

CmpE 443 Final Project Design Document

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December 29, 2018

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1 Block Diagram

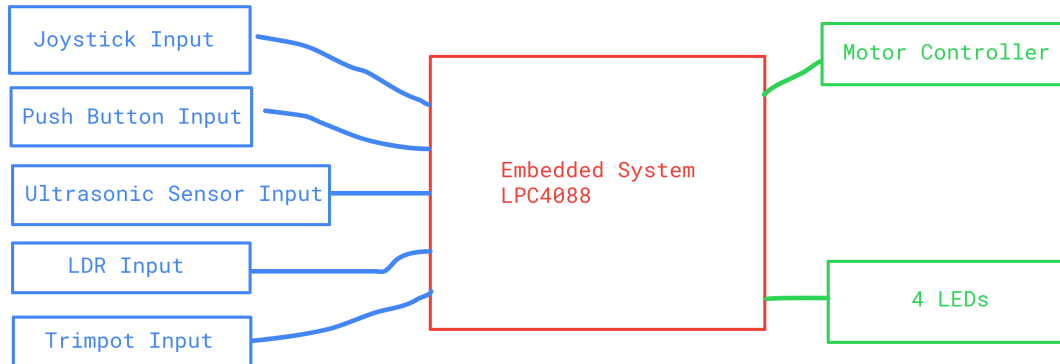


Figure 1: Block Diagram

2 System-Level Functional Diagram

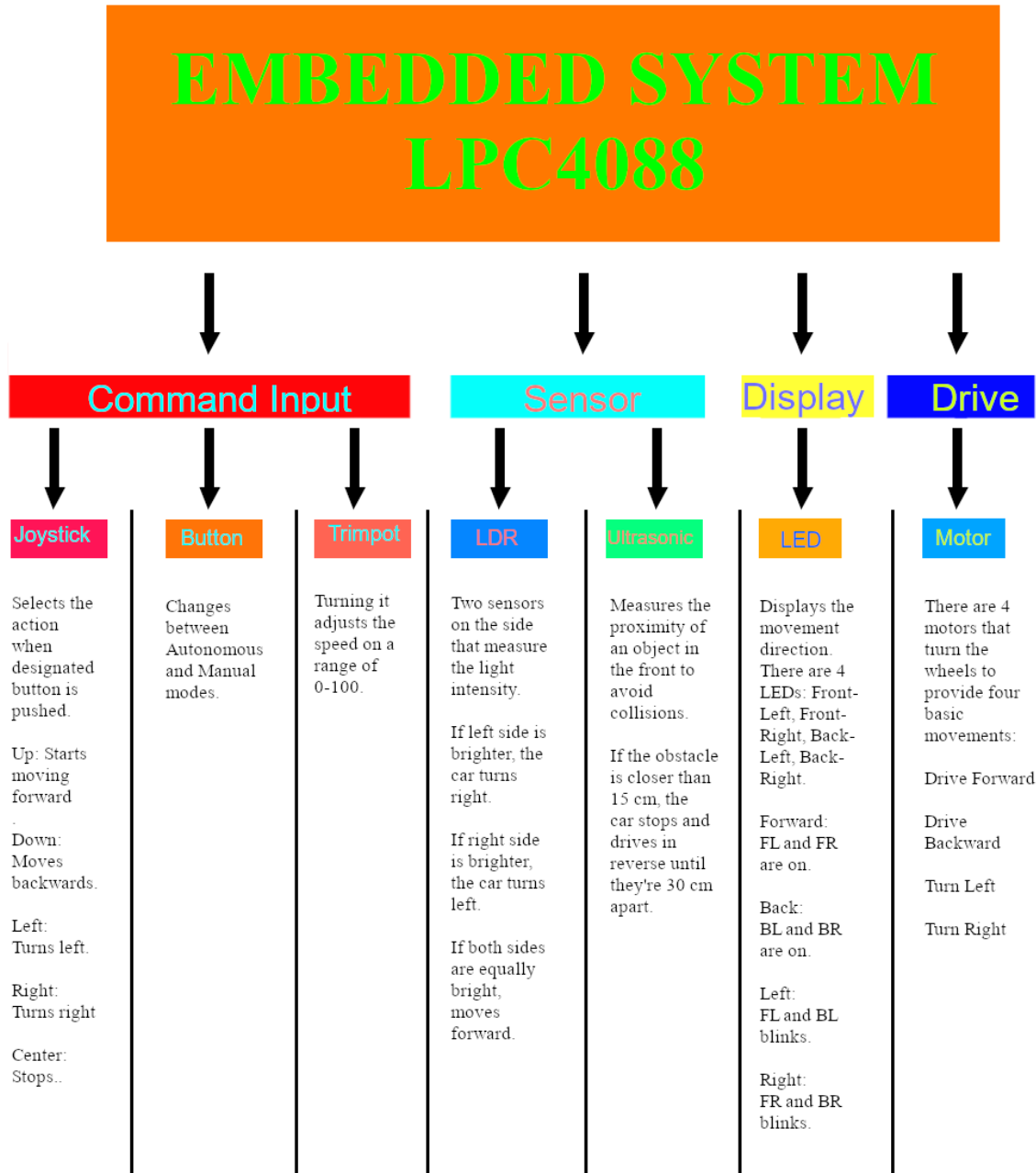


Figure 2: System-Level Functional Diagram

3 Sequence Diagram

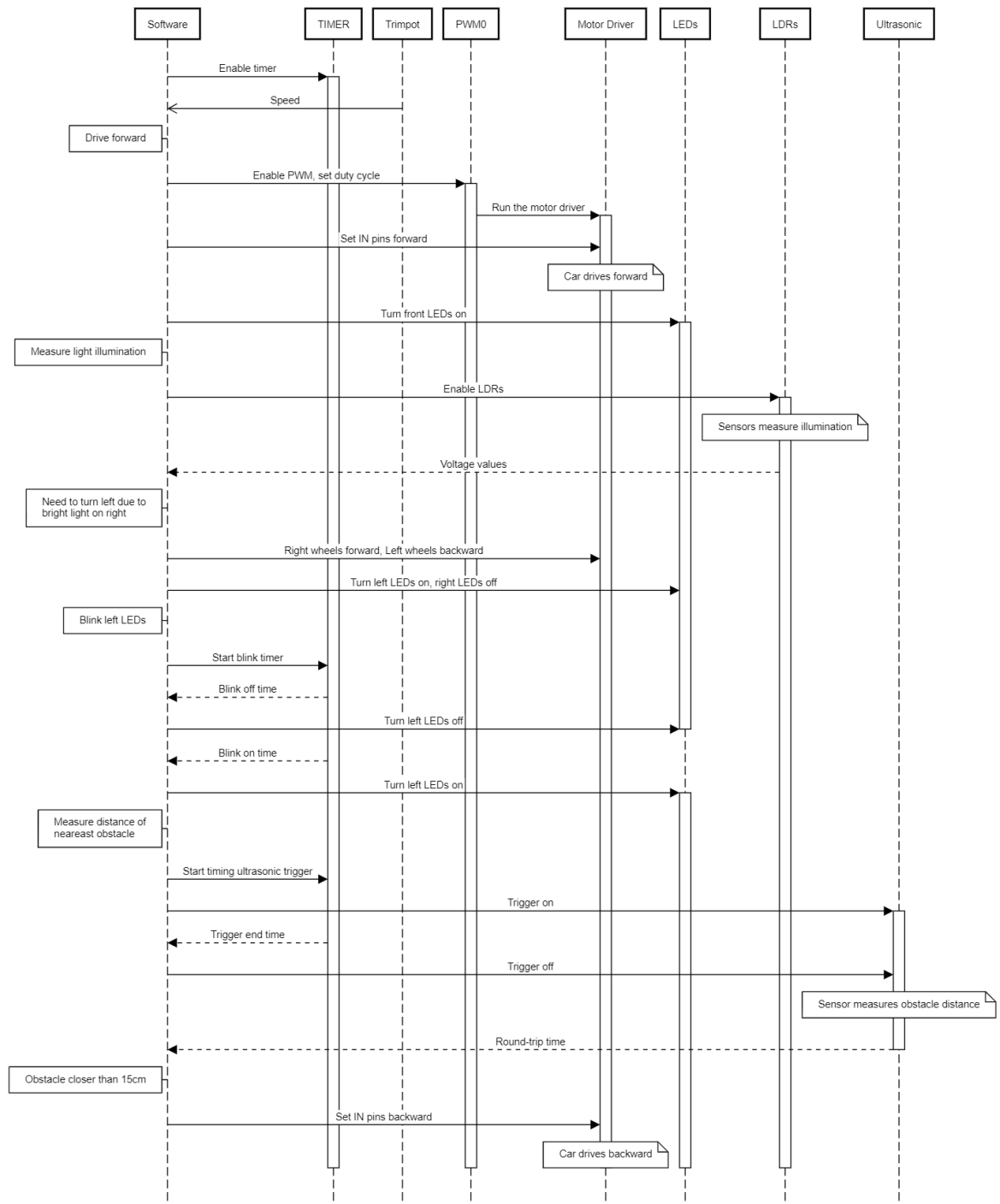


Figure 3: Sequence Diagram

4 LED Connection

LED Name	LPC4088 Pin	Pin Functionality	Reason
Front-Left	P8	GPIO	No overlap with PWM or Timer or ADC
Back-Left	P10	GPIO	No overlap with PWM or Timer or ADC
Front-Right	P34	GPIO	No overlap with PWM or Timer or ADC
Back-Right	P33	GPIO	No overlap with PWM or Timer or ADC

Table 1: LED Connection

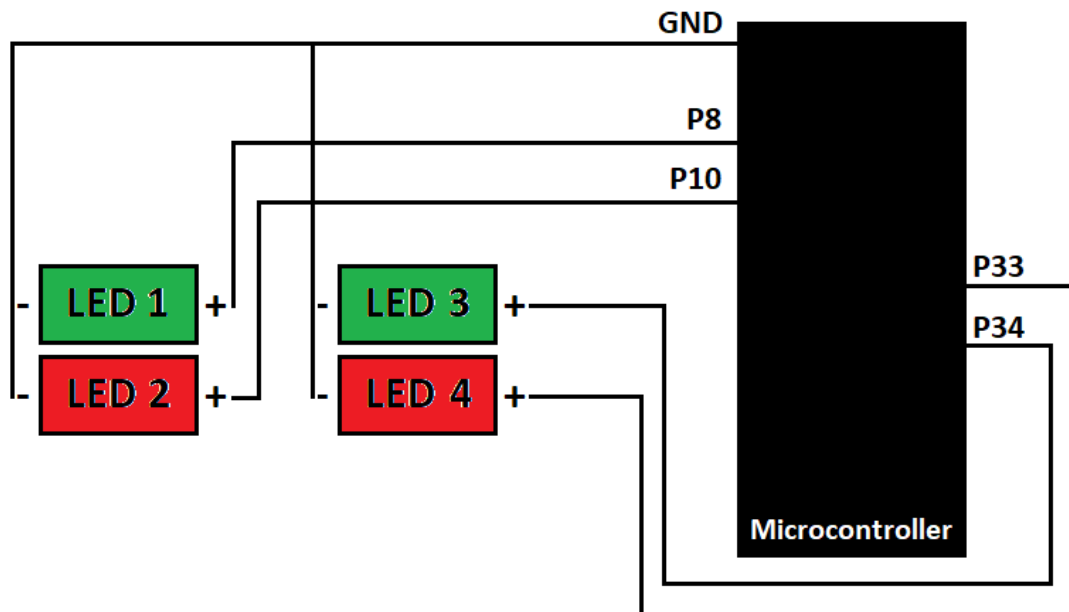


Figure 4: Led Schematic Diagram

5 Motor-Driver Connection

Motor Terminal	Motor Driver Terminal
Front-Left +	Output A +
Front-Left -	Output A -
Back-Left +	Output A +
Back-Left -	Output A -
Front-Right +	Output B +
Front-Right -	Output B -
Back-Right +	Output B +
Back-Right -	Output B -

Table 2: Motor-Driver Connection

6 Driver-Board Connection

Motor Driver Pin Name	LPC4088 Pin	Pin Functionality	Reason
ENA	P30	PWM0[1]	PWM 0 Channel 1
ENB	P29	PWM0[2]	PWM 0 Channel 2
IN1	P9	GPIO	No overlap with PWM or Timer or ADC
IN2	P12	GPIO	No overlap with PWM or Timer or ADC
IN3	P13	GPIO	No overlap with PWM or Timer or ADC
IN4	P42	GPIO	No overlap with PWM or Timer or ADC

Table 3: Driver-Board Connection

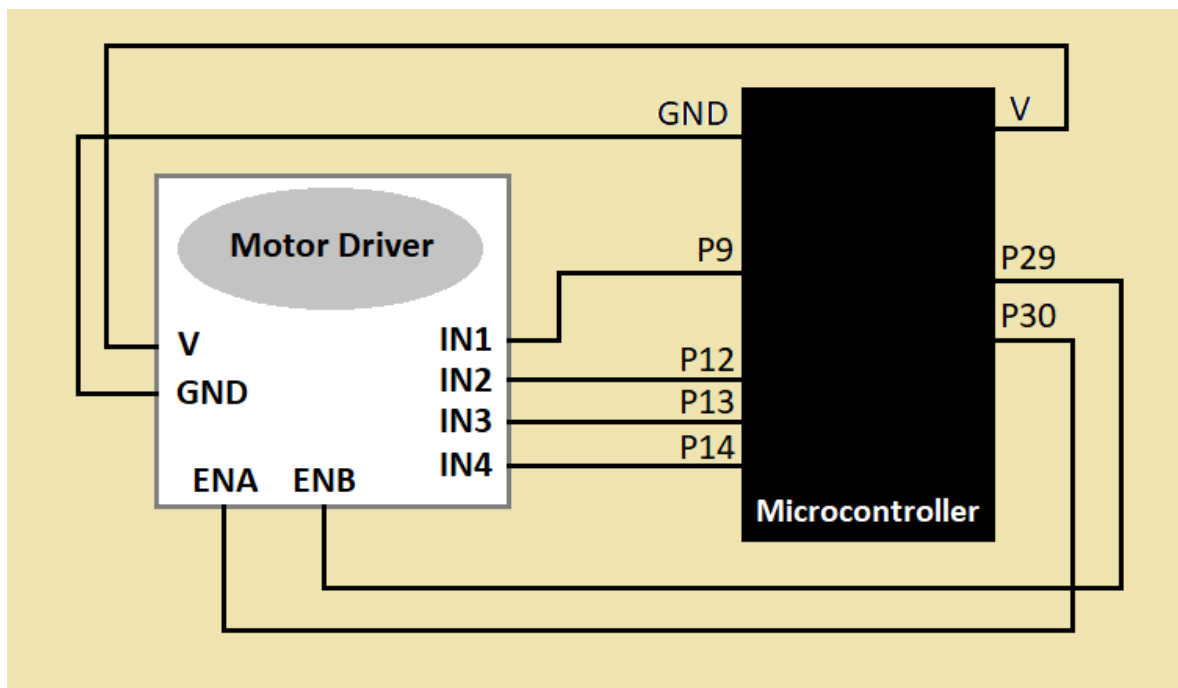


Figure 5: Motor Driver Schematic Diagram

7 Ultrasonic Sensor Connection

Ultrasonic Sensor Pin Name	LPC4088 Pin	Pin Functionality	Reason
Trigger	P11	T2_MAT3	Timer Match 3
Echo	P16	T3_CAP1	Timer Capture 1

Table 4: Ultrasonic Sensor Connection

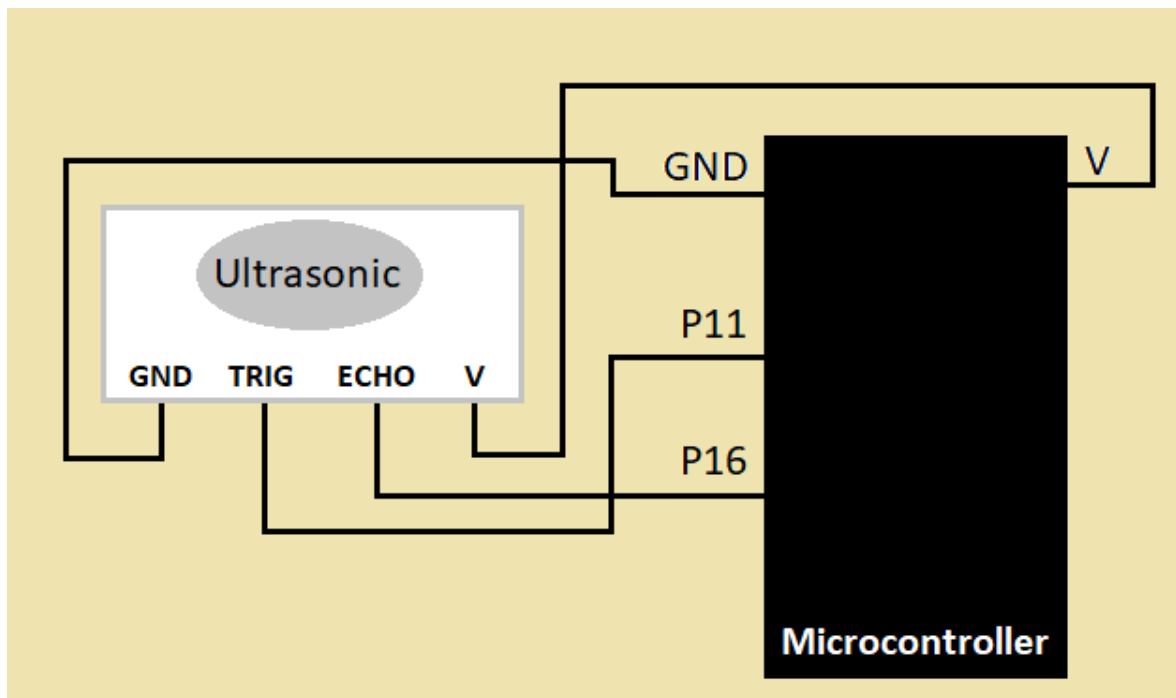


Figure 6: Ultrasonic Sensor Schematic Diagram

8 LDR Connection

LDR Name	LPC4088 Pin	Pin Functionality	Reason
Left	P17	ADC0_IN[2]	ADC Channel 2
Right	P18	ADC0_IN[3]	ADC Channel 3

Table 5: LDR Connection

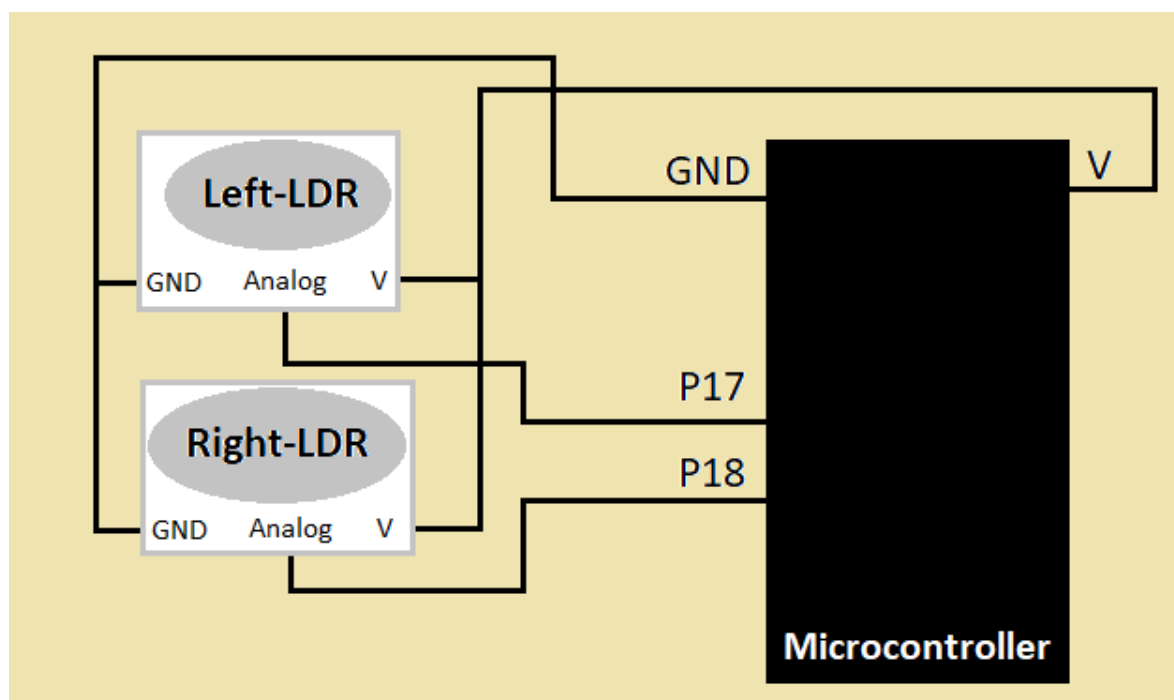


Figure 7: LDR Sensor Schematic Diagram

9 Expense List

Jumper Wires 40 pin with Male to Male Connectors	10TL
Jumper Wires 40 pin with Female to Male Connectors	10TL
Jumper Wires 40 pin with Female to Female Connectors	10TL
Total	30 TL

Table 6: Expense List