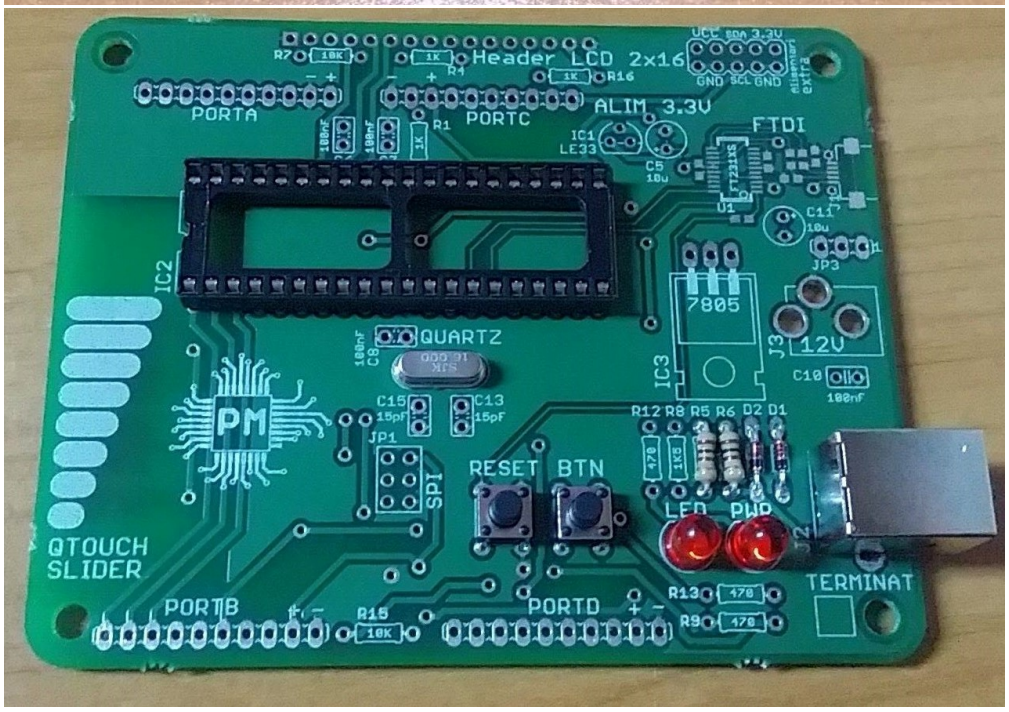
PORTB
PORTD
QUARTZ
RESET BTN
LED PWR
SPI
QTOUCH SLIDER
TERMINAT
7805
12V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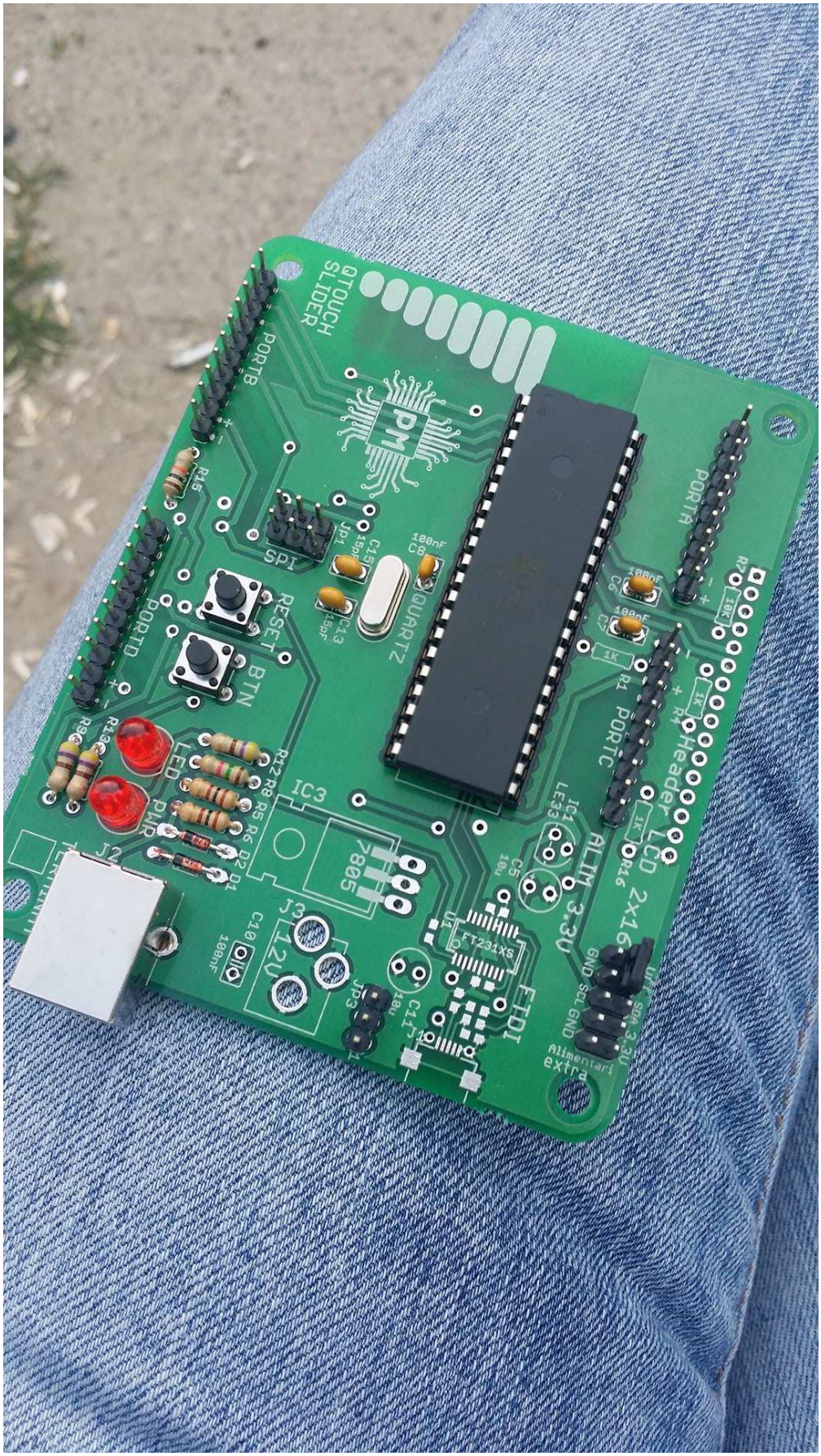
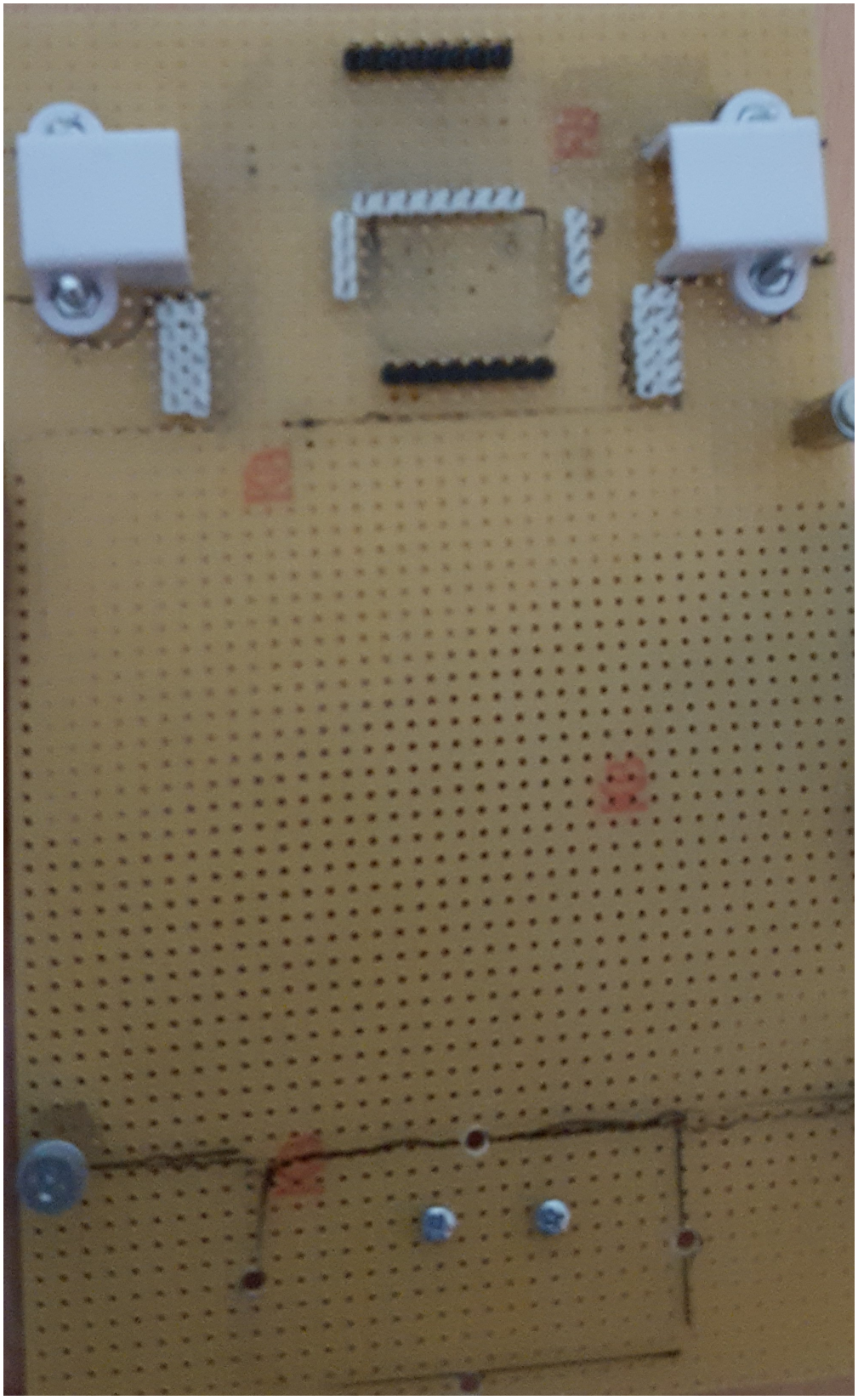
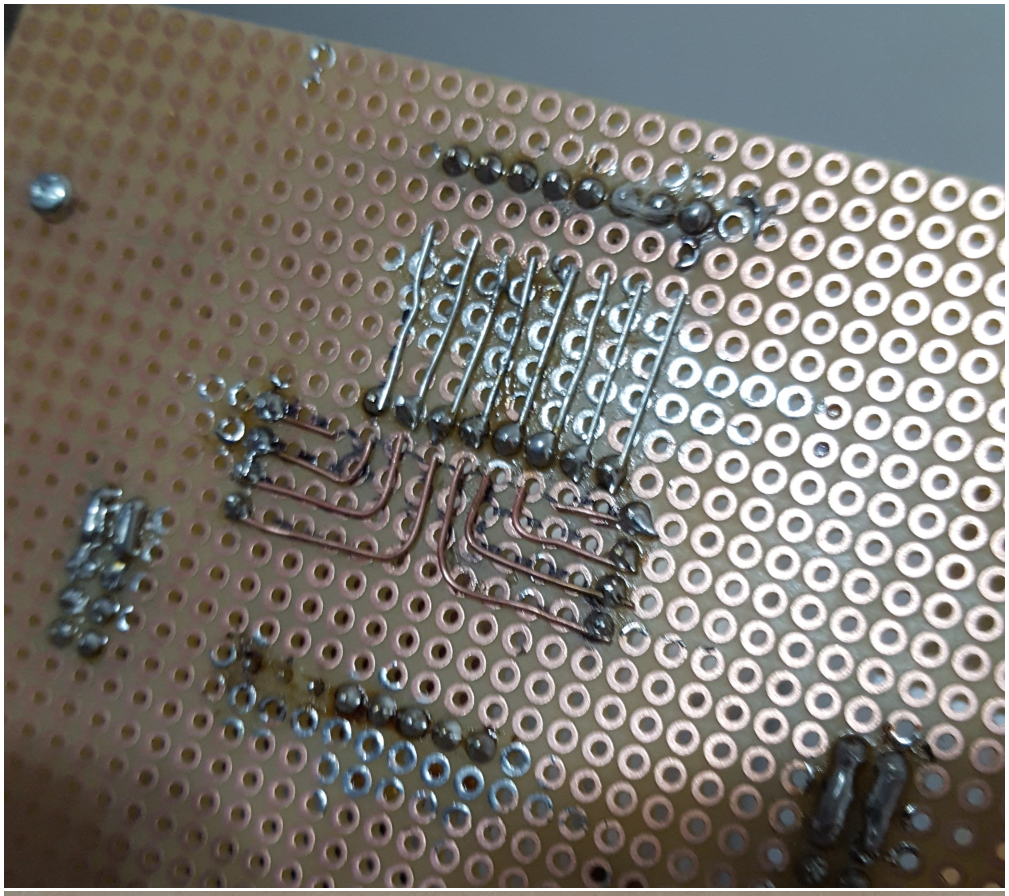
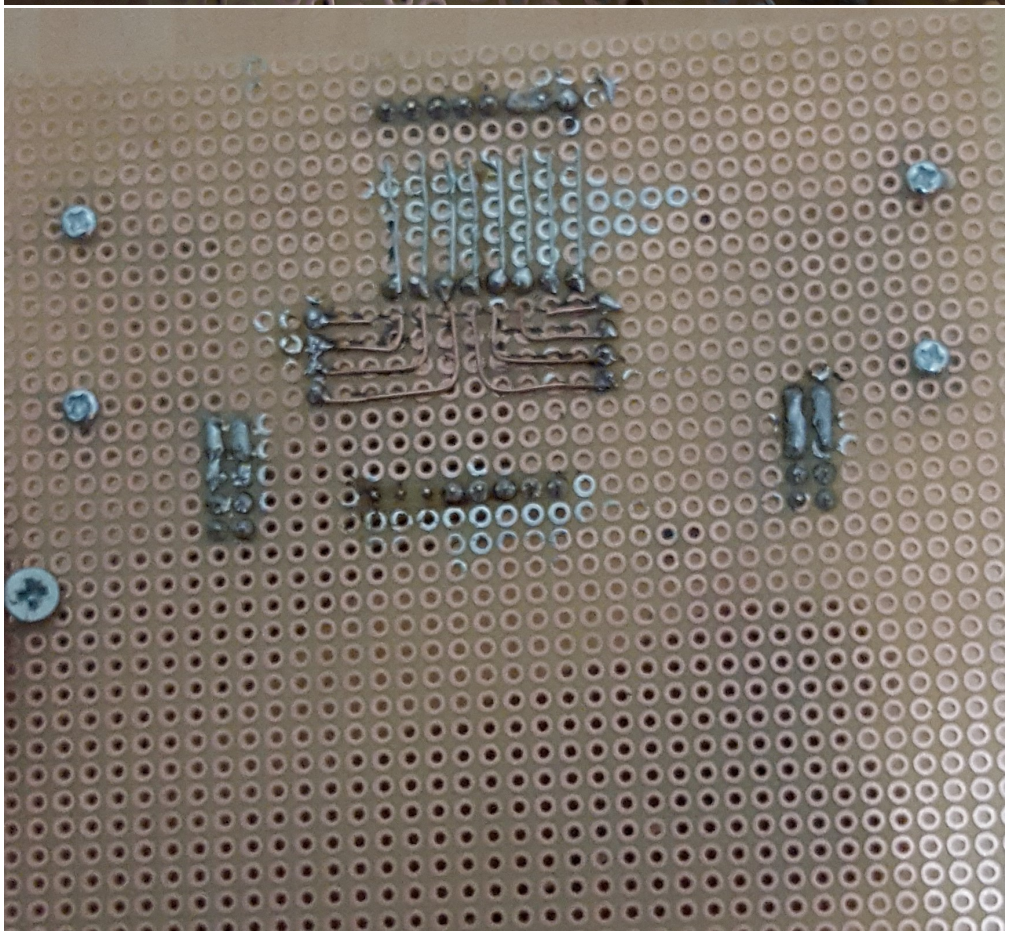


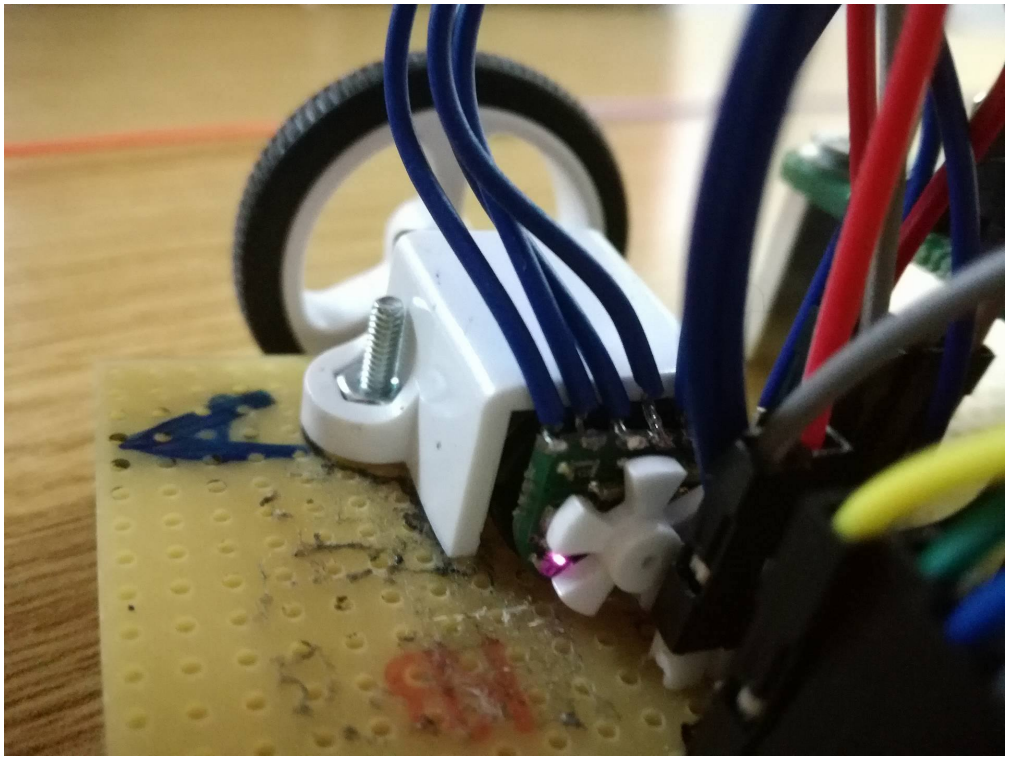
- 7.05.17 - Adăugare schema electrica
- 9.05.17 - Am inceput sa lucrez pe placa de test si am lipit driverl pentru motoare



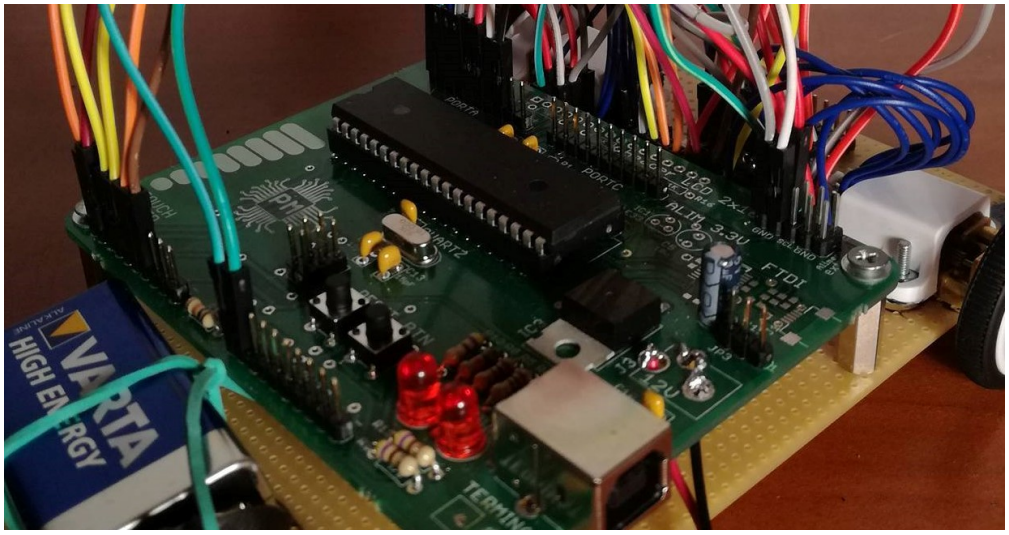


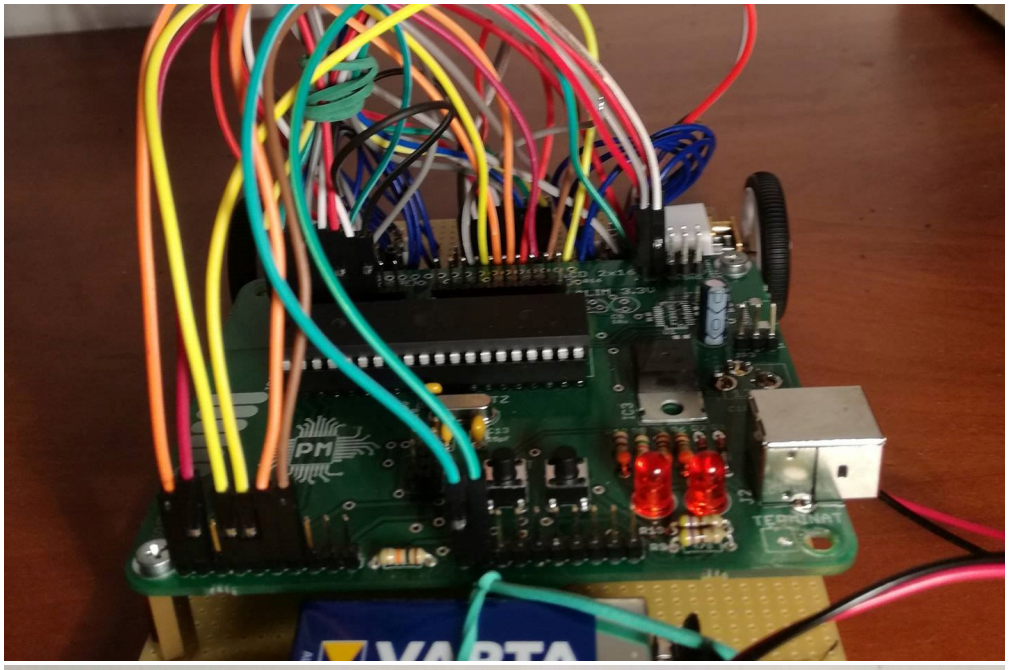


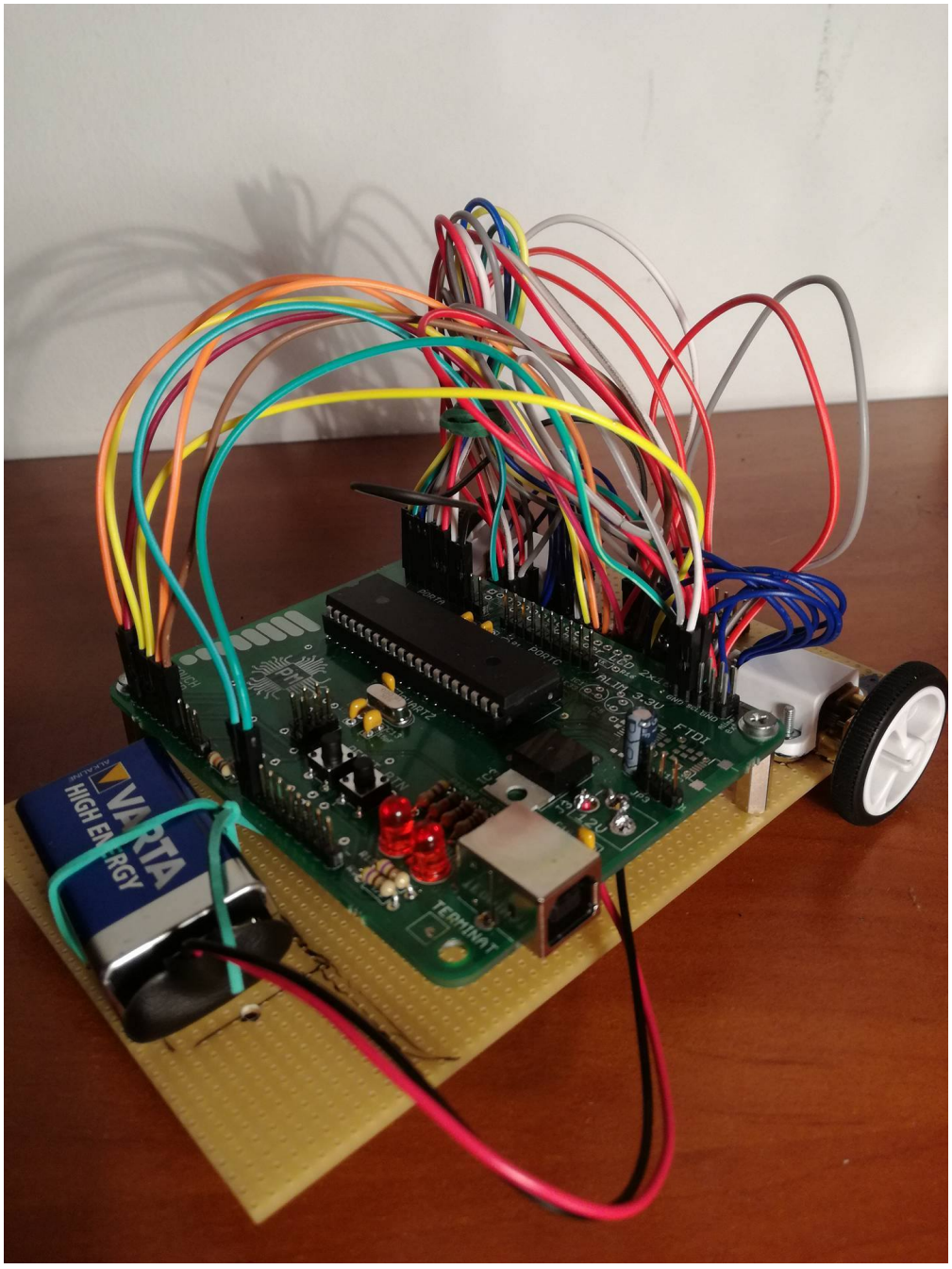
- 11.05.17 - Am lipit encoderele



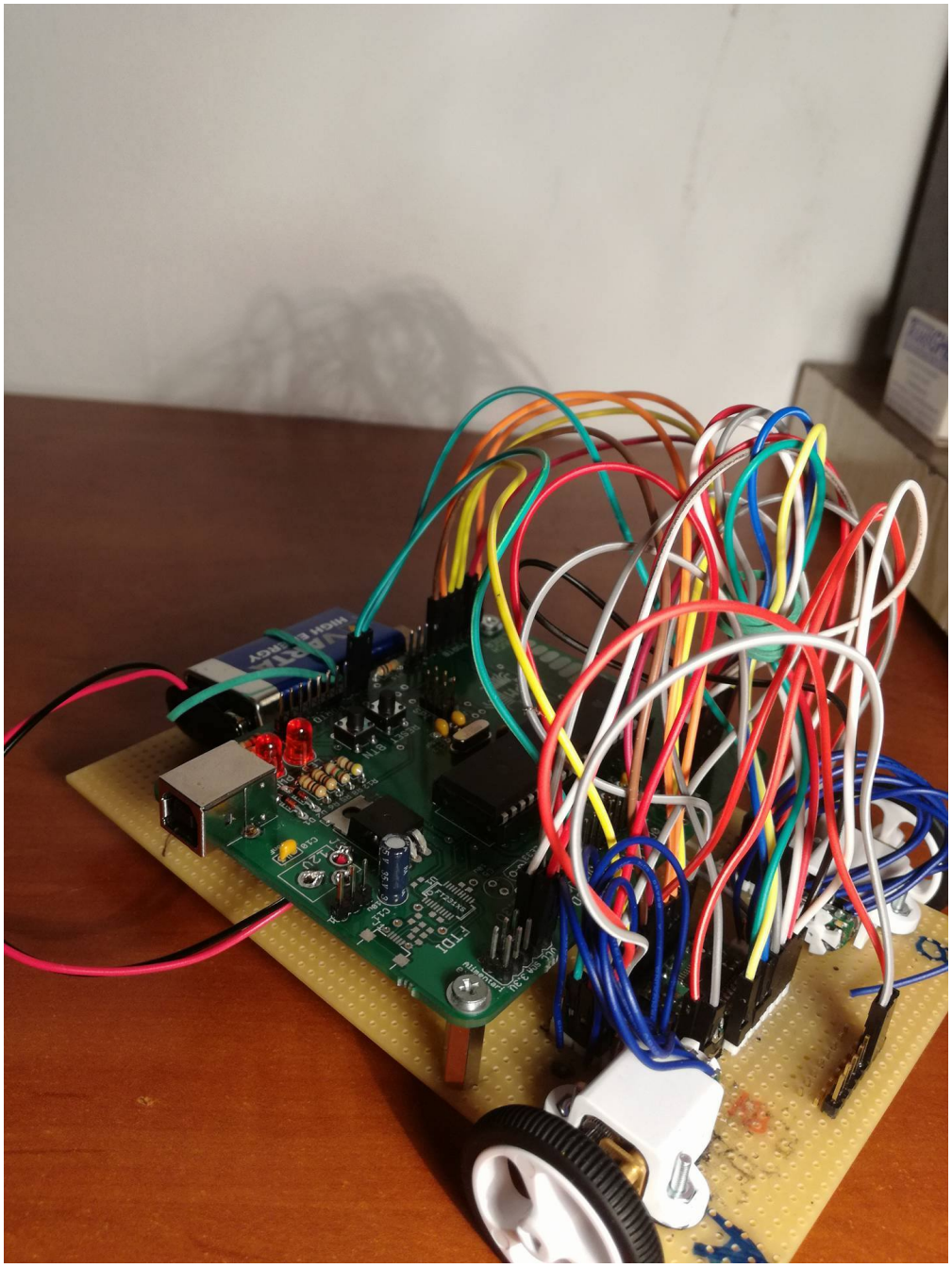
- 18.05.17 - Am terminat partea de hard

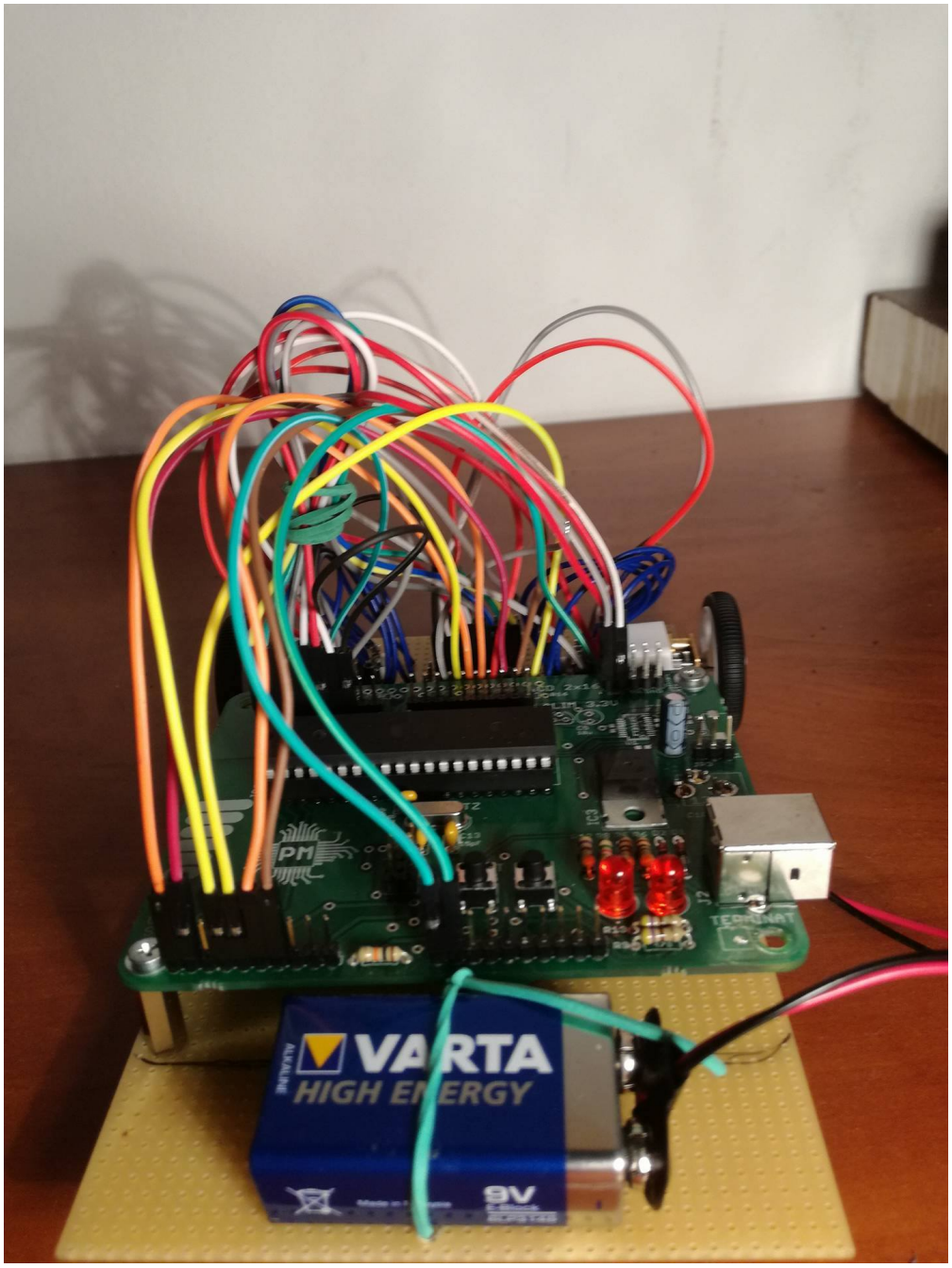


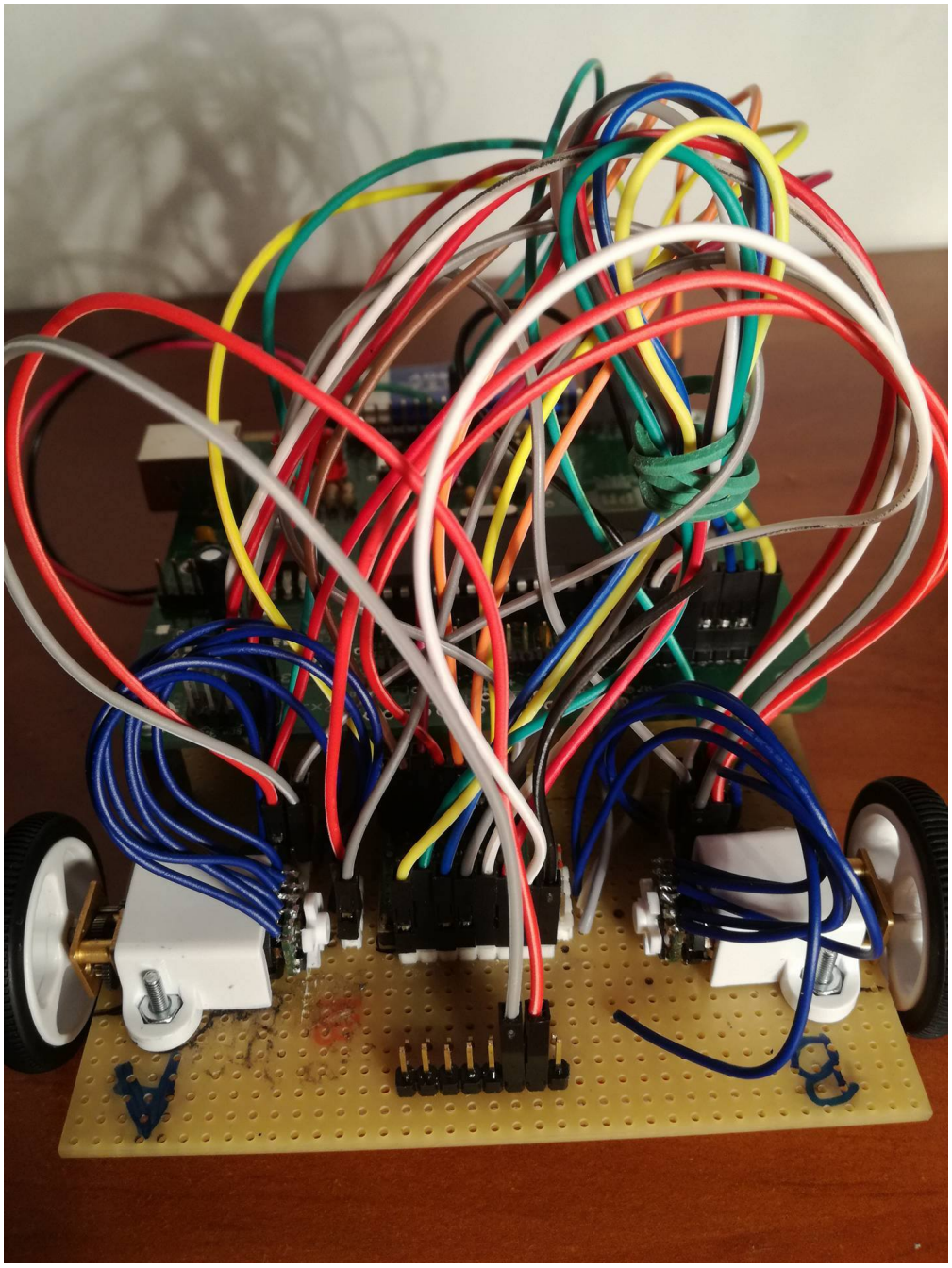



VARTA
HIGH ENERGY
FTDI
TERMINAT


RESET
BTN
FT231XS
FTDI
Alimentare




VARTA
HIGH ENERGY
9V



Bibliografie/Resurse

- Documentația în format PDF

Resurse Software

- Exemple cu Atmega324PA - laboratoare PM
- Tutoriale Eagle - laboratoare IC
- Biblioteci Eagle:
  - atmega8.lbr
  - rotary-encoder.lbr

Resurse Hardware

- Datasheet ATmega324
- TB6612FNG Dual Motor Driver Carrier
- Optical Encoder Pair Kit for Micro Metal Gearmotors, 5V
- 50:1 Micro Metal Gearmotor HPCB 6V with Extended Motor Shaft
- 2.1 Driving Robots Around | Control of Mobile Robots
- 2.2 Differential Drive Robots | Control of Mobile Robots
- 2.3 Odometry | Control of Mobile Robots
- 2.4 Sensors | Control of Mobile Robots
- 2.5 Behavior Based Robotics | Control of Mobile Robots
- Schema electrica ATMega324