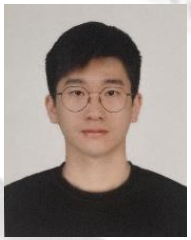
승객의 안전을 고려한 운전자 보조 시스템

Driver assistance system considering the safety of passengers

SWIP 9th, Team 3

Embedded based SW Project

Taehoon Lim*



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HYUNDAI MOTOR GROUP

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HYUNDAI MOTOR GROUP

Contents

1 Introduction

1. Introduction

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- Existance of possibility of a accident due to a power window and driver negligence
  - Need to develop driver assistance system through ultrasonic sensor, buzzer sound, and motor control

Mode 1: Smart Window

- The object is close to the window when the window is going up
  - The Buzzer ring
  - The Red LED turned on
  - The window stop

Mode 2: Driving State Warning System

- A Driver does not hold the handle for 10 seconds
  - The Buzzer ring
  - The Red LED turned on
  - The window opened

2

System Diagram

2. System Diagram

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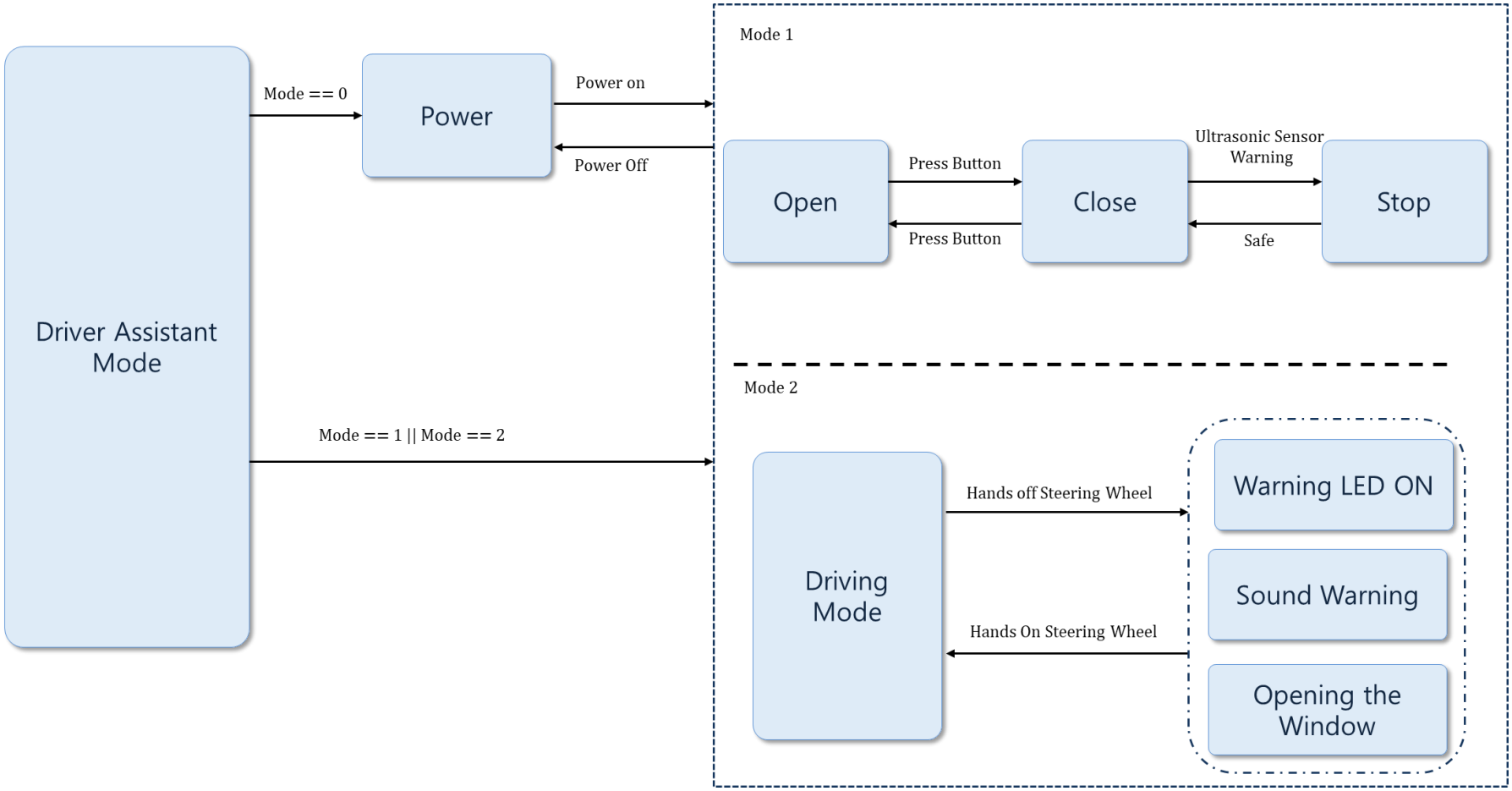
- Software Architecture



Mode 0 : Power Standby Mode
Mode 1 : Smart Window Mode
Mode 2 : Driver State Warning Mode

2. System Diagram

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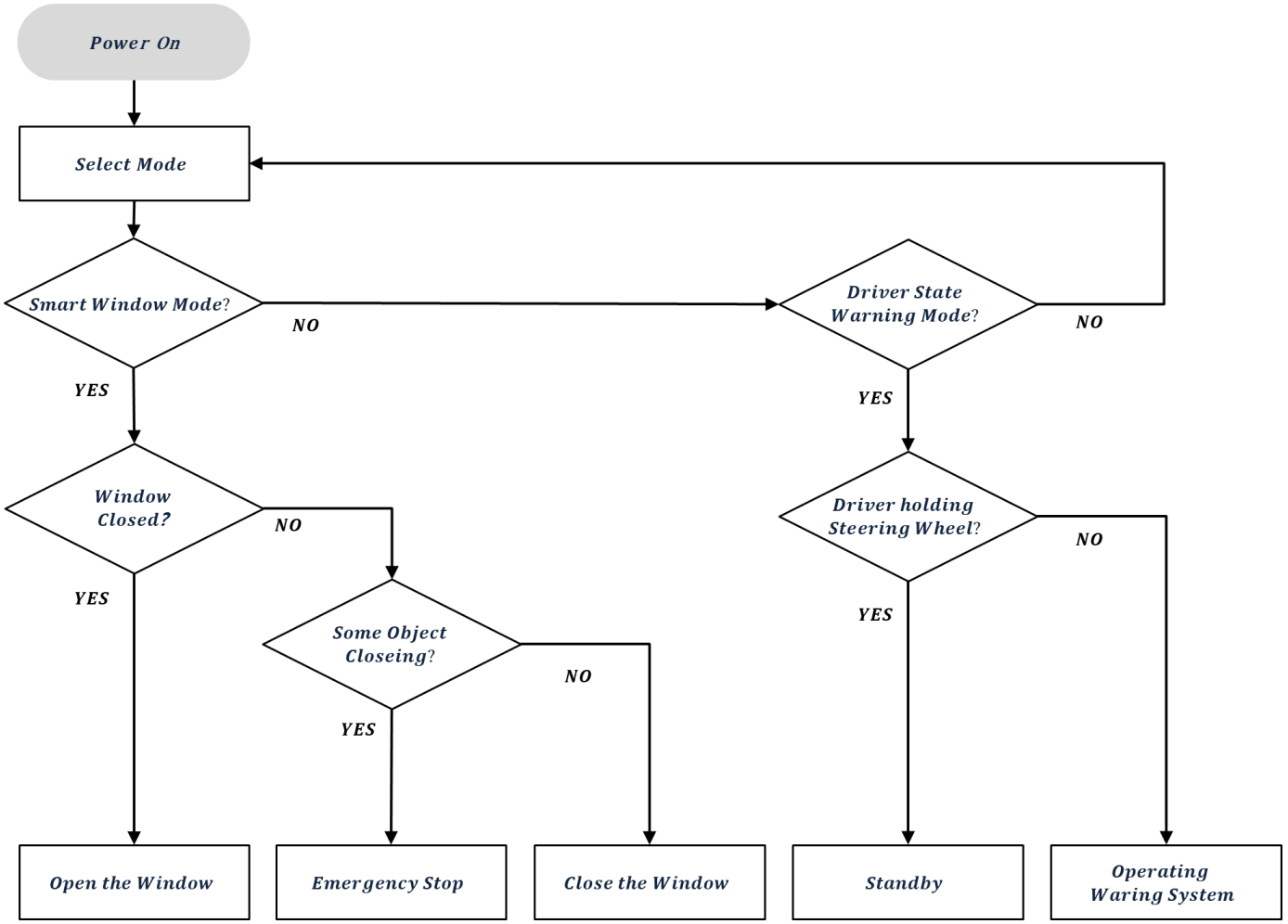
- Flow Chart



2. System Architecture

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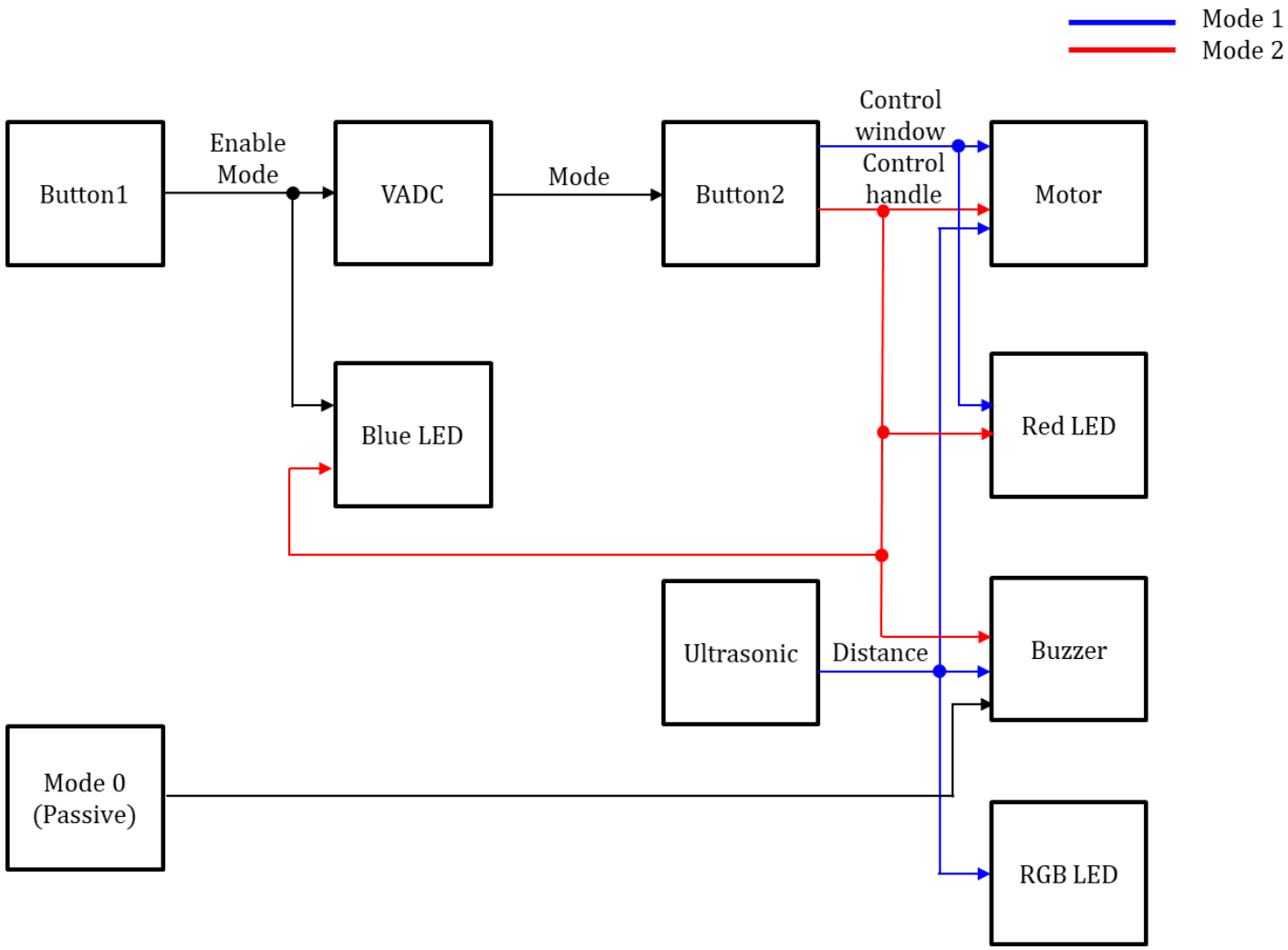
- Block Diagram



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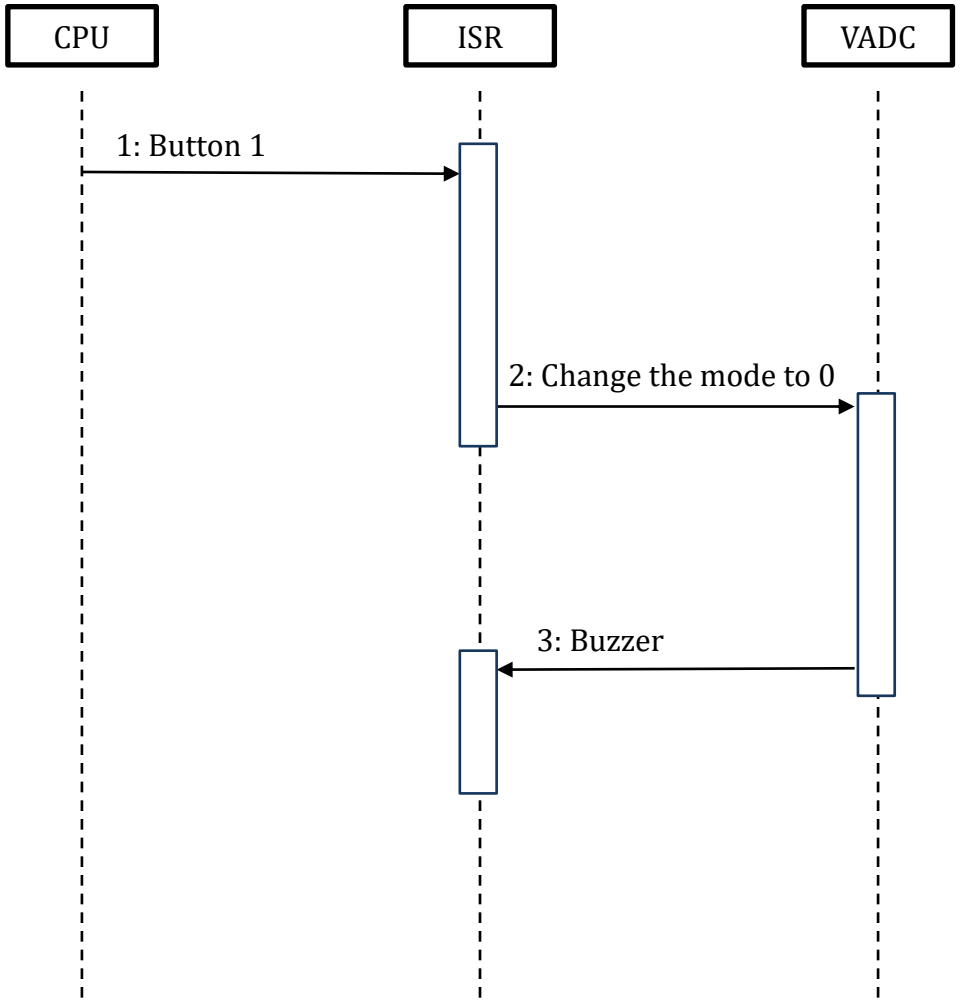
- Sequence Diagram

- **Mode 0**



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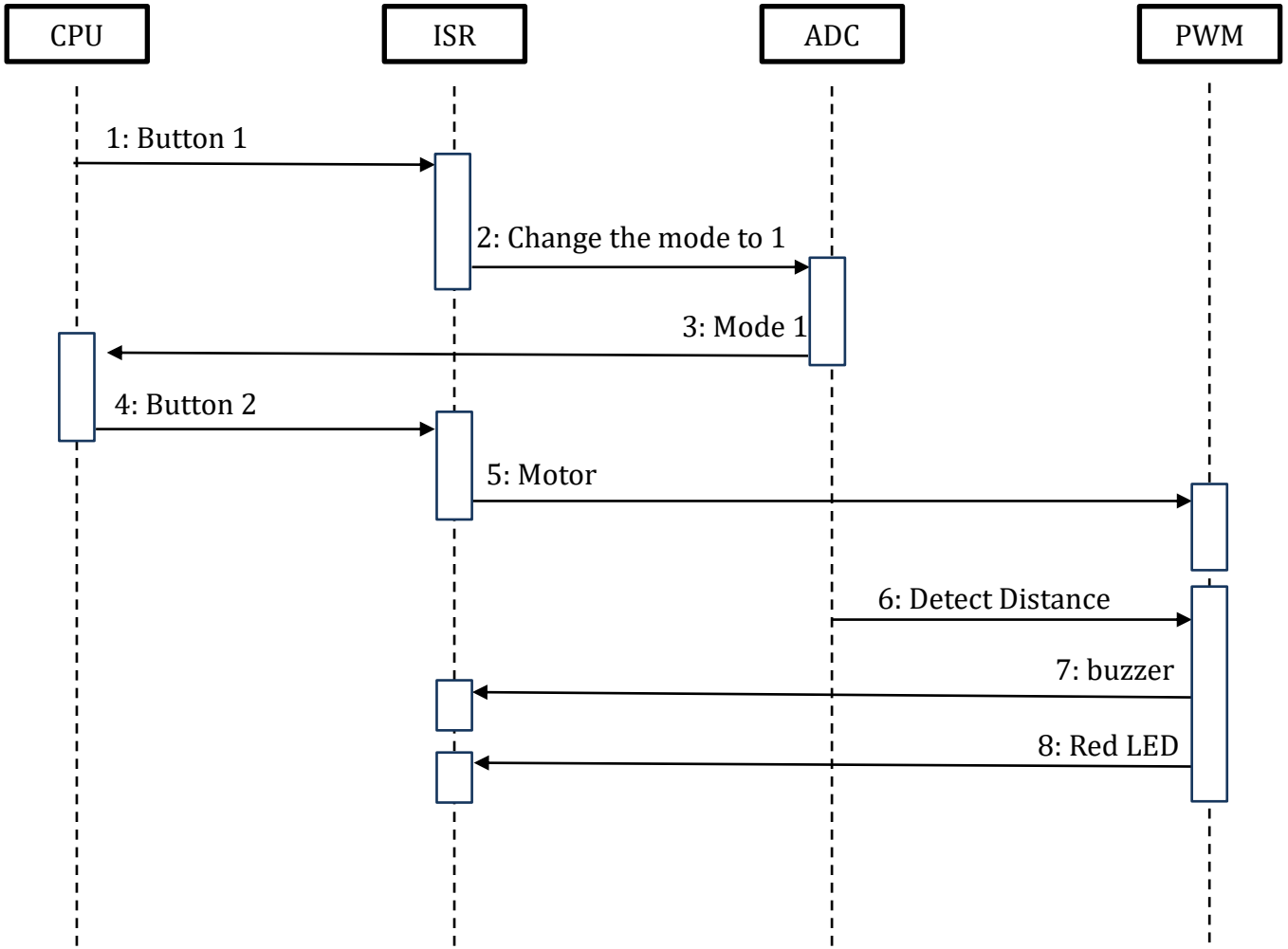
- Sequence Diagram

- **Mode 1**



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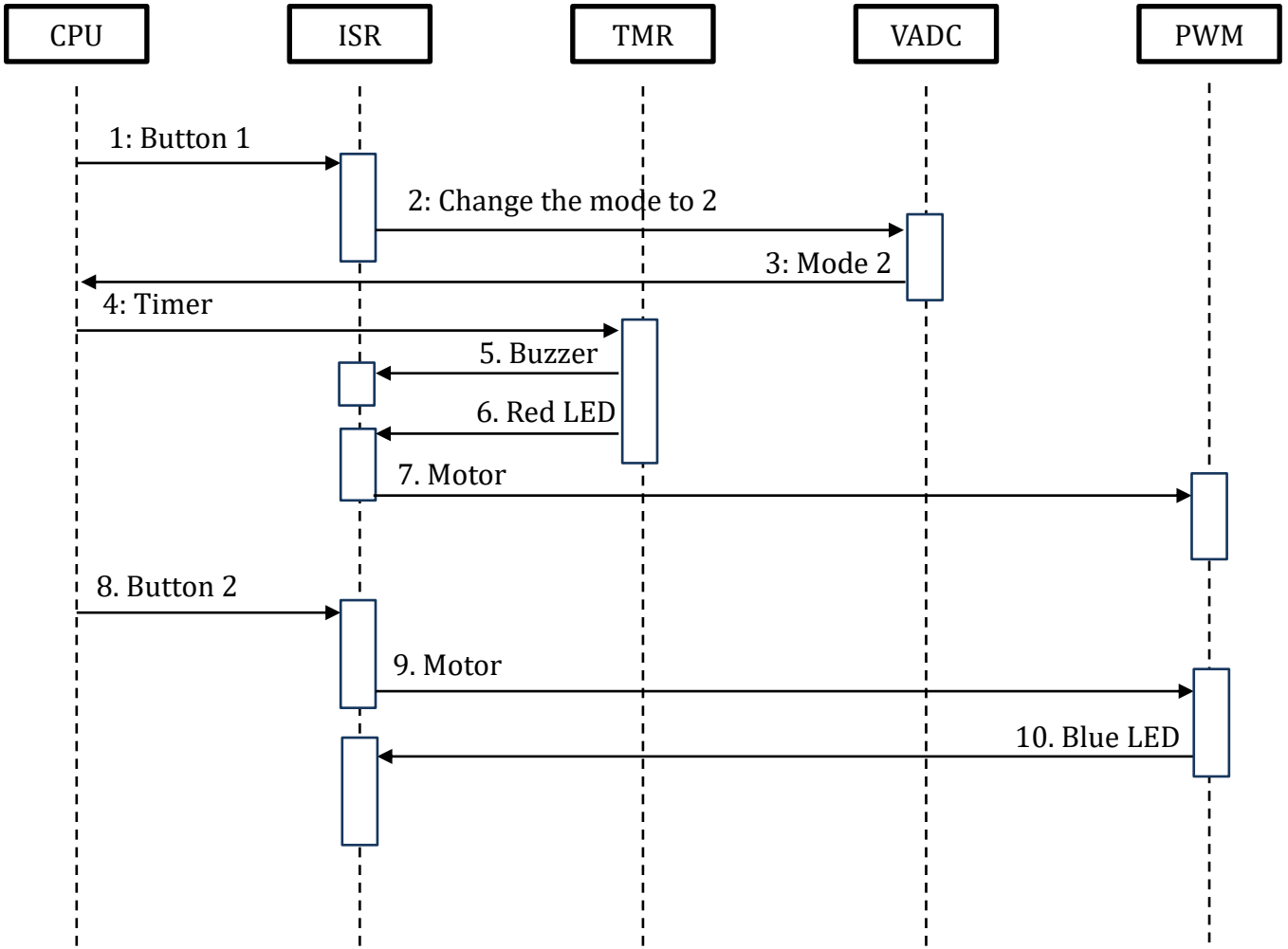
- Sequence Diagram

- **Mode 2**



3 Function

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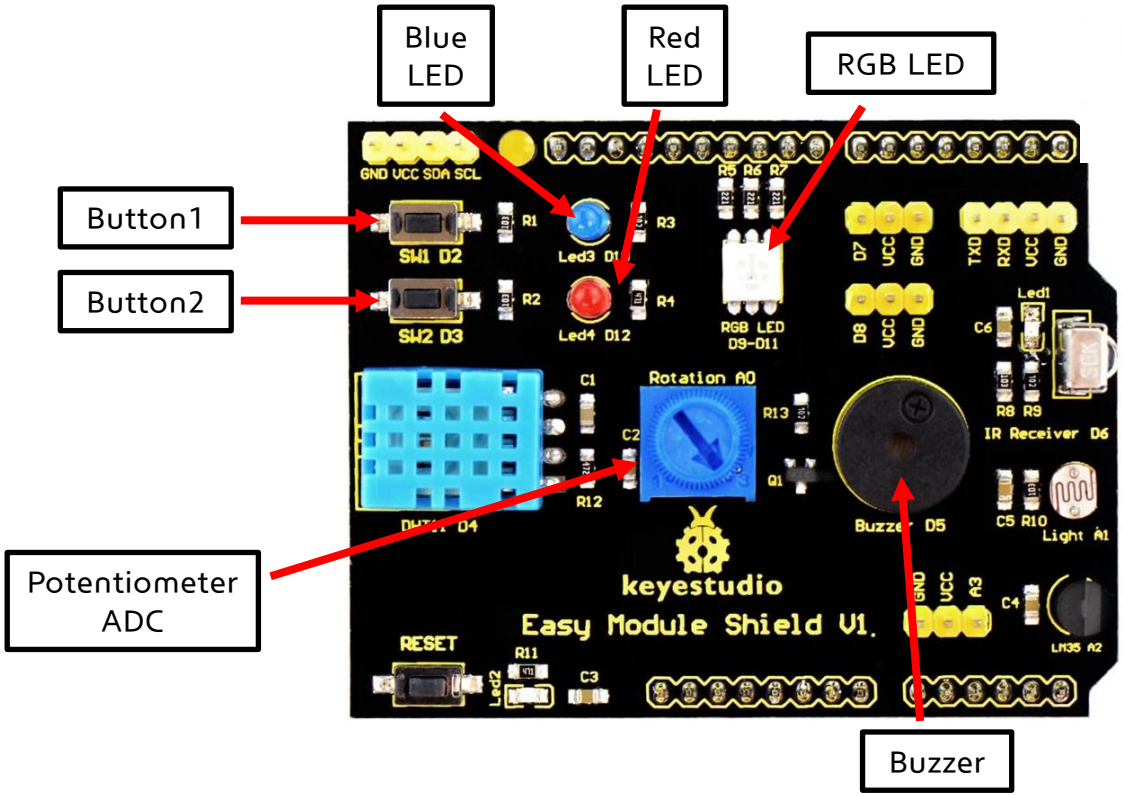
- Hardware



Ultrasonic

Motor

- Mode Detail

Mode 0: Power Standby Mode

	VADC	Button1	Blue LED	RGB LED	Buzzer
Func	Mode 0: Standby Mode	Select Mode	Change Mode	Mode 0 : R	Sound

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- Mode Detail

Mode 1: Smart Window

	VADC	Button 1	Blue LED	Button2	Ultrasonic	Red LED
Func	Mode 1: Smart Window	Select mode	Change the mode	Null: Stop First: Open Second: Close	Distance between Window and object	Ultrasonic detects an object
	Motor	Buzzer	RGB LED			
Func	L: open R: close	The object is close to the window	Distance (Far: R, 0: G, Close: W) /Mode 1: G			

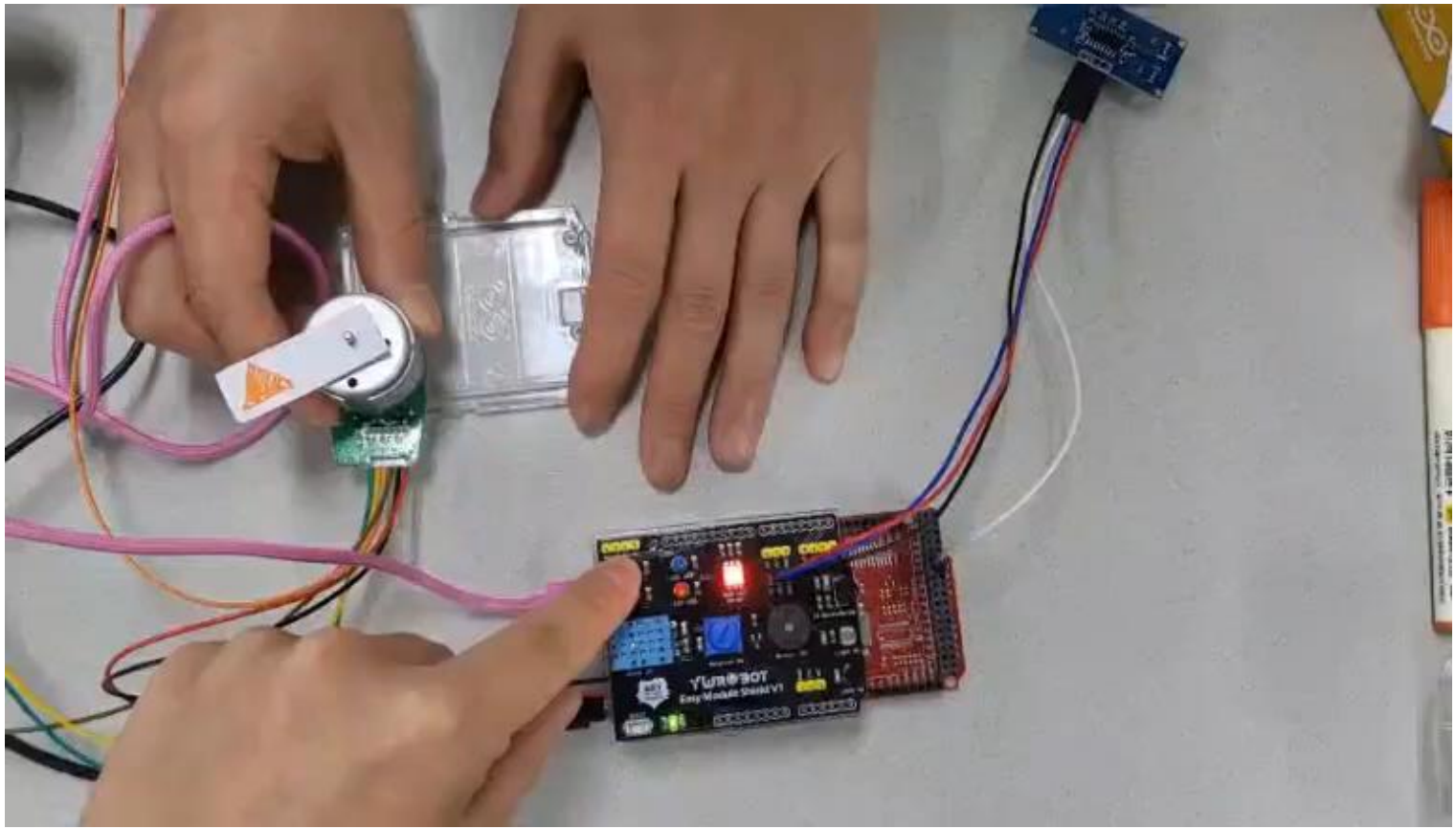
- Mode Detail

Mode 2: Driver state Warning Mode

	VADC	Button 1	Blue LED	Button 2	Red LED	Motor
Func	Mode 2: Driver state Warning	Select mode	Change the mode	Handle detects the hands	Not holding the handle	Open the window
	RGB LED	Buzzer				
Func	Mode 2: B	Sound every 10sec				

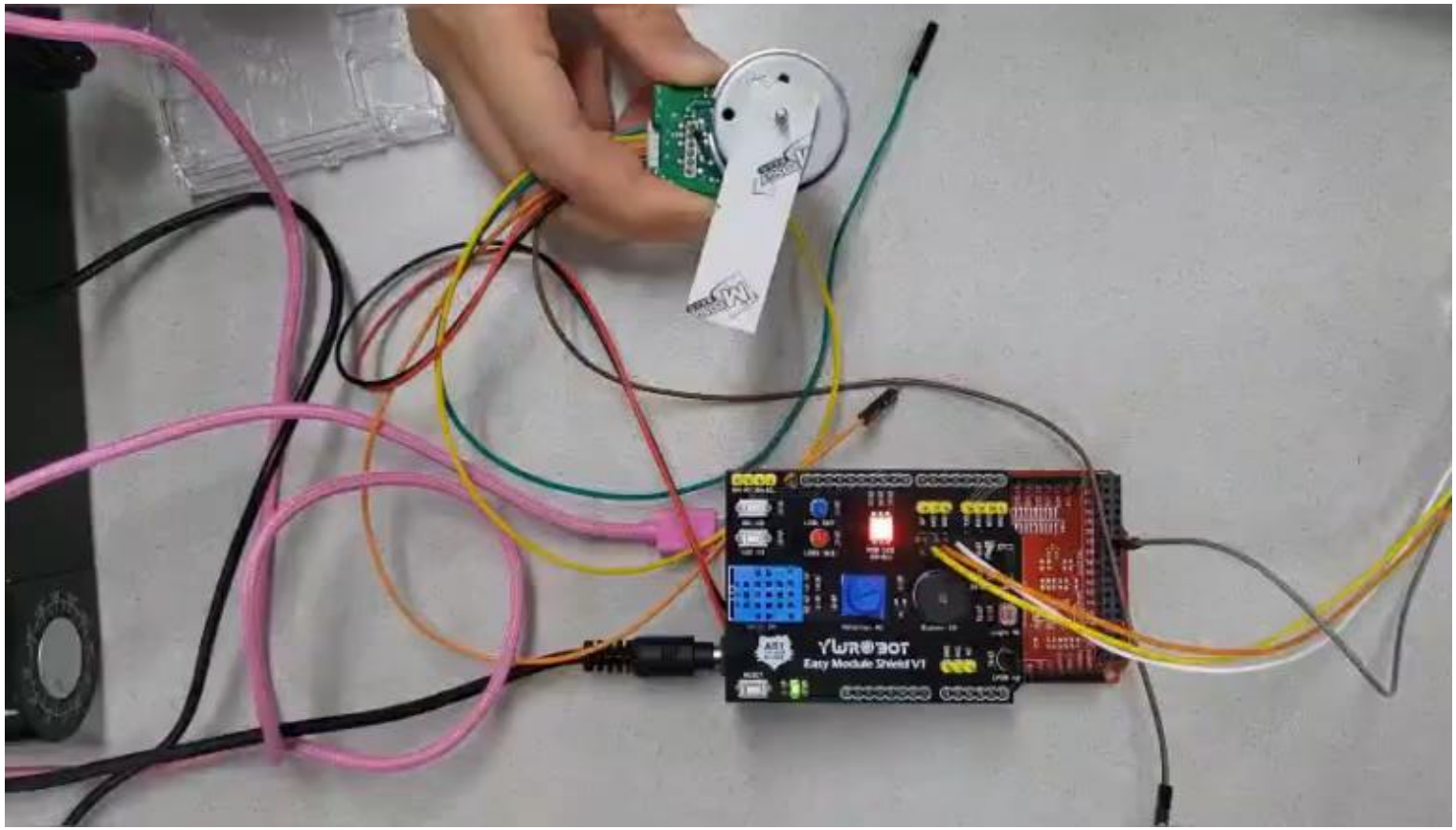
3. Function

- Function Validation



3. Function

- Function Validation



3. Function

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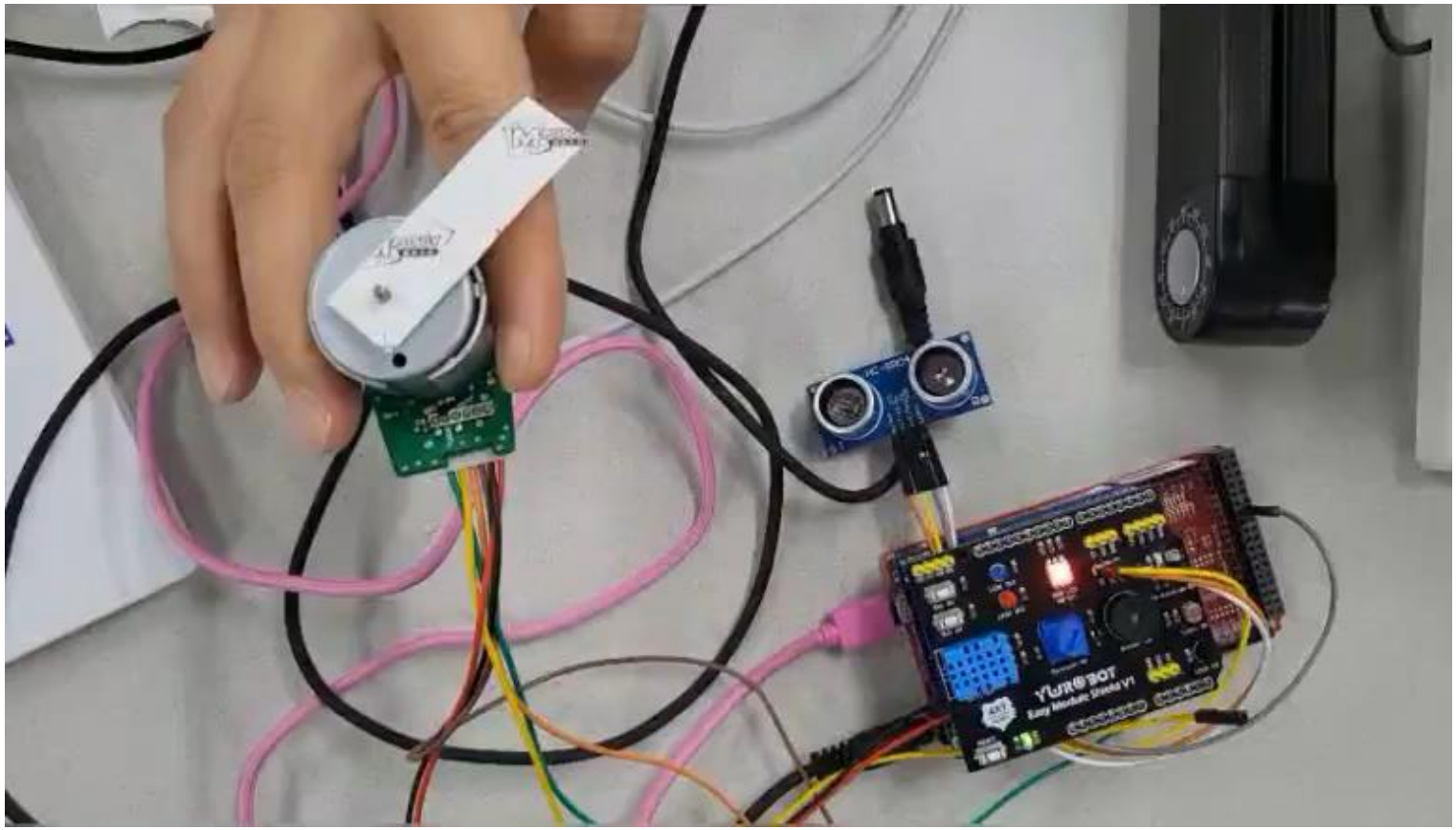
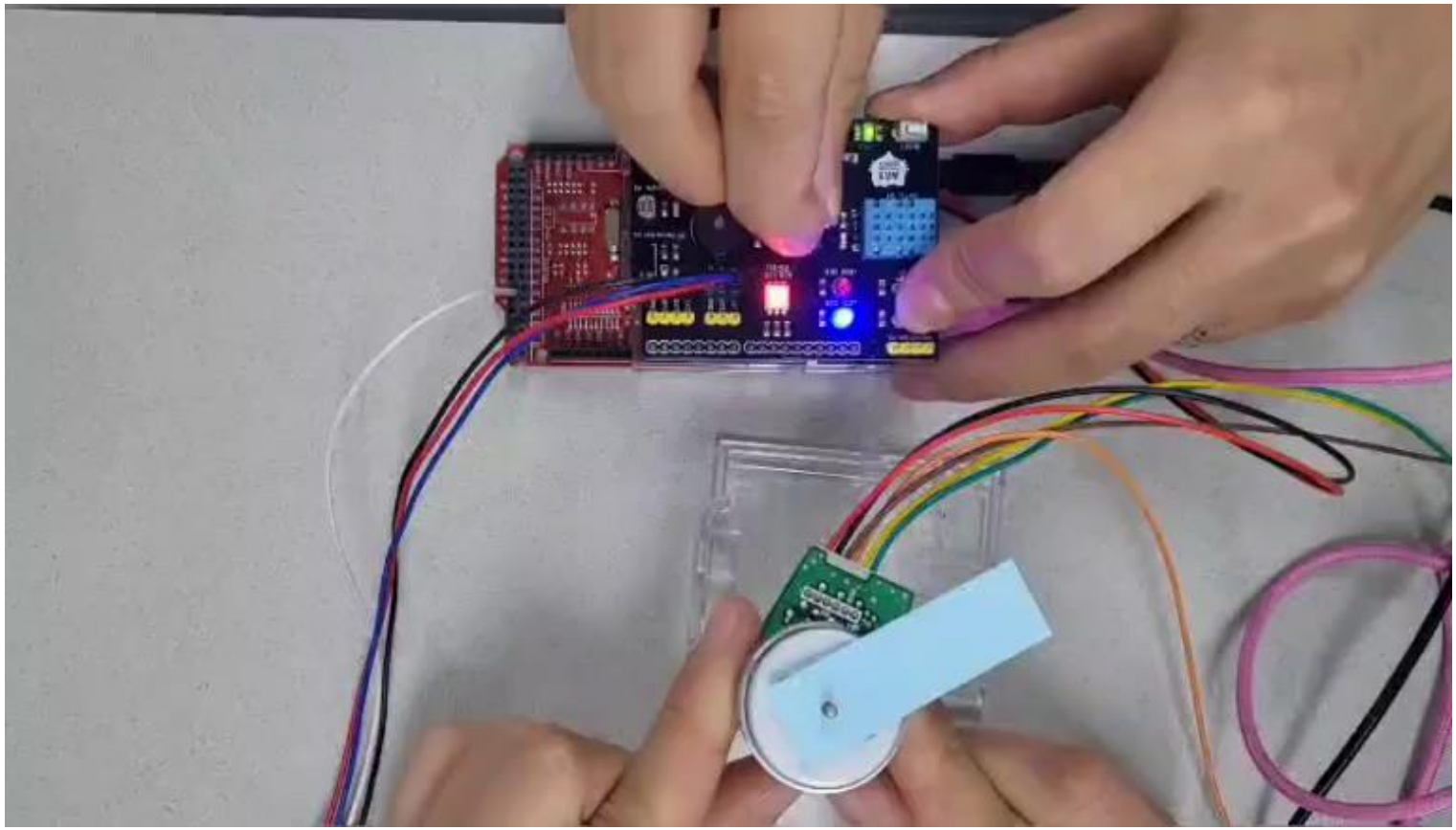
- Function Validation



- Function Validation



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MOTOR GROUP

4 Gantt Chart & Contribution

4. Gantt Chart & Contribution

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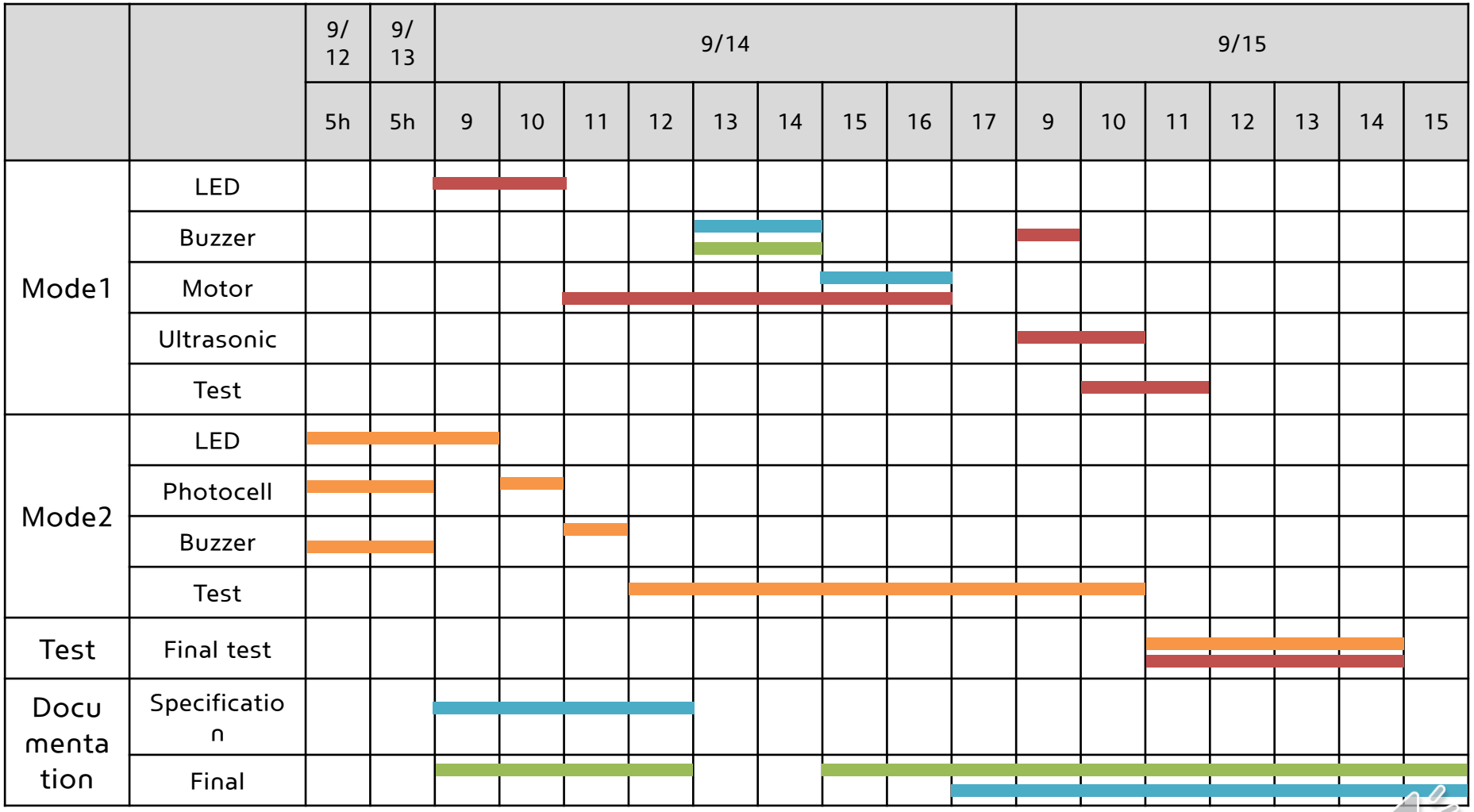
- Gantt Chart



4. Gantt Chart & Contribution

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- Contribution

	Design	Coding	Validation	Documentation
Taehoon Lim (Leader)	25	40	30	15
Donghyeoung Ryu	25	35	30	15
Seono Jang	25	15	20	35
Yeaseul Cho	25	10	20	35

Thank you