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SMART LIGHT SYSTEM

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ABSTRACT

*We are pleased to present **Smart Light System** that will ease out the process of handling light automatically with respect to environmental condition like fogish,haze conditions etc.*

The System will let user an opportunity to automate process of turn on or off light effectively.
This System will focus on checking current weather condition using some real time Application Programming Interface and according to current condition we are setting light on or off using microcontroller.
As mentioned system will use IOT devices and real time data making it more efficient and flexible comparing to system with number of sensors.

Keywords

GPS, API, NodeMCU, ArdiunoIDE.

1. INTRODUCTION

Bharat stage emission standards (BSES) are emission standards instituted by the Government of India to regulate the output of air pollutants from compression ignition engines and Spark-ignition engines equipment,including motor vehicles. The standards and the timeline for implementation are set by the Central Pollution Control Board undertheMinistryofEnvironment,ForestandClimateChange.Inlateststandardgivenby them, they set rule by which headlight of any automobile is turned on whenever engine of same is started,main reason behind this to avoid accident on road.

The key concept behind this standard is to avoid the accident which are depends on nature or probably environment situation like fog,haze cloudy where vision level is very low. with light of automobile turn on for whenever engine is on is good idea to avoid accident but there are some some cons of it also, with turned on light it may drastically affect the battery and life of light.

Our proposed System is divided into two modules.The first one is extracting the real time data of current weather environment using application programming interface,and second module check whether there is is need to turn on the light or not, this module will turn the light on or off accordingly.As mention we are using IOT concept in our proposedsystemwhichwillsolvegivenproblemeffectively.Detectingfogcanbeeasily achievedbythesameconceptratherthanusenumberofsensorswithrealtimeaccurate data we are able to turn light on or off. The need for Automate light system mainly to overcome the draw-backs of the existing system. The main aim of the project is to give user-friendly and more interactive system to the user. The automate light system

is a much faster and clear method to define all the relevant schemes. It brings much transparency to the present method.

An application programming interface (API) is a computing interface to a system, that defines how other systems can use it. It defines the kinds of calls or requests that can be made, how to make them, the data formats that should be used, the conventions to follow, etc. It can also provide extension mechanisms so that users can extend existing functionality in various ways and to varying degrees.An API can be entirely custom, specific to a component, or it can be designed based on an industry standard to ensure inter operability. Some APIs have to be documented, others are designed so that they can be ”interrogated” to determine supported functionality. Since other components/systems rely only on the API, the system that provides the API can (ideally) change its internal details ”behind” that API without affecting its users. Remote APIs allow developers to manipulate remote resources through protocols, specific standards forcommunicationthatallowdifferenttechnologiestoworktogether,regardless of language or platform.

2. PROBLEM STATEMENT

SmartLightsystemusingIOTandApplicationprograminginterfaceisveryusefulas it can greatly reduce cost and gives more automation in automobile industry to turn on or off light in automobile. An ideal scenario would be where the light in automobile must be turn on when there is fog in environment,in addition to this we are adding certain more condition in proposed system.
For a start, the light in automobile is turned on whenever engine started. As this would affect the battery and light life badly.We are trying to implement best system for automating this process.

3. LITERATURE SURVEY

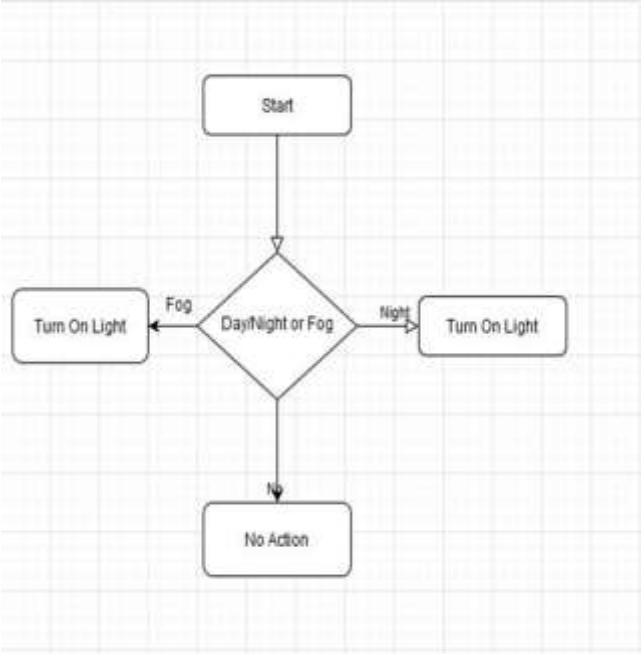
SurveyEvaluationofautomaticlightsystembasedonfogandotherenvironmentalcondition isn't a new thought. It has been in the works since large time. A large number of techniques where experimented with to solve the problem efficiently but to implement the same idea in automobile there are very few techniques are available and this is our main aim.As of now we have smart LED street light system which controls intensity of light during rain and fog. The system works first on colour sensor and then LASER beam light is used to detect the fog,according to that the intensity of LED light has been varied.If the beam of LASER light received by the color sensor is very less then brightness of LED will be increased and when there is no fog or rain the intensity of light will remain low.This system is achieved by using ARDUINO, LED lights and LED dimming control PWM circuit.The power consumption by using LED and intensity variation graph of street light has been shown through MATLAB. By using PWM circuit,current and voltages values are presented. The mechanism of circuit depends on pulse width modulation and analog to digital convertor features of microcontroller
Aslam MusthafaR(2017)built upon automatic headlight beam controller. It will sense the light intensity value of opposite vehicles and automatically switches the high beam into low beam and It will reduce the gla effect[1].Abdul Kader Riyaz.M(2017)proposed an graphene coated LED based automatic street lighting system using arudino microcontroller. In this the author introduced GaN based LED which acts as a heat sink. They have used arudino uno microcontroller[2].Williams. E.A (2016) proposed
A design and implementation of automatic head light dimmer for vehicles using light dependent resistor (LDR) sensor .The device is able to automatically switch the headlight low when it Is sensed by the light dependent resistor[3].MaliP.S(2016)describes about automatic headlight dipper with respect to upcoming vehicles response. In this author uses LDR for sensing weather the light is low or high beam. The circuits will intimate the LDR which the light is in upper mode it will changes to dipper mode[4].Sanal Malhotra (2014) designs an automatic brightness control using LDR sensor. In this system they used LED and LDR. LED is a diode which works based on the concept of Electrolumine scence. According to the programming the LED will glow. If in day time they don't need light the LED will off automatically[5].Kavita A. Bajaj worked on Intelligent Street Lightening System LDR is used for save power and energy. Control system is used for on and off the street lights. Zigbee module is used to check the state of the street lights and also the information is transferred point to point [6].B. K. Subramanyam worked on Design and Development of Intelligent Wireless Street Light Control and Monitoring System Along With GUI in this for automatic mode operation the using LDR sensor. It main principle is to when the light intensity is low,light will ON automatically and if light intensity is high ,light will OFF automatically[7]

4. TERMINOLOGY

For predicting we define the three states in a request send by user: 1. Get details : We get all details of current data from API in JSON/XML format from which we are converting this data to plain text and then we are able to use this data in our system

2. Check conditions and turn light on/off : Once we are getting all the details like wind speed,weather condition, temperature value etc we are able to turn light on or off accordingly,using NODE-Mcu microcontroller and show this data to LCD screen which will give more clarity to proposed system.

5. SYSTEM OVERVIEW:



5.DESCRIPTION

'Smart Light System' system collects the current weather data using application programming interface.This System can be widely used in auto mobilesector,It can also be implemented in different sectors to gives mart solution for light handling.As of now we have strong internet connection across the country and there are enough devices and microcontrollers are available for establishing connection with internet.

the Pre-processing step it will extract the text from response which we are getting from API.For connection and integrating light components we are using NodeMCU LUA WiFi Internet of things ESP8266 Development Board,An open-source firmware and development kit that helps you to prototype your IOT product within a few Lua script lines.Open-source, Interactive, Programmable, Low cost, Simple, Smart, WI-FI enabled.

We are not using any sensor, as mentioned earlier there is no particular sensor which will give accurate result for fog in environment so our idea is to use this concept effectively and find solution for given problem which is more reliable and gives more accuracy,for a given problem we are using some api which will gives us real time data of outside and with that data we can turn the light on or off.

6. CONCLUSION

Smart light system has been designed implemented and then tested. The concept is based on fog sensor detection and sense the brightness in the surrounding environment and handle the light accordingly.The Internet of Things, called the IoT for short, is a newinterconnectionoftechnologyheraldedasthenextindustrialrevolution—implying radical change,disruption,and an entirely new paradigm for the planet. Specifically,the Internet of Things is an extension of the existing connections between people and computers to include digitally-connected"things",with these we are using API to get current data of environment.The system is cost effective and simple in designing as compared to sensor based system.It is more efficient and reliable as compared to the existing systems.

7. FUTURE SCOPE

The Project"Smart light System"can be used in various part of sectors with some modification like further it can be used to handle intensity of light for the same we have to implement some processing algorithm. This utility is very useful in automation in lights handling in automobile and can be further extended in other fields.

As mentioned current model supports only fog condition further it can be easily modified with certain another conditions in environment. we can also add real time monitoring in it, using webcam and mic to make our system interactive.

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