

Smart DRL System

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Abstract- *The concept of the SMART DRL(Daytime Running Lights) SYSTEM is powerful yet simple and cost effective which works by means of integrated sensor module. The main motive of our project is to reduce the day time light pollution & to avoid uncomfortable riding nature for the motorists. Since this system is easily adaptable where it can be easily implement on any kind of traditional & future automobiles. By using this SMART DRL SYSTEM manual errors can be avoided and better safety can be provided for the motorists. Where installing it on traditional automobiles need for an dedicated unit and with future vehicles SDS can be easily integrated within its sensor unit.*

Keywords- Daytime Running Lights(DRL), Integrated Sensor Module, Reduce The Day Time Light Pollution,Implement On Any Kind Of Traditional & Future Automobiles, Installing It On Traditional Automobiles.

I. INTRODUCTION

The ideology of the project is to reduce the light **pollution** caused from DRL condition and also to save the power consumption in automobiles. Due to **BS4 Government Norms** day time **DRL** has to be lit all time the day, which creates unwanted disturbances for the motorists who travel around and also it consumes frequent use of power from the battery, which leads to reduce in life span of the battery. The sole purpose behind the BS4 Government norms regarding “Automatic Headlight On” (AHO) is to provide safety for the riders. So as that road safety awareness has been improved nowadays and human errors has been decreased rapidly. But as per AHO Condition automobile DRL needs to be lit all over the day, due to that day time DRL visibility causes awkward nature for the motorists who travel around. Our project motive is to reduce the day time light pollution and also to save a optimal range of battery consumption in automobiles. By means of introducing three type of sensors with programing modules in our project (SMART DRL SYSTEM), this AHO condition can be fixed. Sensors use in SMD to assess the condition [1] Thermostat sensor assess the temperature in the surroundings and gives a feedback to the microcontroller [2] Light Dependent Resistor (LDR) assess the luminous intensity in the surroundings and gives a feedback to the microcontroller [3] Real Time Clock (RTC) tracks the current time and gives a feedback to the

microcontroller. STM32-BLUE PILL (programed using C - Language) Microcontroller process the feedback assessed. By using these three conditions, Artificial Intelligence in SMART DRL SYSTEM automatically detects the safety condition & actuate the headlight as per necessity.

II. WHY NEED THIS?

- Due to **BS4 Government Norms** day time **DRL** has to be lit all time the day, which creates unwanted disturbances for the motorists who travel around and also it consumes frequent use of power from the battery, which leads to reduce in life span of the battery.
- SMART DRL SYSTEM headlight can be actuated as per necessity without eliminating the safety factors as per BS4 Norms by means of it’s Artificial Intelligence technology.
- Future scope of automobiles rely on electric vehicles, So this project can reduce power consumption in automobiles by means of it’s Artificial Intelligence technology.

III. LITERATUREREVIEW

A. LDR:

A Light Dependent Resistor (LDR) is also called a photoresistor or a cadmium sulfide (CdS) cell. It is also called a photoconductor. It is basically a photocell that works on the principle of photoconductivity. The passive component is basically a resistor whose resistance value decreases when the intensity of light decreases. This **optoelectronic device** is mostly used in light varying sensor circuit, and light and dark activated switching circuits. Some of its applications include camera light meters, street lights, clock radios, light beam alarms, reflective smoke alarms, and outdoor clocks.

B. THERMOSET:

While temperature is generally sensed by humans as “hot”, “neutral”, or “cold”, chemical engineering requires precise, quantitative measurements of temperature in order to accurately control a process. This is achieved through the use of temperature sensors, and temperature regulators which process the signals they receive from sensors.

C. RTC MODULE:

Real-time Clock (RTC) Module is an integrated circuit, usually called a clock chip. Real-time clock chips are one of the most widely used consumer electronic products in daily life. It provides people with accurate real-time time or an accurate time reference for electronic systems. At present, most real-time clock chips use high-precision crystal oscillators as clock sources. Some clock chips need to be powered by an external battery in order to work even when the main power supply is off.

IV. WORKING PRINCIPLE

The Working of SMART DRL SYSTEM is functioned by means of an Thermostat sensor, Light Dependent Resistor (LDR) & an Real Time Clock (RTC), Which is been embedded to an Microcontroller which is programed using C language. Where the Thermostat& LDRsensors senses the temperature & luminous intensity of the surrounding atmosphere And the RTCmodule tracks the current time and provides feedback to the microcontroller. Microcontroller converts the analog feedback received from the sensors to an digital value by using Pulse-Width Modulation (PWM). When the programmed conditions satisfies (listed below) the output received from the microcontroller transfers the feedback to the driver unit. Driver unit amplifies the frequently monitored digital values received from the microcontroller which is been updated on a display and we also receive an negative voltage from the output port that has been connected directly to the **Negative port** of the headlight & the Positive voltage from the battery must be always connected directly to the positive port of the headlight. By means of programmed Artificial Intelligence in SMART DRL SYSTEM actuate the headlight as per necessity.

V. OPERATING CONDITIONS OF SMART DRL SYSTEM

- As per this TEMPERATURE STATE condition if the surrounding temperature decrease to Automobile headlight will be “ON” and when the surrounding temperature increases Automobile headlight will be “OFF”.
- As per this LDR condition if the surrounding luminous intensity is below 15 the headlight will be “ON” and when the surrounding luminous intensity is above 15 the headlight will be “OFF” .
- As per this condition between the Railway time range of 18:00 P.M to 8:00 A.M the headlight will be “ON” & rest of the times it is set to “OFF”.

VI. CONCLUSION

As per analysis SMART DRL SYSTEM reduces the light pollution and provides better riding environment for the motorists. Future scope of automobiles may rely on electric vehicles & it will be manufactured under “Automatic Headlight On” (AHO) conditions as per Government Norms (from BS4), So this project can reduce high power consumption in automobiles by means of it’s Artificial Intelligence technology.

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