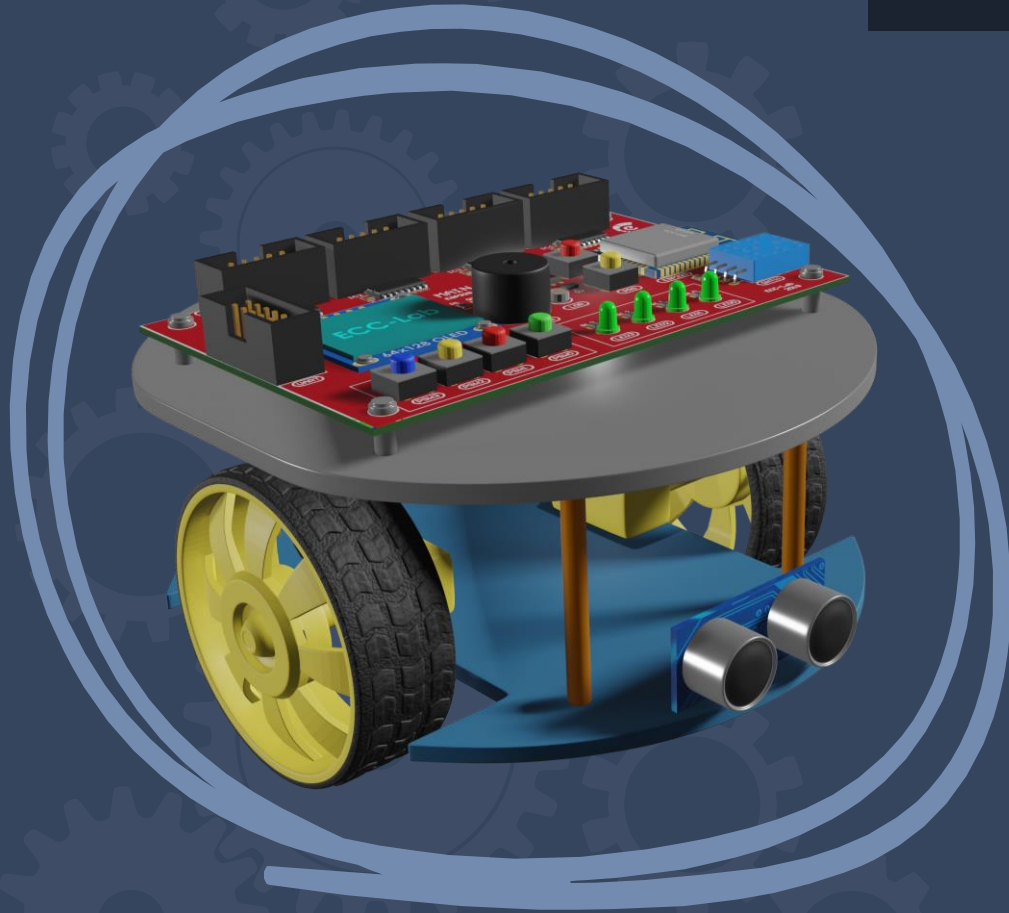


Robot Control Learning Platform for Automation Engineers



01

Overview

02

Robot Microcontroller Design

03

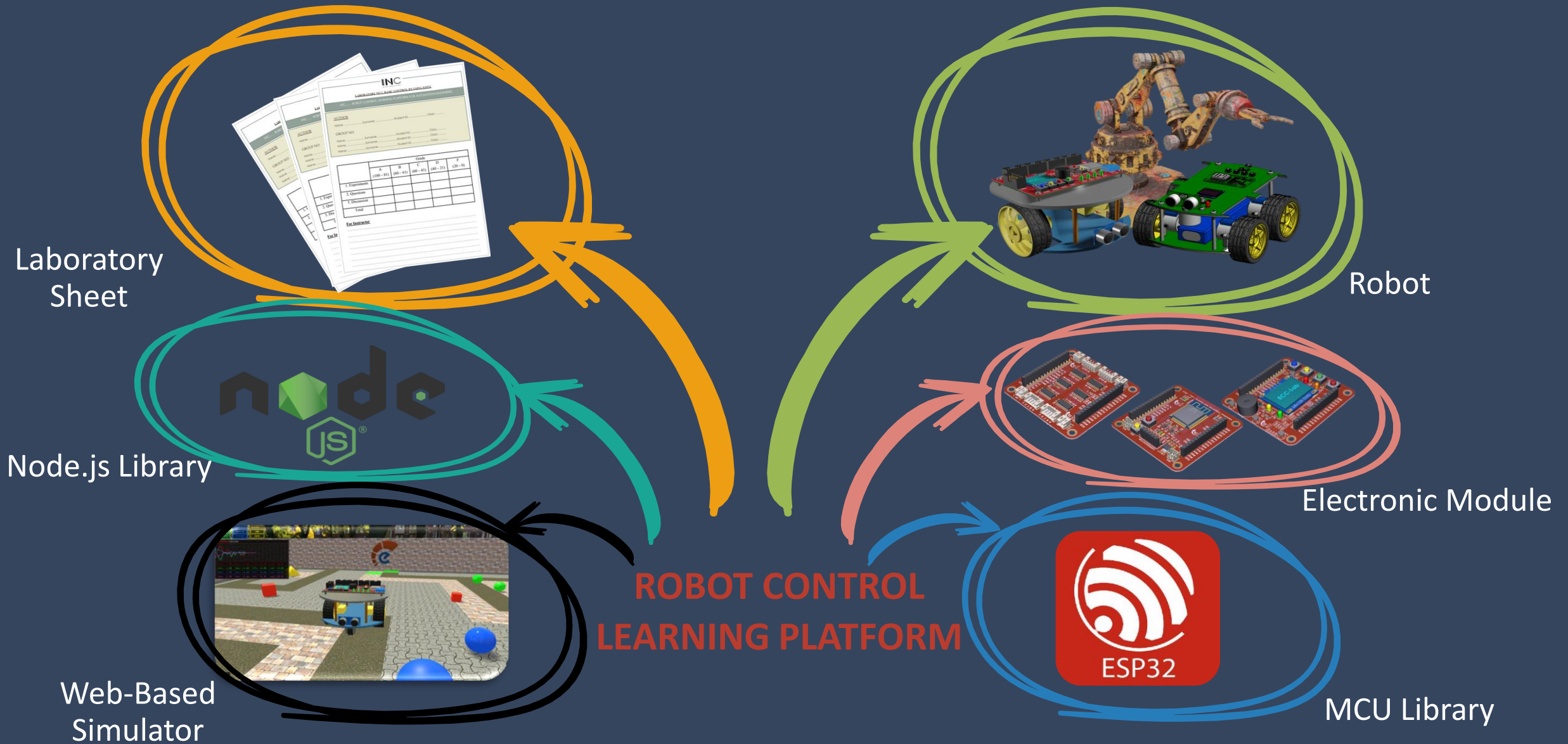
Laboratory

01

Overview

Overview

4



Overview

5

Laboratories

Robot Design

Library Design (COM + MCU)

Version 1

Design first draft

Design Robot

Research + Design function

Version 2

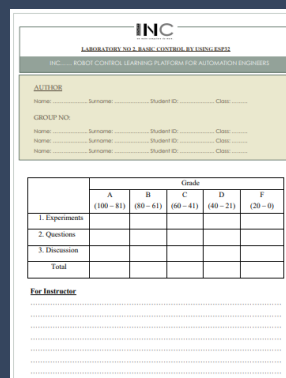


Form + Content

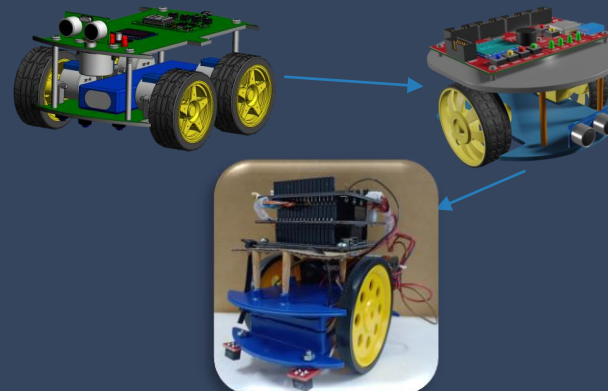
- Hardware Design
- Circuit Design
- Testing

- Basic Control
- Wi-Fi

Version 3



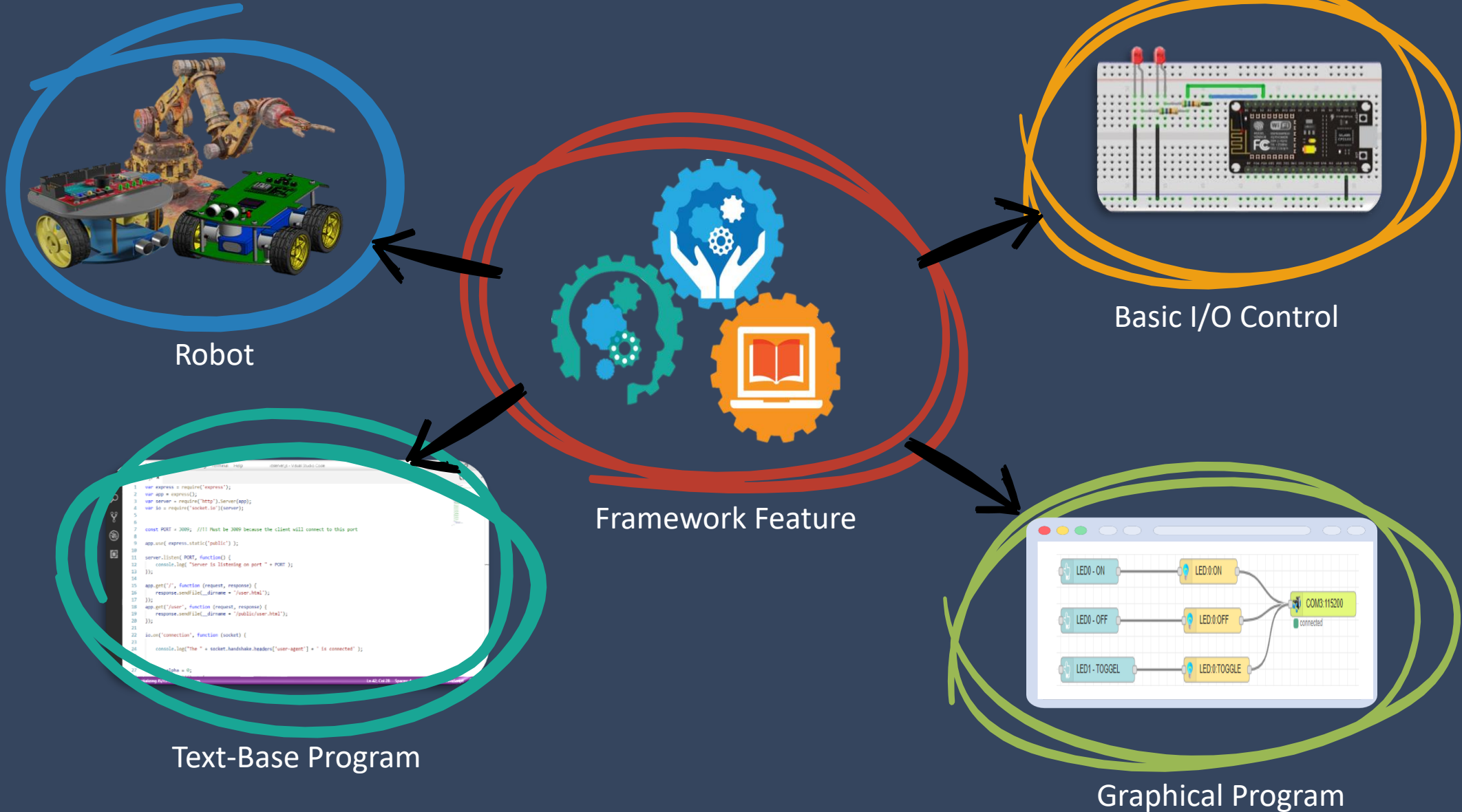
Complete
Laboratory Sheets



- Simulation
- Node.js

Overview

6

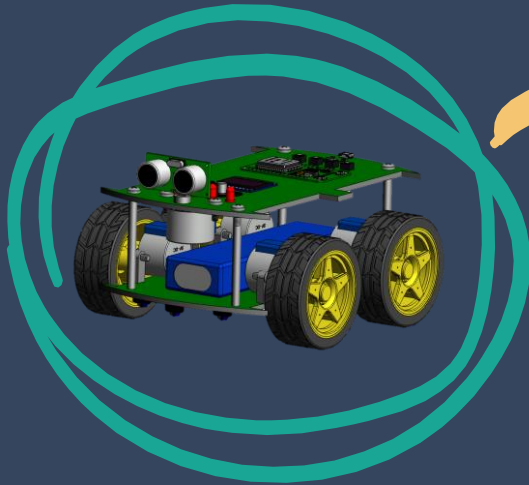


02

Robot Microcontroller Design

Robot Design

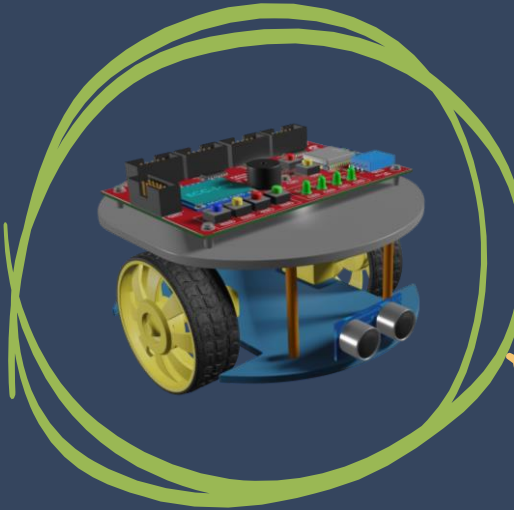
8



Design 1

Disadvantages

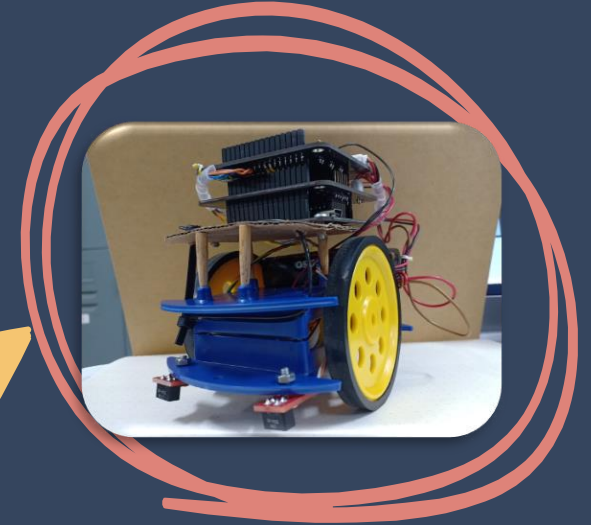
- Too big
- Fixed kind of robot
- Battery is too big and too much current
- Use a lot of motor
- Have specific function



Design 2

Disadvantages

- Not flexible to work
- There are still specific function



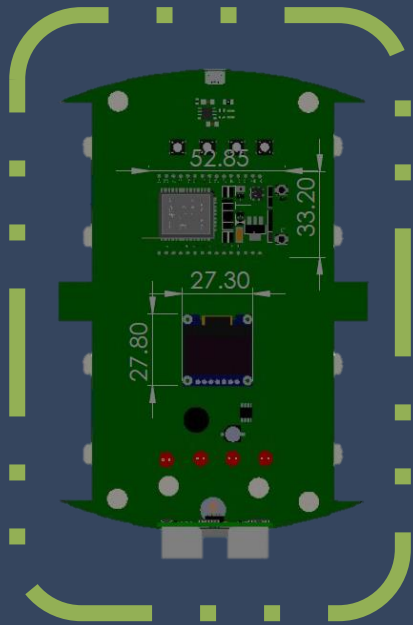
Design 3

Advantages

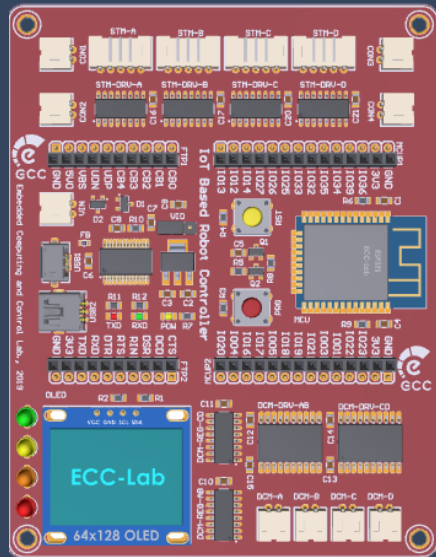
- Any robot can be use
- Microcontroller board will support all type of robot

Microcontroller Design

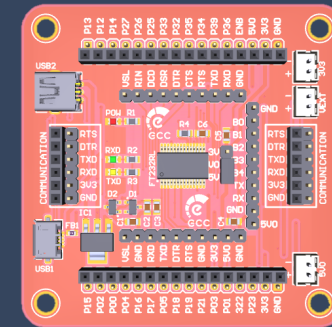
9



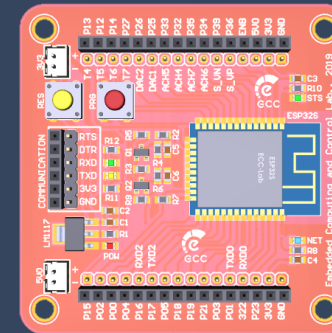
PCB Design
Version 1



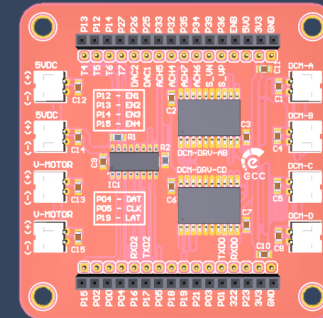
PCB Design
Version 2



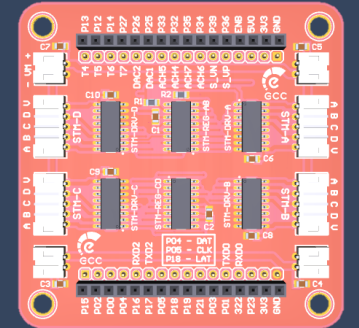
FT232



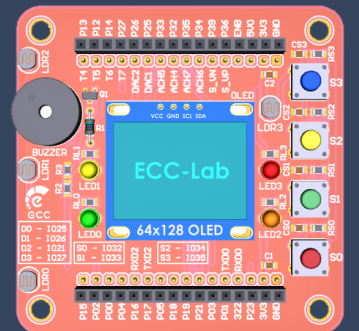
MCU ESP32



DC Driver



ST Driver



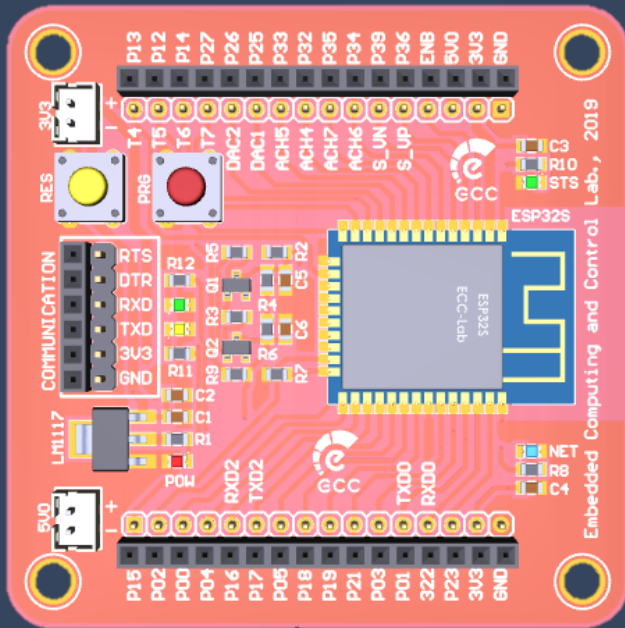
Panel

PCB Design
Version 3



MCU ESP32

10



WIFI

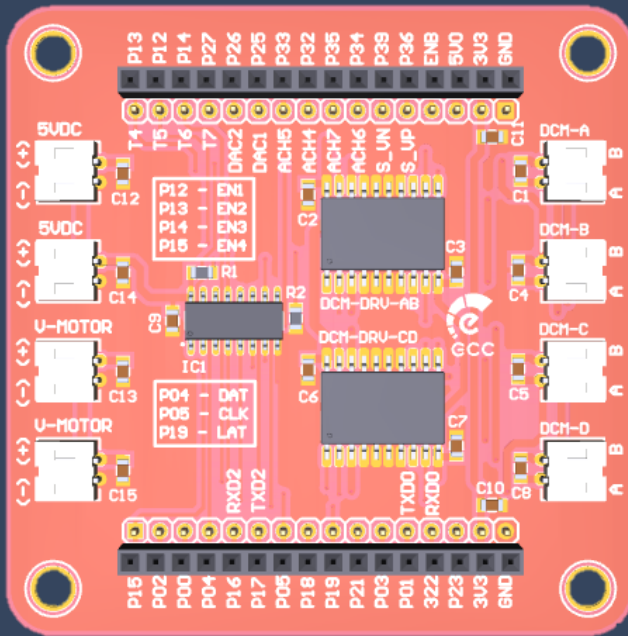
Bluetooth

LED indicator
(Status green, Internet
connection blue)



Full Bridge 4 channels DC Motor Driver

11



L293D

Pulse-Width
Modulation (PWM)

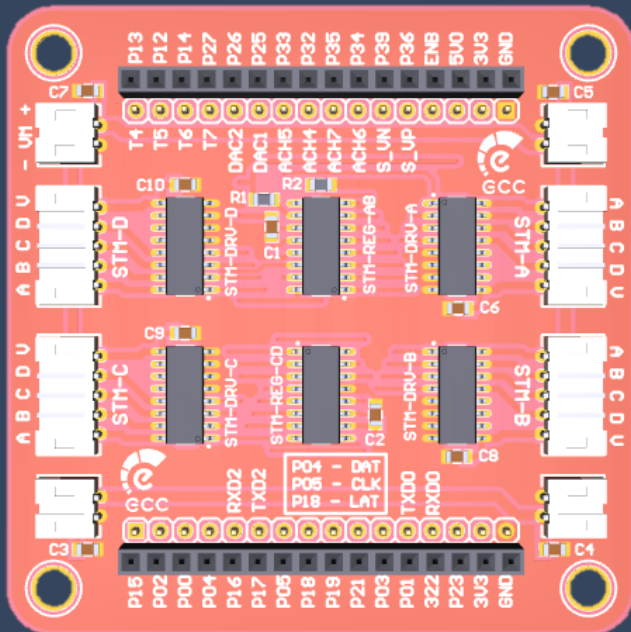
Voltage range
4.5V – 36V

Current
600 mA/channel



4 Channels Stepper Motor Driver

12



Current
350 mA/channel

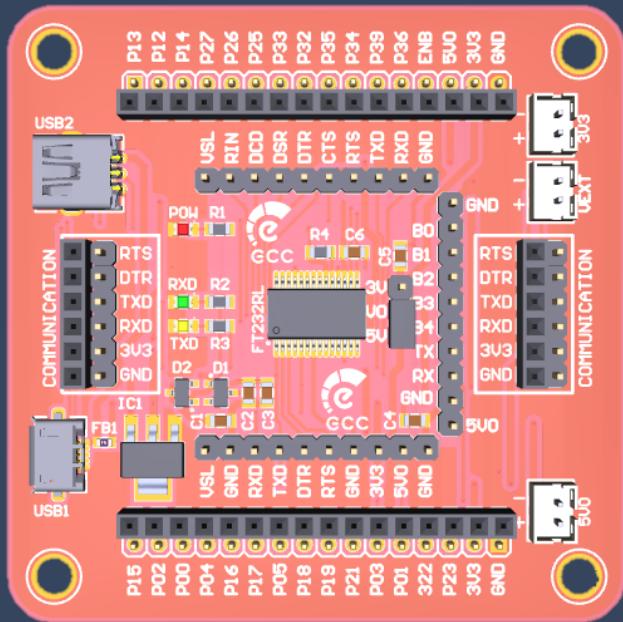
Bidirectional Stepper
Motor Drive

Voltage range
3.5V – 55V



USB to serial adapter converter

13



Build-in
power supply

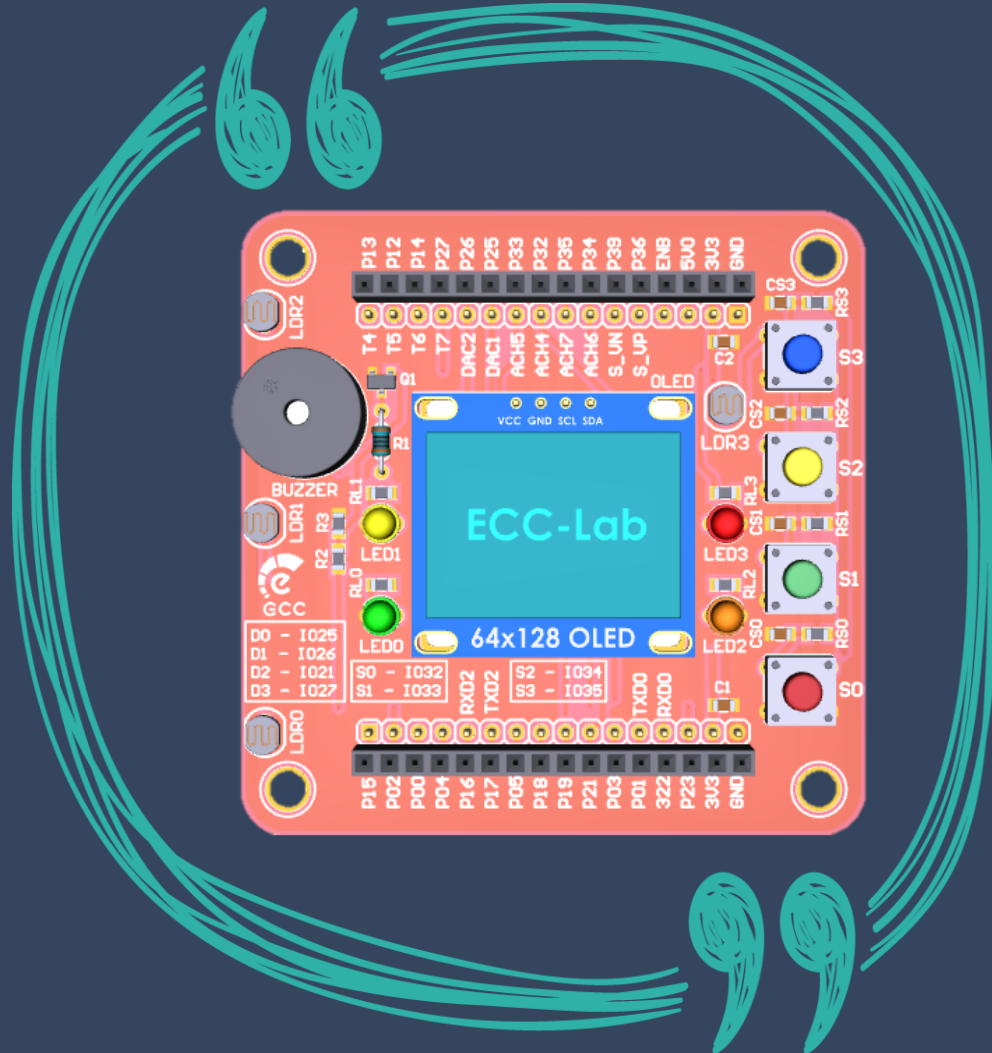
LED indicator

Full speed USB 2.0



Front Panel (User Interface)

14



Buzzer

LCD

LED

Switch



03 Laboratory

