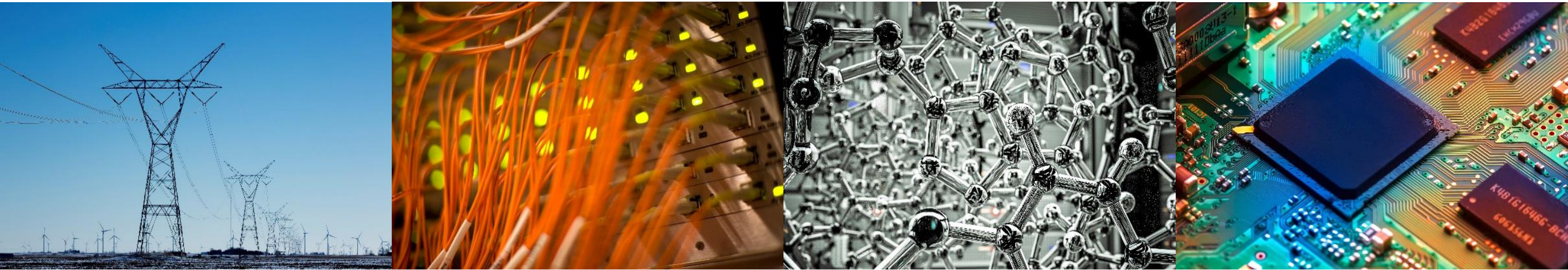# WIFI MOUSR

Isabel Ugedo, Marc Abraldes and Nick Thoele

ECE 445 Project Presentation
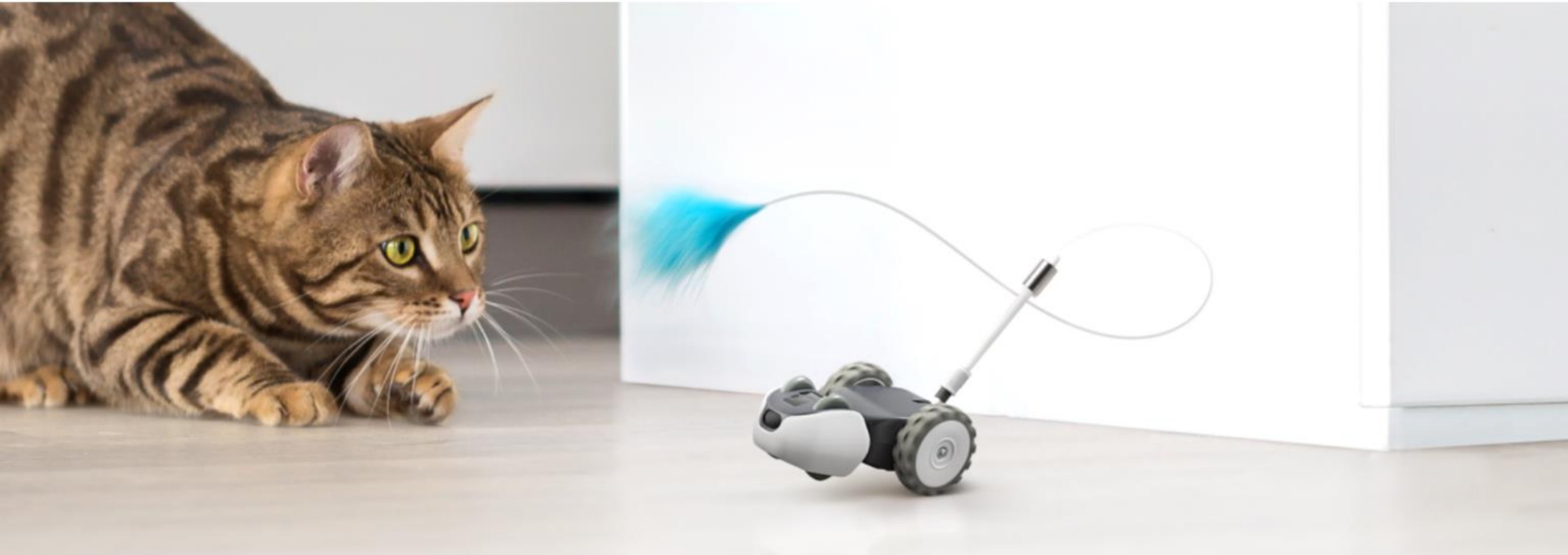
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**COLLEGE OF ENGINEERING**

Introduction

Introduction

- Petronic's "Mousr" is an automatic/phone controlled cat toy.
- It currently connects to the phone via Bluetooth, which has significant range and data transfer limitations.
- The aim of our project is to develop the product on a different microcontroller, which along with a new App allows for WiFi connection.
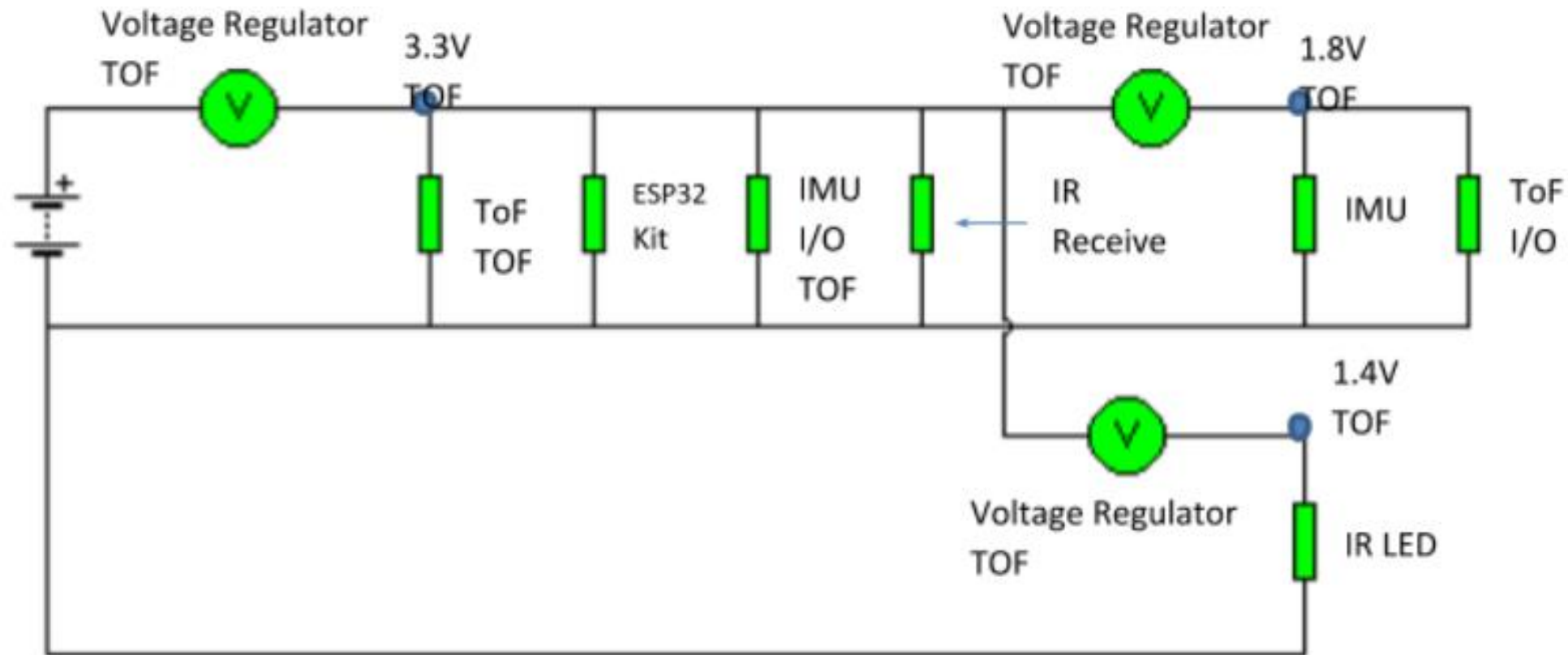
Objectives

- Create App to manage Bluetooth and WiFi communication with Mousr (Android)

- Integrate sensors with ESP32 microcontroller and read output data

- Recreate UART connection with engines

- Design LED/Pushbutton circuit to change and display power state and battery level

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Block Diagram
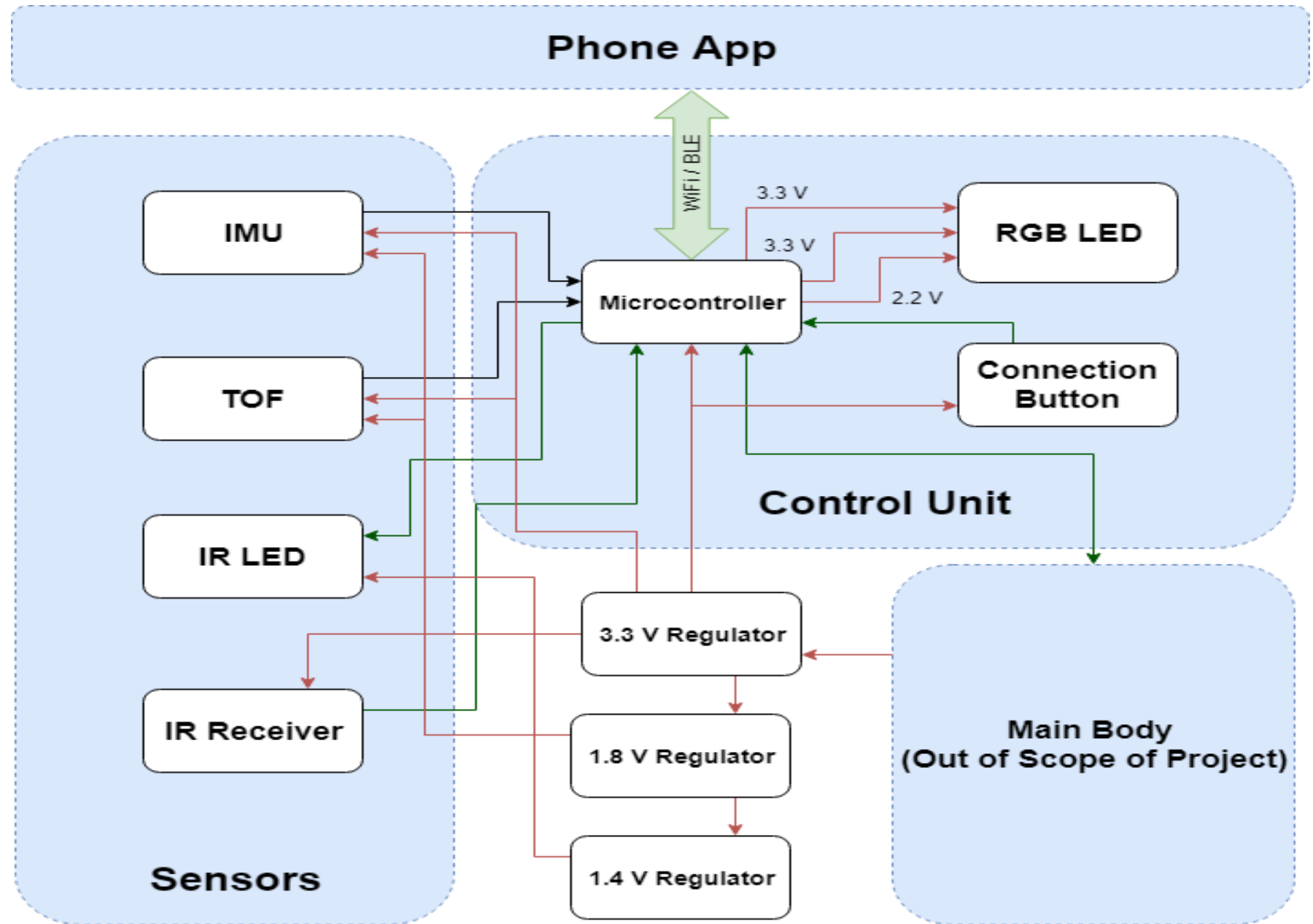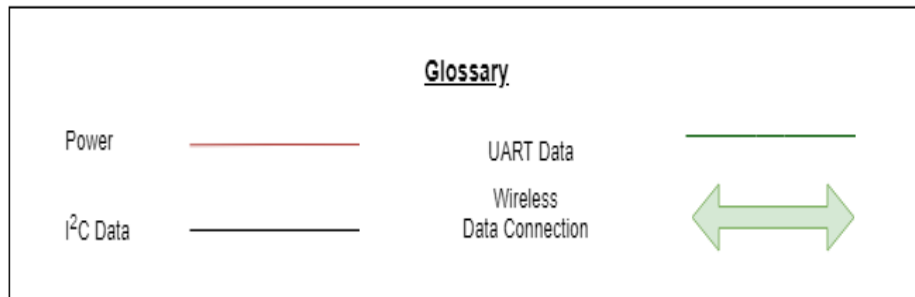
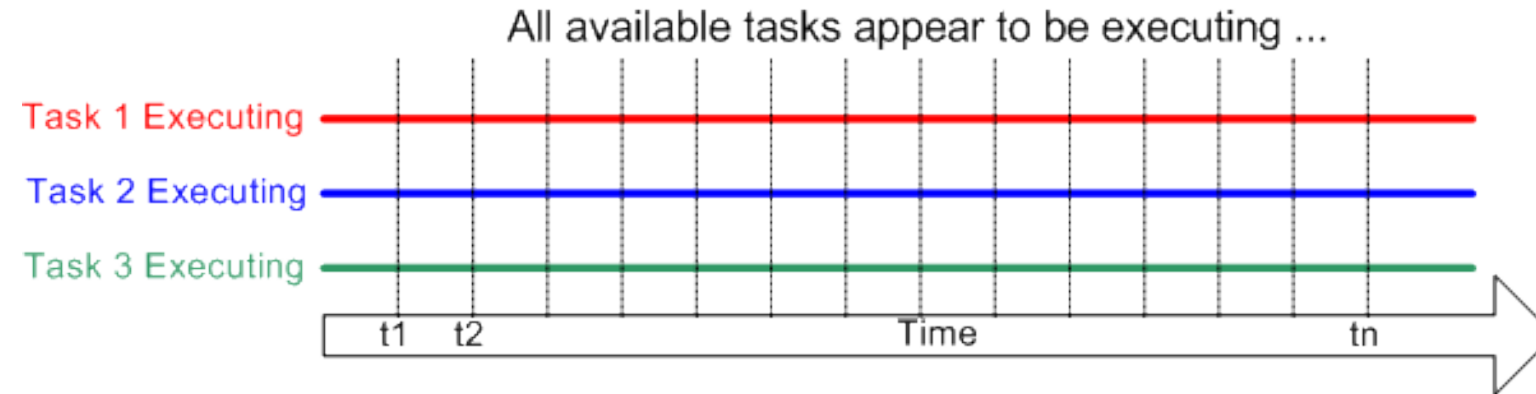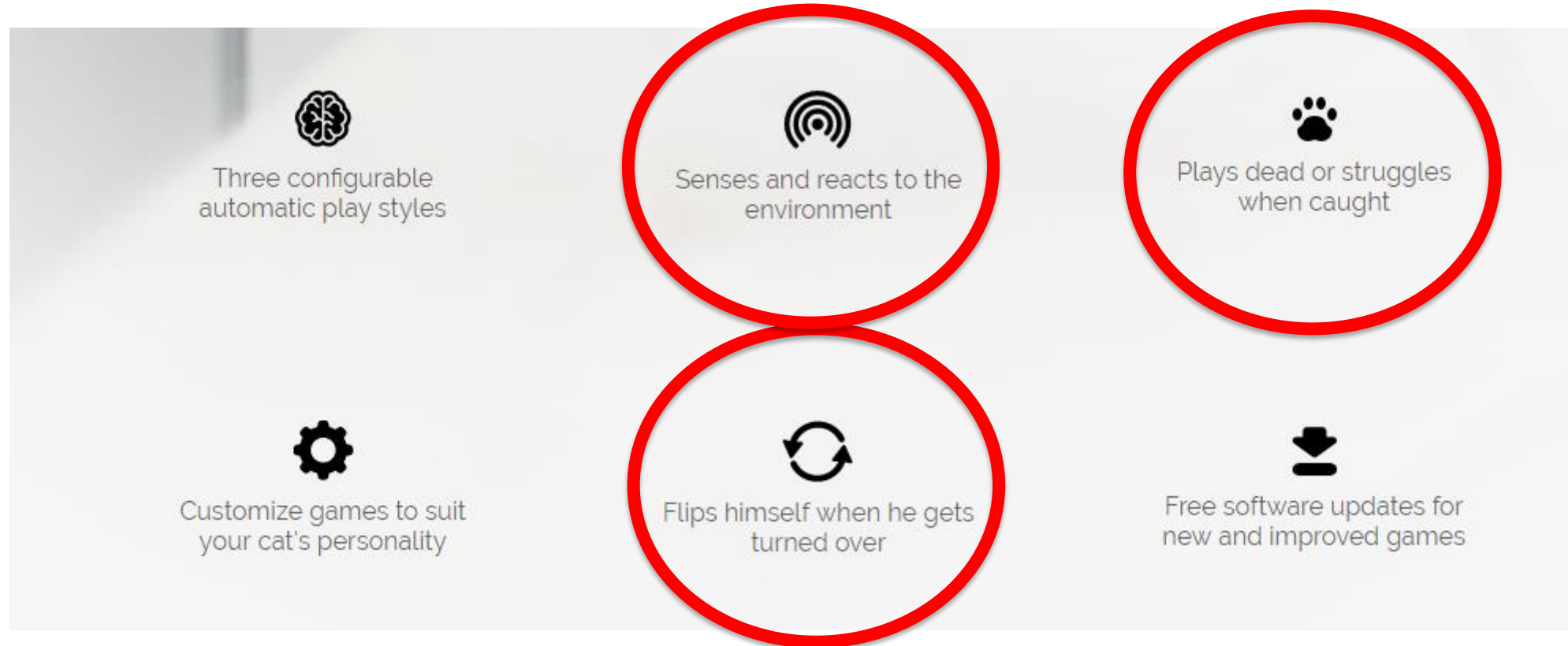# Power Circuit

Power Circuit Schematics

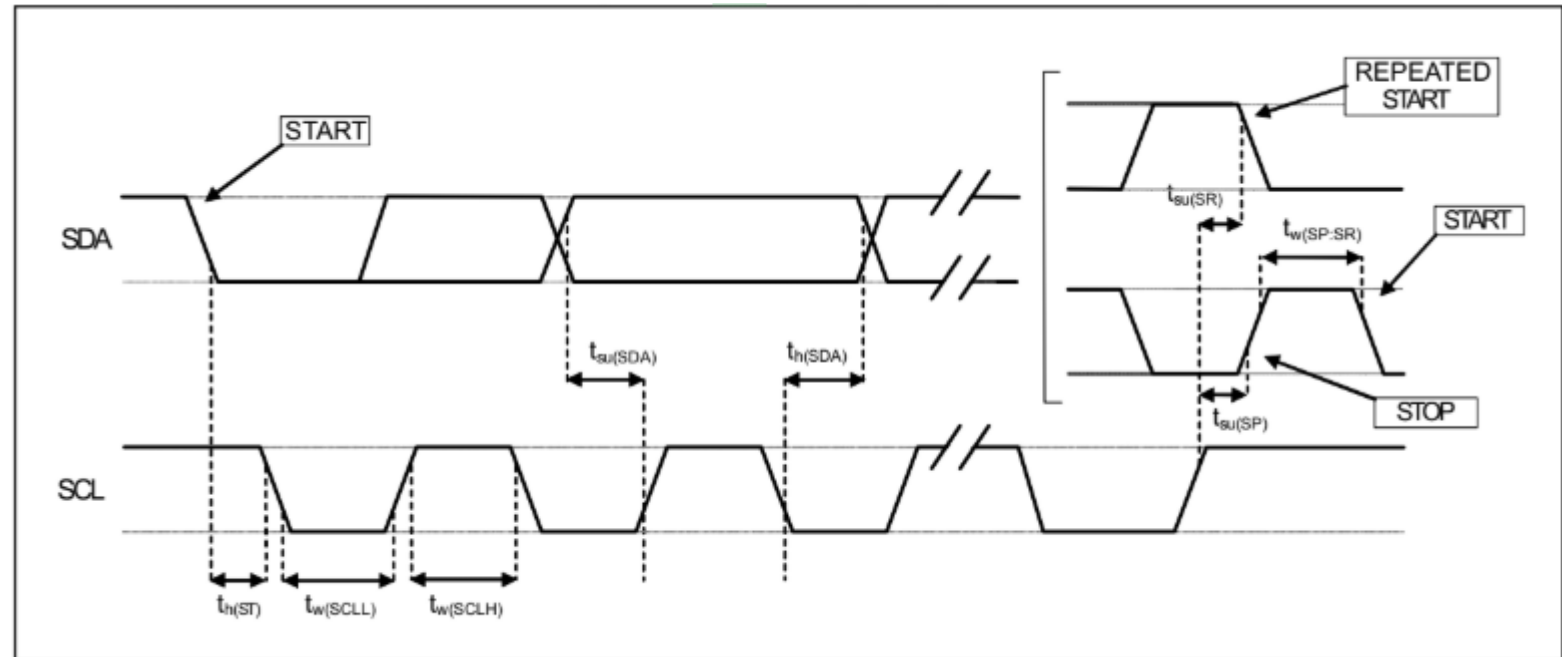# ESP 32

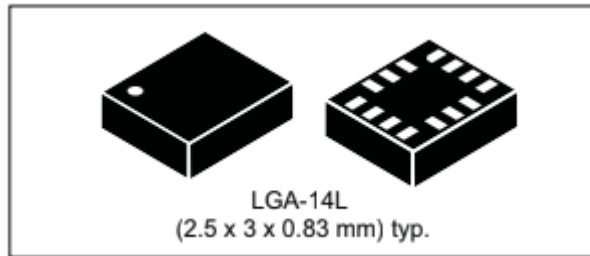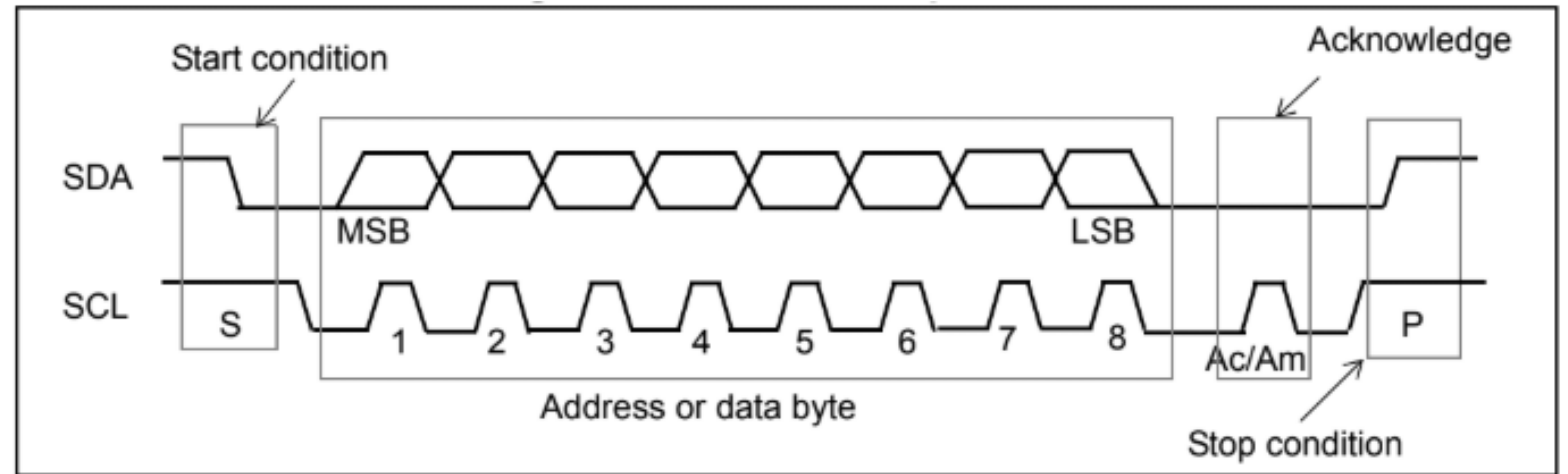ESP32 series [2]

ESP32 Wrover kit [2]

FreeRTOS

Sensors

Mousr functionality [1]

Sensors – IMU

LGA-14L
(2.5 x 3 x 0.83 mm) typ.
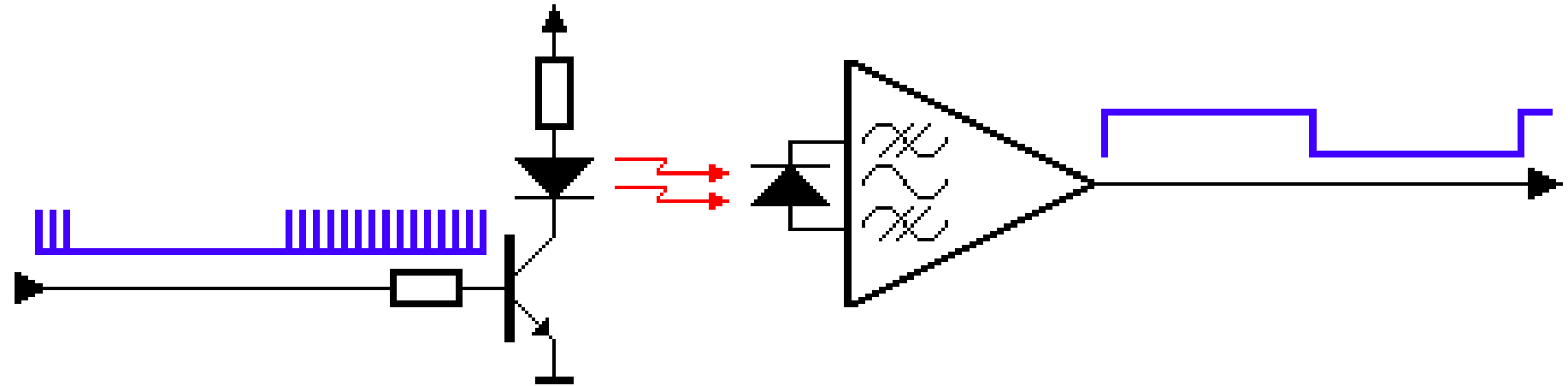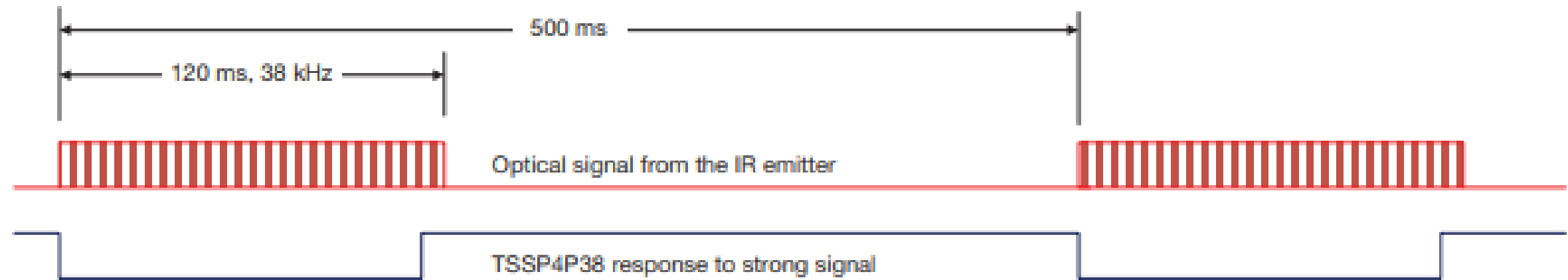
I2C Protocol for IMU [3]

Sensors – TOF
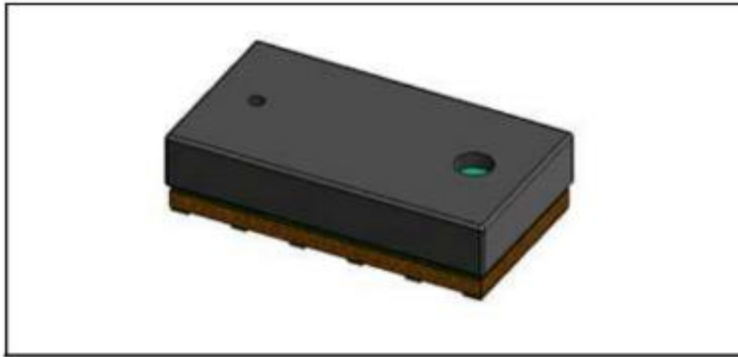
I2C Protocol for TOF [3]

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Sensors – IR circuit

Presence detection circuit [4]

Sensors – IR circuit

Presence detection circuit [4]

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PCB Design

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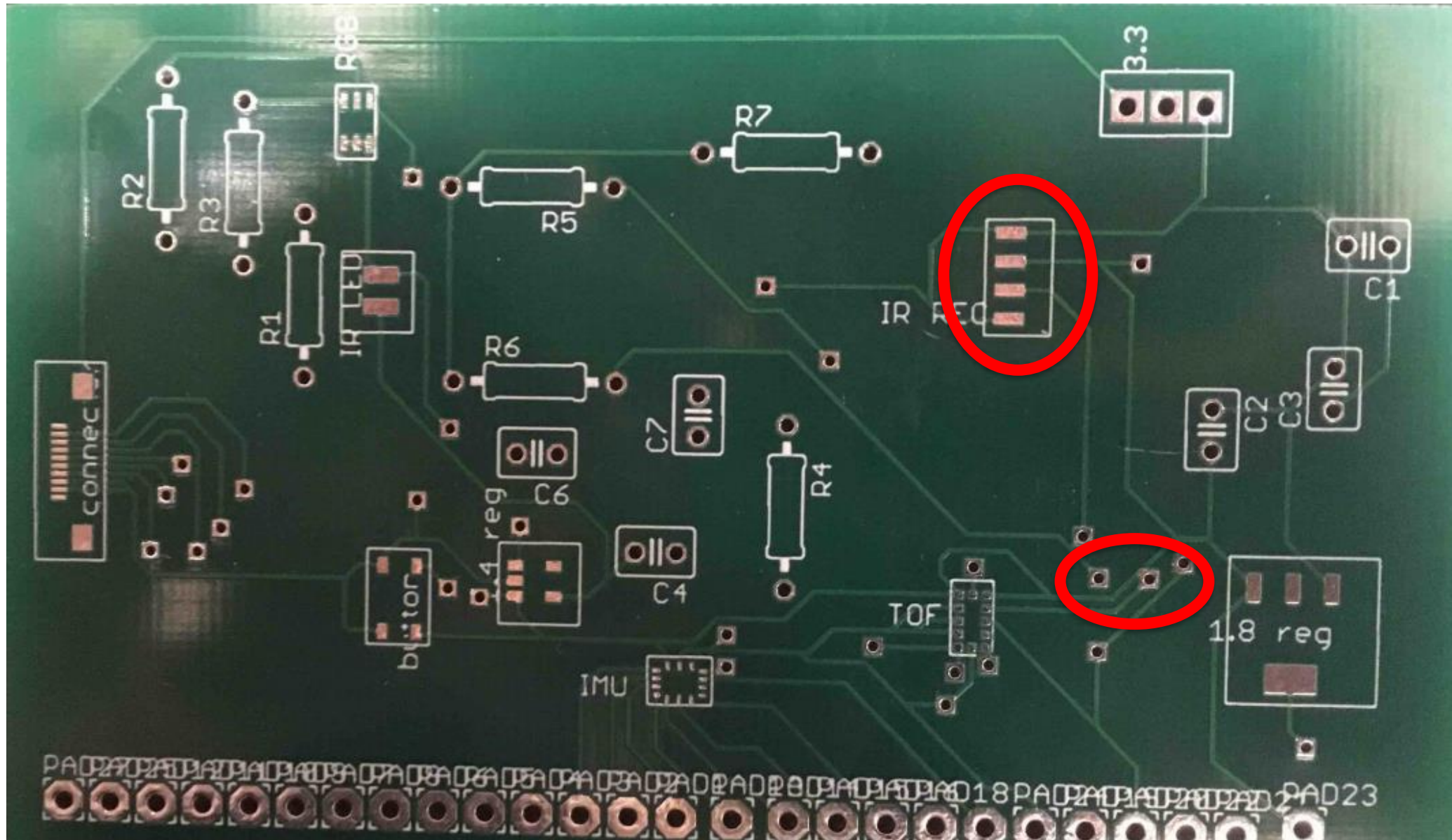
PCB Design
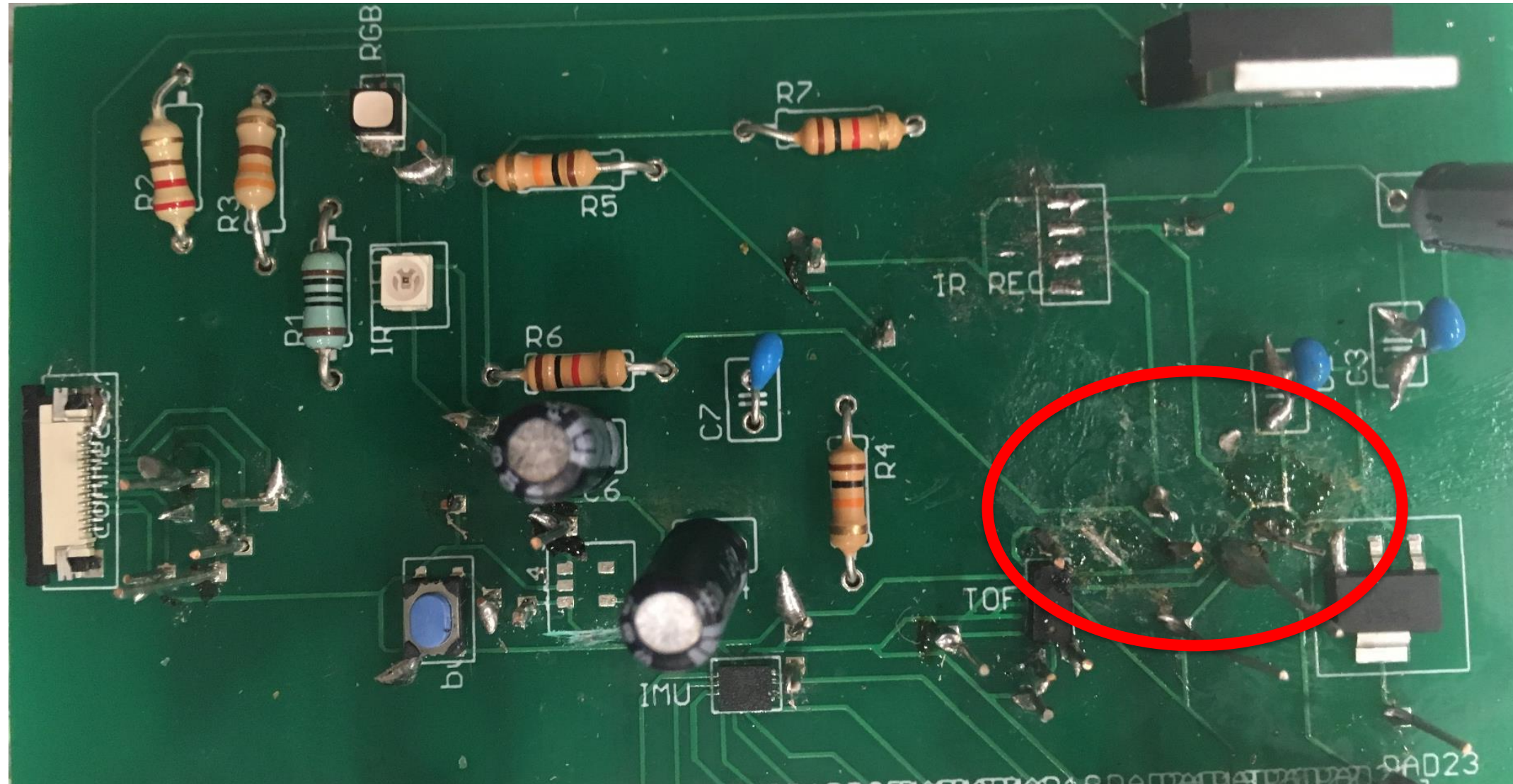
App Main Activity
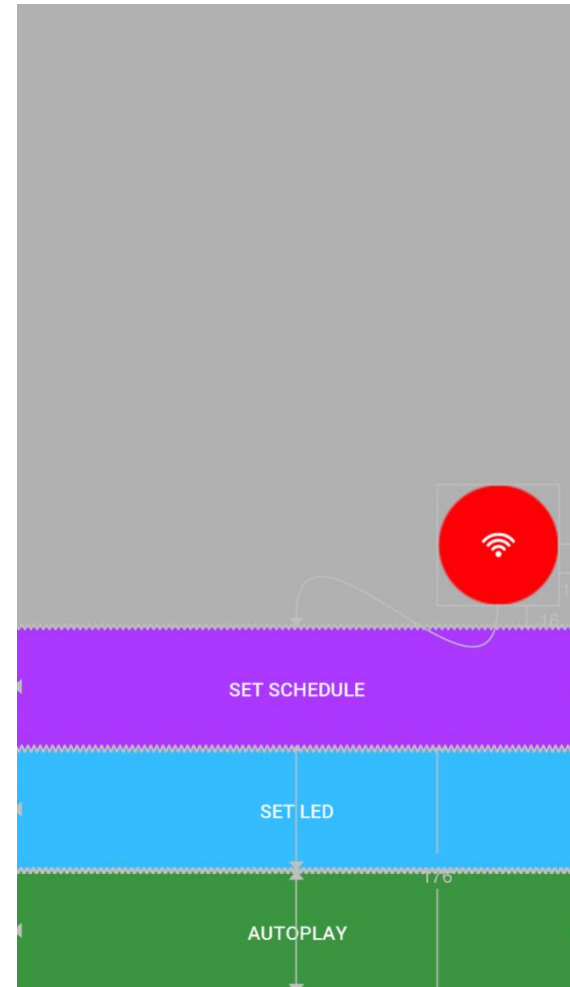

App Screen

Connection Activity

App Screen

Issues and Future Work

- There were several errors in the PCB layout which impeded sensor connections.

- ESP32 crashed when we flashed I2C drivers, and displayed an "Invalid Architecture" error.

- IR circuit proved hard to debug due to the inability to see the specific wavelengths. We weren't able to get a response from IR receiver.

Issues and Future Work

- UART reset protocol was complicated and failed when attempted.

- Bluetooth connection between Mousr and App unbonded. This inability to connect led to the inability to send data packets, including the WiFi credentials.

References

[1] Petronics Oficial Website: https://petronics.io/

[2] ESP32 Oficial Website: http://esp32.net/

[3] Wikipedia I2C page: https://es.wikipedia.org/w

[4] "Vishay's TSSP-AGC P Sensor Series for Proximity Sensing": https://pdfs.semanticscholar.org/b33d/0a973e715ca6b67689cb69ef4e8b62826f7b.pdf

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Thank you for you time

Any questions?

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