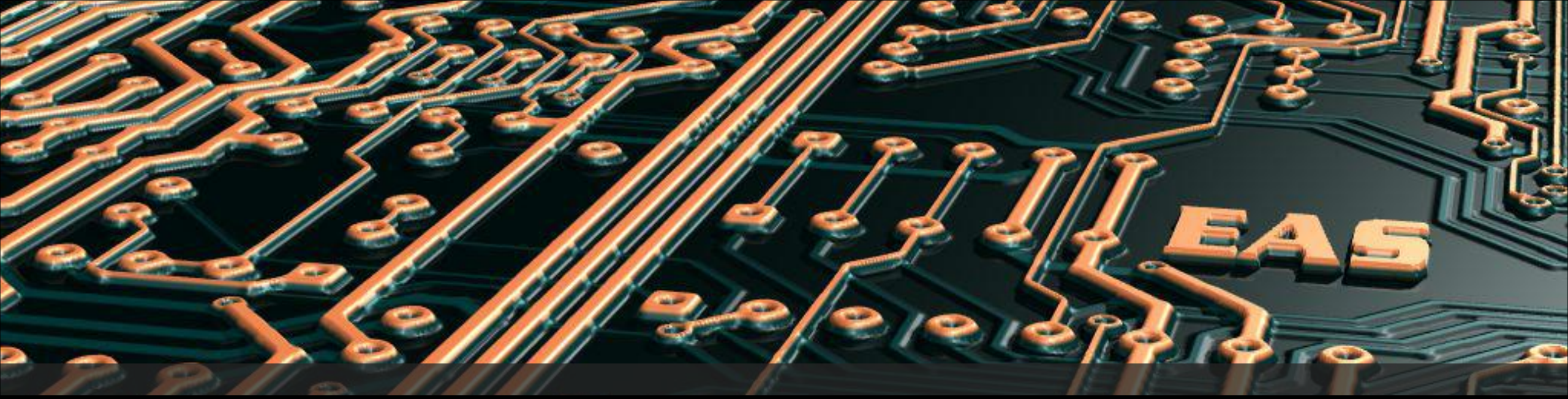

Line Follower Robot (& IR Remote)

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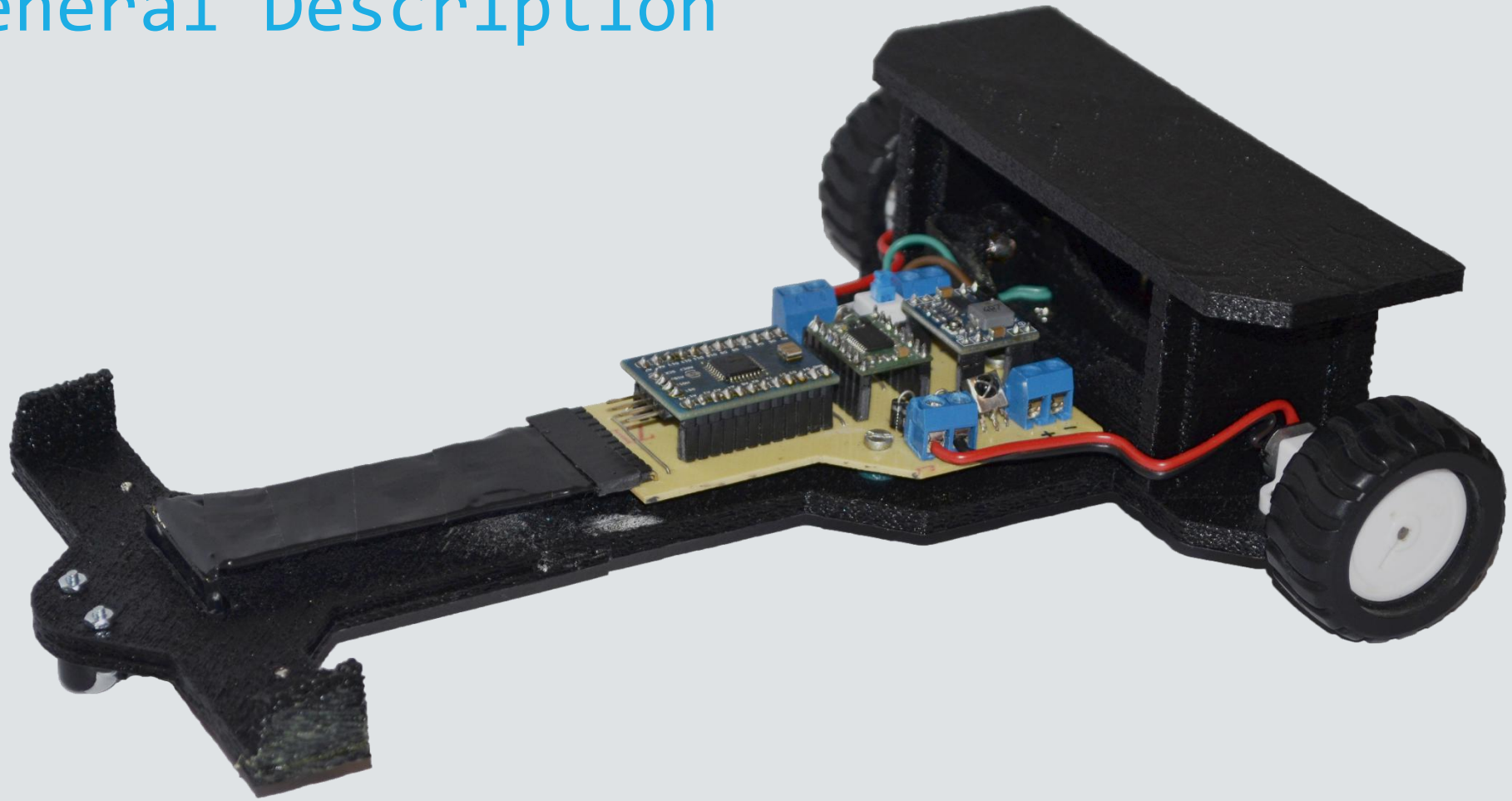
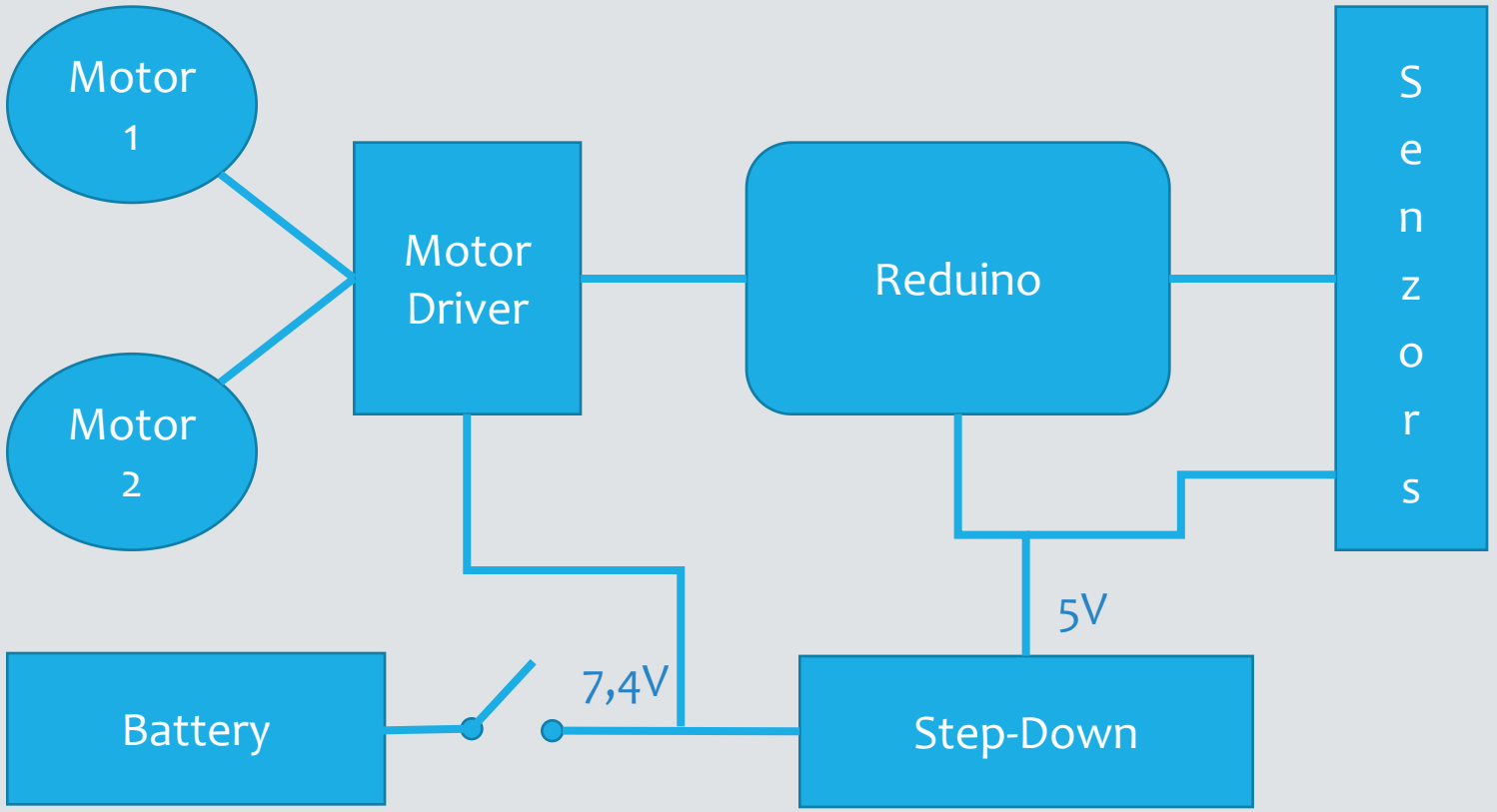
Summary

- General Description
- Hardware
  - Electrical Scheme
  - Components
  - PCB Building / Chassis Design
- Software
  - PID Algorithm
  - Algorithm
- Use cases and future development
- References

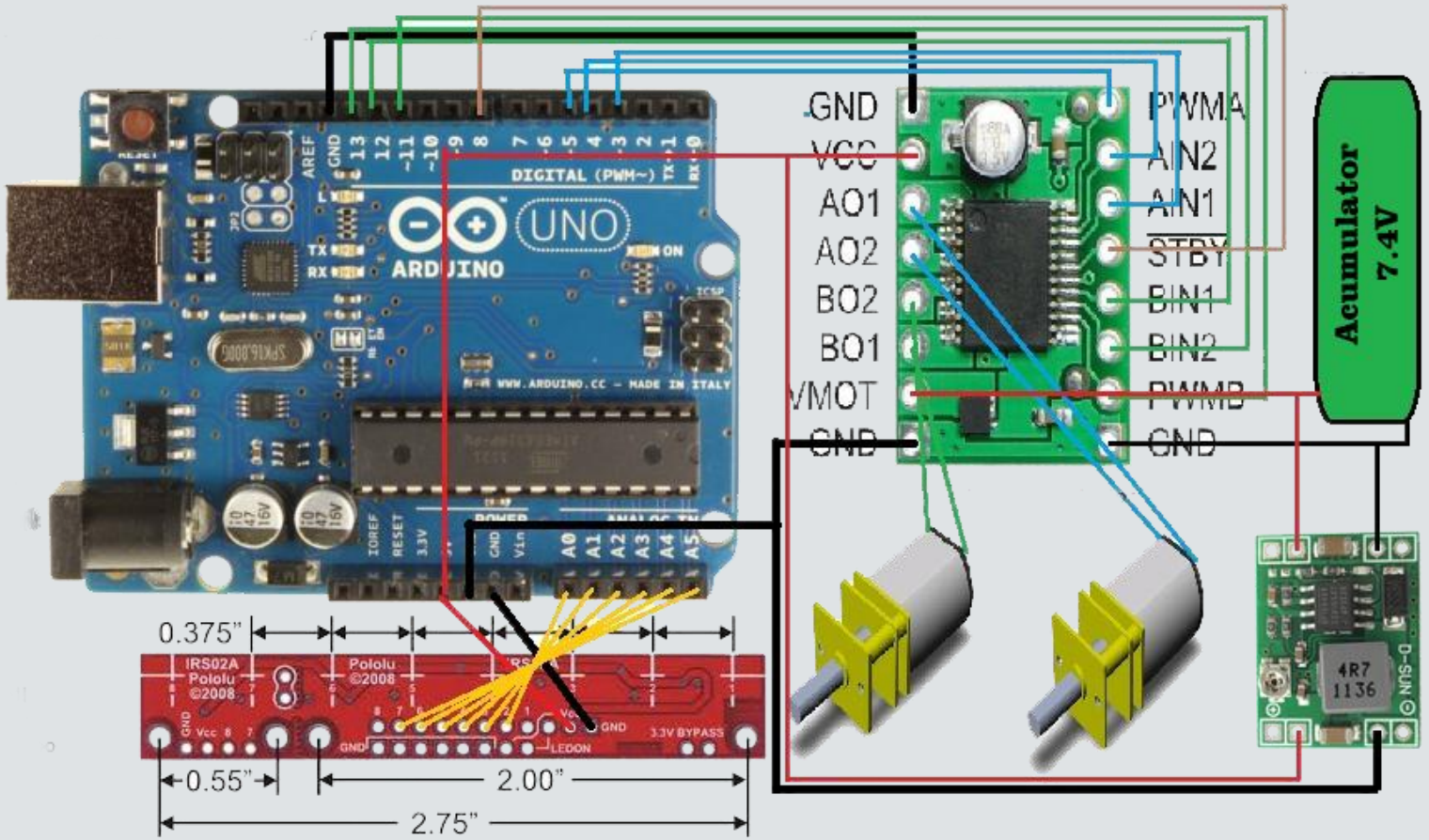
General Description



Electrical Scheme



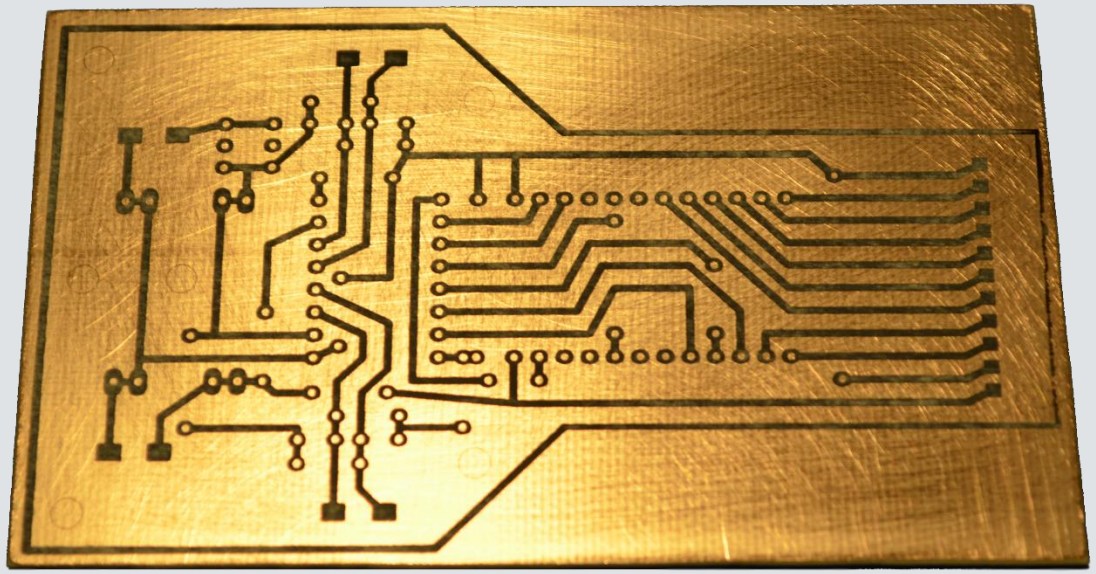
Electrical Scheme

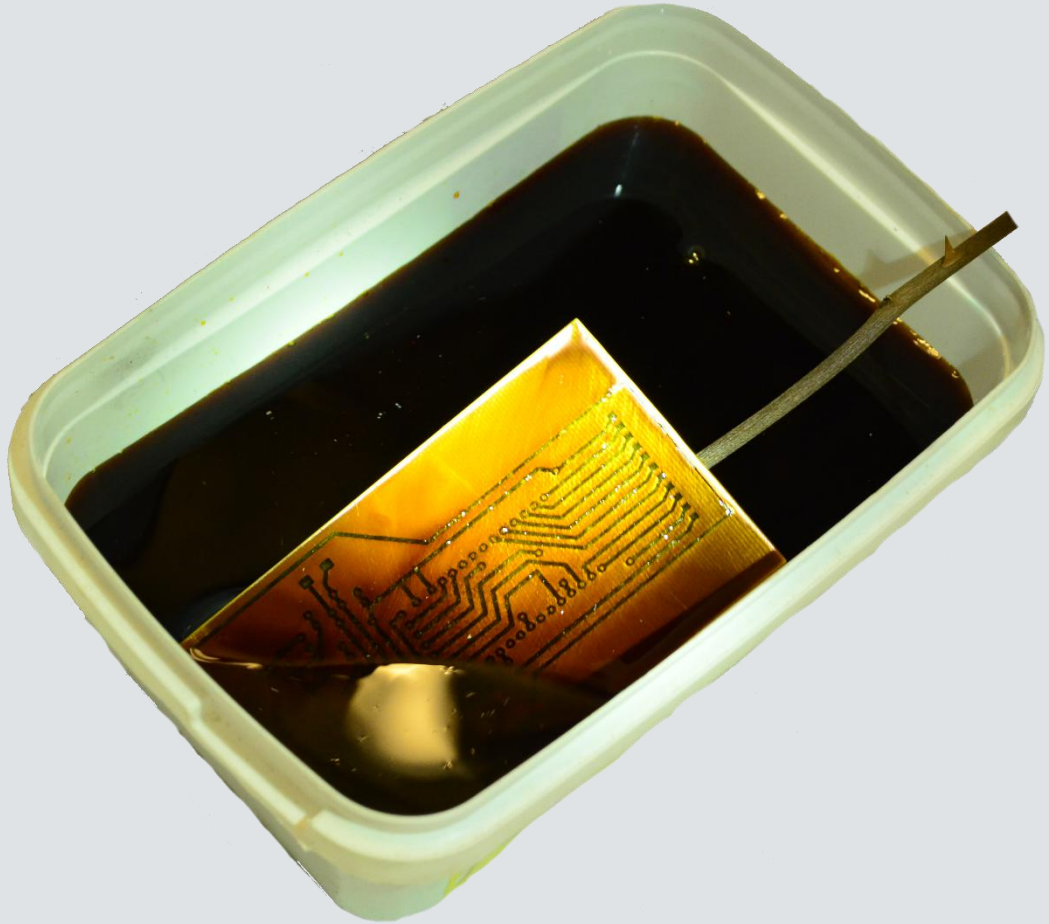


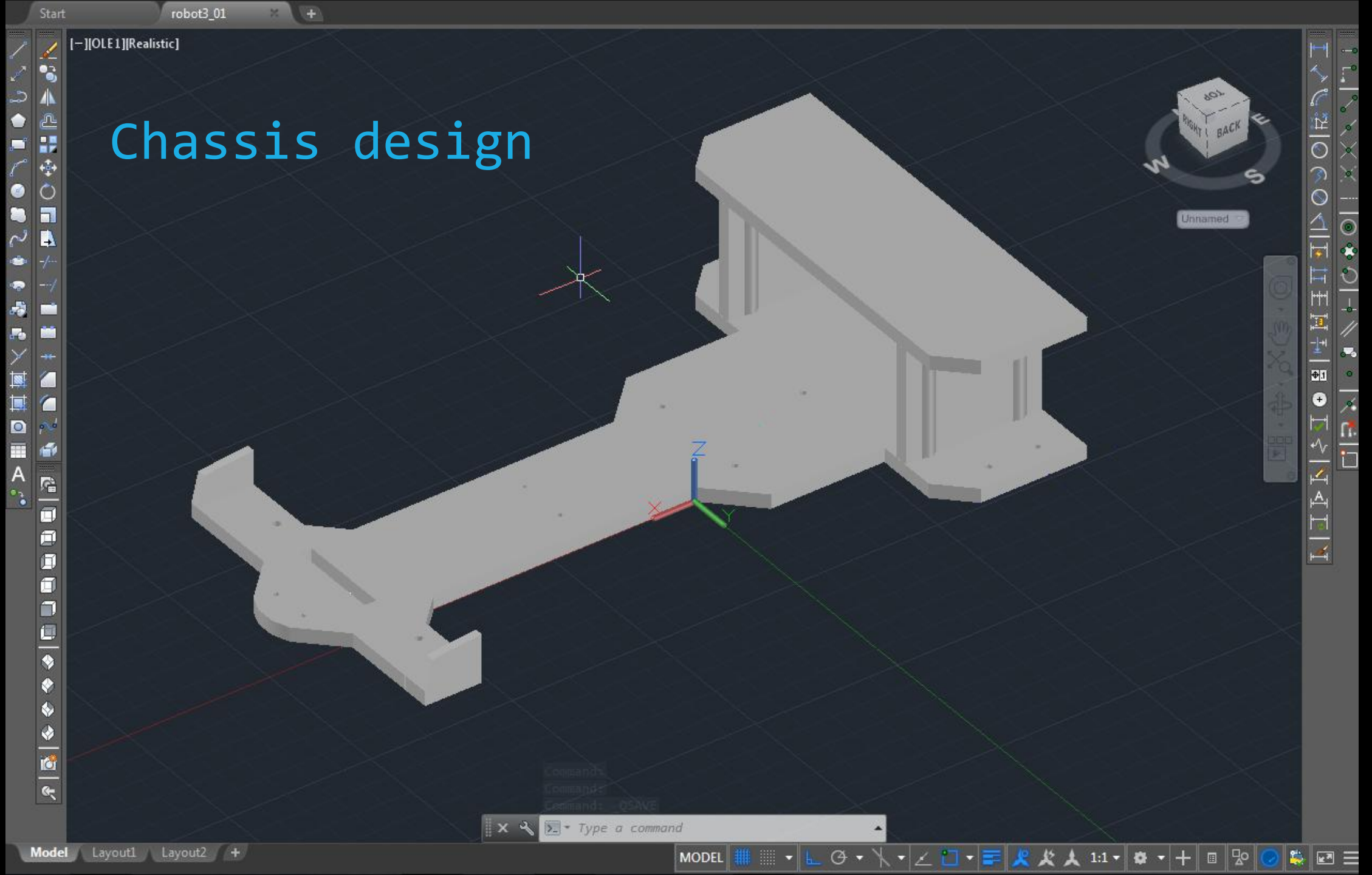
Components

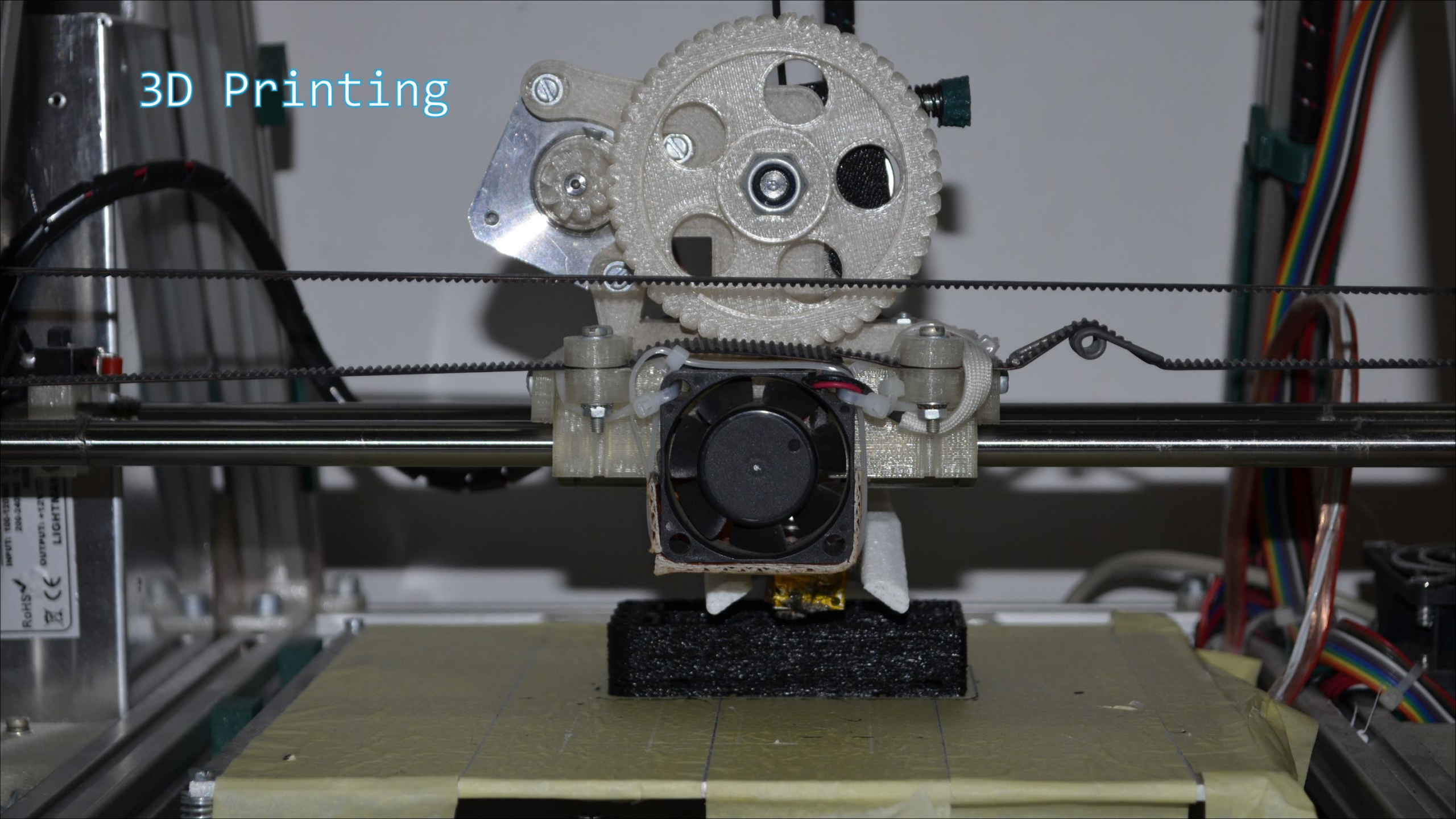
- Reduino Core
- Step-down MP1584
- Motor Driver TB6612FNG Dual 1A
- Digital line sensors QTR-8RC
- Electric Motor Micro Metal 50:1 HP
- 2 18650 Battery cells
- Ball Caster
- Other components: 1N4004 diode, LEDs, 220Ω resistors, 100nF capacitors, micro-switch, connectors

PCB Building

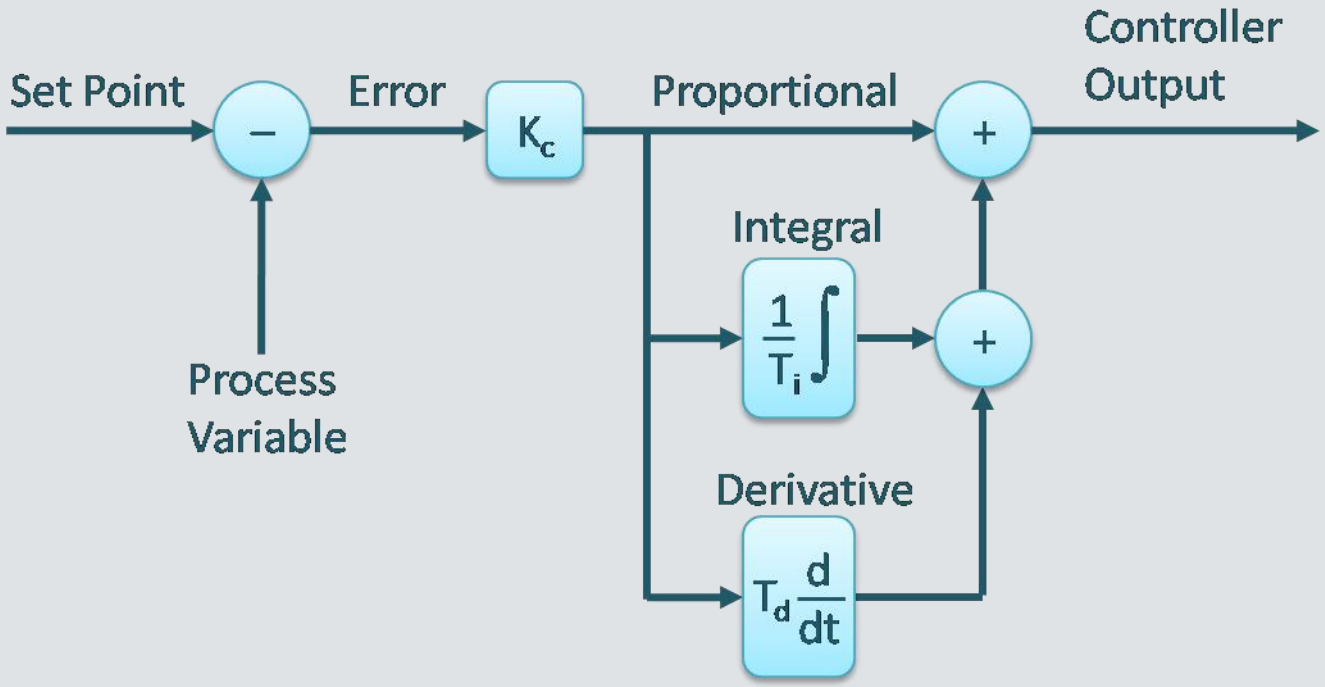


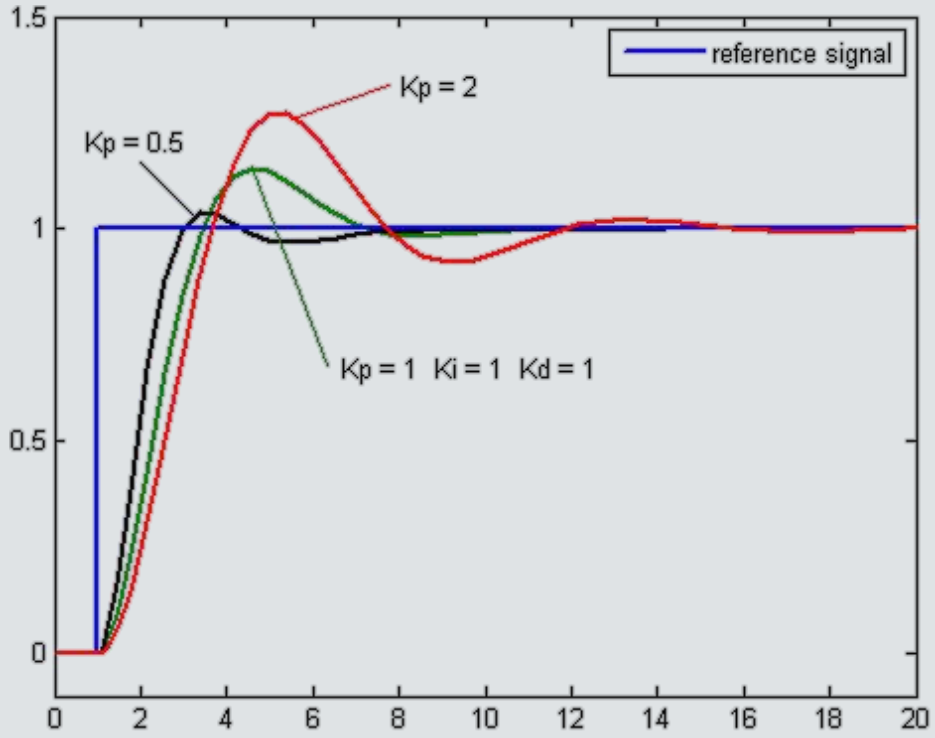



Start
robot3_01
[−][OLE1][Realistic]
Chassis design
TOP
RIGHT
BACK
Unnamed
Z
X
Y
Type a command
Model
Layout1
Layout2
MODEL
1:1


3D Printing

PID Algorithm





Algorithm

Robot_alex_bun

-- Select Board or Port --

Robot_alex_bun.ino | ReadMe.adoc

```
/*
 *  Robot Line Follower with Arduino (Reduino)
 *
 */

/* --------------INCEPUT PROGRAM------------- */

#include <QTRSensors.h>

#define STANDBY          8   /* Pin-ul de STANDBY al driverului de motoare */

#define MOTORLEFT_DIR_A  12   /* Pin-ul 1 de directie al motorului stang */
#define MOTORLEFT_DIR_B  13   /* Pin-ul 2 de directie al motorului stang */
#define MOTORLEFT_PWM    11   /* Pin-ul PWM al motorului stang */

#define MOTORRIGHT_DIR_A  3   /* Pin-ul 1 de directie al motorului drept */
#define MOTORRIGHT_DIR_B  4   /* Pin-ul 1 de directie al motorului drept */
#define MOTORRIGHT_PWM    5   /* Pin-ul PWM al motorului drept */

#define NUM_SENSORS       8   /* Numarul de senzori utilizati */

/*
 * Cantitatea de citiri analogice pentru senzori
 */
#define TIMEOUT 2500
#define EMITTER_PIN   9   /* Pin-ul emitator al senzorului QTR */

/* ---------------------------------------- */

/*
 * Structura senzorilor
 * Senzorii sunt conectati in pinii analogici A0-A7 sau pinii digitali 14-21
 */
QTRSensorsRC qtrrc((unsigned char[]) {  14, 15, 16, 17, 18, 19, 20, 21} , NUM_SENSORS, TIMEOUT, EMITTER_PIN);
```

Use cases and future development

- Automotive – autonomous driving

- Industry – warehouse robots


Q&A

References

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