Embedded Software Project Proposal

'Adaptive LED Headlight and Smart Warning'

SWIP 9th , Team 2

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1. Project Goals

Adaptive dimming LED Headlight

1. Steering Wheel based
2. Object detection based

Driver Attention Warning (DAW)

1. Traffic Light based Warning (TLW)
2. Forward Collision Warning (FCW)
3. Leading Vehicle Departure Warning (LVDW)

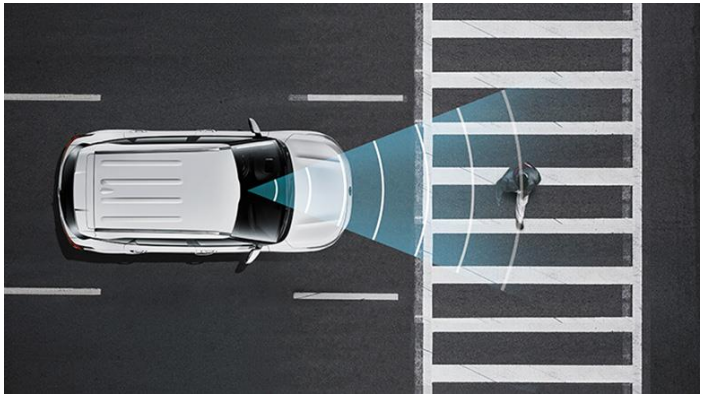
2. Proposed System – Architecture

Adaptive dimming LED Headlight

Steering wheel based

- If rotate potentiometer goes left,
  Left LED light is brighter than right one.
- If rotate potentiometer goes right,
  Right LED light is brighter than left one.

Object detection based

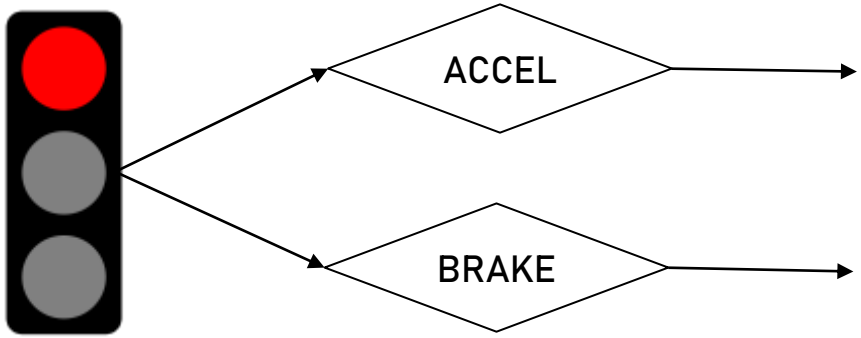


- Ultrasonic sensors are for detecting objects.
- The distance between objects and vehicle is represented as the dimming of Left/Right LED light

2. Proposed System – Architecture

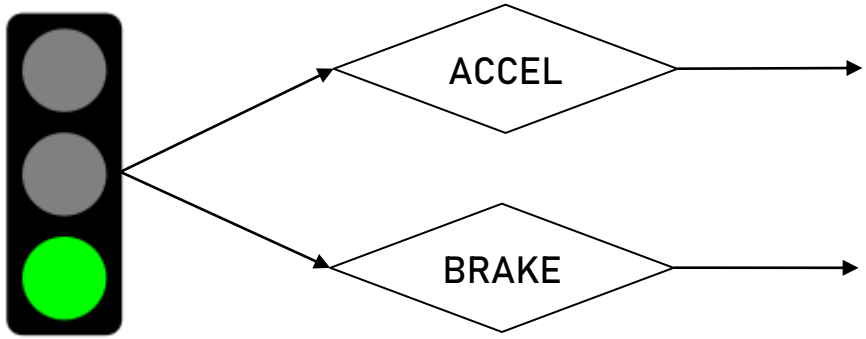
Driver Attention Warning (DAW)

- Traffic Light based Warning (TLW)



Forward Collision Warning (FCW)

Pass



Pass

Leading Vehicle Departure Warning (LVDW)

2. Proposed System – Project Timeline

Module	Detail	Time (hour)							
		1	2	3	4	5	6	7	8
Project Design	Organize overall structure and write project proposal								
Steering wheel based Adaptive Headlight	Adaptive LED dimming based on steering wheel angle								
Object detection based Adaptive Headlight	Use, set, and initialize two ultrasonic sensors								
	Adaptive LED dimming based on distance from ultrasonic sensors								
Traffic light based Warning	Make flowchart using RGB LED traffic light								
Motor control	Visualize acceleration using DC motor								
Forward Collision Warning	Buzzer ringing based on distance from ultrasonic sensors								
	Ultrasonic sensor parameter tuning								
	Make brake control according to the distance between leading vehicle								
Lead Vehicle Departure Warning	Buzzer ringing based on distance from ultrasonic sensors								
Architecture Design	Function integration								
Writing report	Write final report and record video								

2. Proposed System – Project Timeline Flowchart