INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X
Impact factor: 4.295
(Volume3, Issue3)
Available online at www.ijariit.com

Smart Vehicle

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Abstract: Automobile is probably the one which has significantly changed human life. In the last two decades it spread drastically in every level of society hence, safety becomes the main concern. Road Accidents account a severe threat to the lives in both ways physically as well as financially. Even after digital control of the vehicle. Many people lost their life every year in a vehicle collision.We have developed a device which will automatically activate the safety switches on stipulated time before unusual situation.

The aim of this project is to build a cost-effective Adaptive Front Lighting System with automatic turn indicator, with fog sensors and solar powered batteries for more efficient and reliable power source, that will help achieve enhance safety, comfort and reliability. The new design and build can fit into an existing fixed headlamp with a very close eye on cost and reliability. Use of existing headlamps will also allow the AFLS addition to maintaining the vehicle's conformity to existing vehicle aesthetics as well as government regulation.

Keywords: Automobile, AFLS (Adaptive front lighting system), Fog sensor, Road Accidents, Solar Powered Batteries.

I. INTRODUCTION

This project is focused on the system which will help to monitor the head lights so that the headlights will not affect the upcoming traffic. It will also automatically detect and give the indication of turn (right/left).

A Smart Vehicle system is an electrical device that enhances the automobile safety and practice of designing vehicles, construction, equipment, and regulation to minimise the occurrence and consequences of traffic collisions. Road traffic safety more broadly includes roadway design. One of the first formal academic studies into improving vehicle safety was by Cornell Aeronautical Laboratory of Buffalo, New York. The main conclusion of their extensive report is the crucial importance of seat belts and pedal dashboards. However, the primary vector of traffic-related deaths and injuries is the disproportionate mass and velocity of an automobile compared to that of the predominant victim, the pedestrian. In India pedestrian is injured by an automobile every two minutes and are 3 times more likely than the occupants of a vehicle to be killed in an automobile crash per outing.

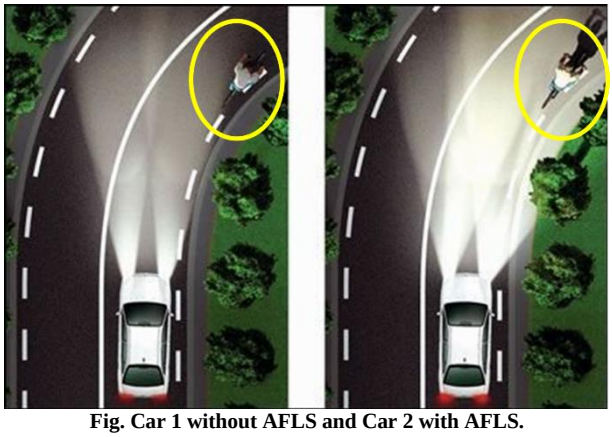


Fig. Car 1 without AFLS and Car 2 with AFLS.

II. LITERATURE SURVEY

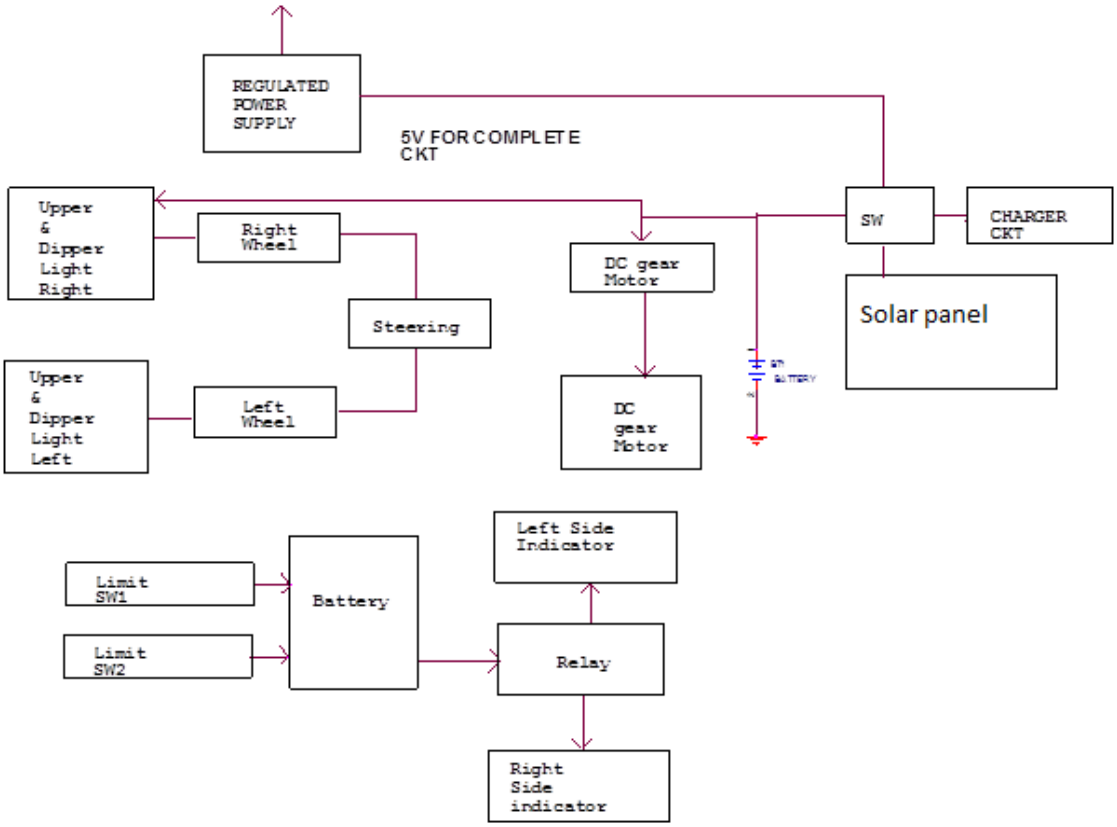
These days user still use manual head lighting switching. Means that the user still needs to switch ON and OFF high beam or low beam, when there is a vehicle coming from the front at night. This system will make it easy for all the drivers or riders who always forget to switch off the high beam when a vehicle is coming from the front. So another driver from the front vehicle will feel comfortable when driving with this new lighting system.

This even helps the user to use the right head lighting system on the right condition automatically. Some drivers do not bother about other drivers and use the wrong light while driving. By using this lighting system, we can help all the drivers using the right light in the right situation.

Headlight high beam on a vehicle are a useful tool. When used incorrectly, they can cause harm to us and to other drivers day or night. It's important to understand the rule of high beams to help prevent a serious accident injury and possible death.

Fog sensors and automation turn detection also enhance the protective system of the vehicle leading to much fewer road accidents. This sort of design is particularly cost effect with more and accurate speed of response.

III. BLOCK DIAGRAM



Main components of Block diagram.

1) IR Sensor
2) Headlights
3) DC gear motor
4) charger circuit
5) Solar panel
6) Battery
7) Limit switch
8) Side indicator

IV. PROJECT WORKING

This project works on solar powered battery or 230V AC supply. It has 230V to 12V step-down transformer which supplies input power to batteries. These batteries can be charged using the solar panel provided, means it is eco-friendly and uses renewable energy resources. It uses DC geared motor to power the wheels of the vehicle. The proximity sensor is used to detect the incoming vehicle from the front. LDR is used to detect the presence of light and intensity of light in order to switch ON and OFF the head lights. Limit switches are used in order to turn on the side indicators at a particular turn angle.

1) LDR (Light Dependent Resistor) or a photo resistor is a semiconductor device whose resistivity is a function of incident light. These are photosensitive semiconductor devices, particularly used for detection of incident radiation.

2) Proximity sensor - We can say that proximity sensor is a device which detects objects nearby without any physical contact up to nominal range or sensor's vicinity. In brief, we can also say that Sensors which convert information on the movement or presence of an object into an electrical signal are called proximity sensors.

3) DC Gear Motor - A geared DC Motor has a gear assembly attached to the DC motor. The speed of the motor is counted in terms of rotations of the shaft per minute and is termed as RPM. The gear assembly helps in increasing the torque and reducing the speed. This concept where gears reduce the speed of the vehicle but increase its torque is known as gear reduction.

4) Limit switch – A switch which is operated by the motion of a machine part or presence of an object. A limit switch is an electromechanical device that consists of an actuator mechanically linked to a set of contacts. When an object comes into contact with the actuator, the device operates the contacts to make or break an electrical connection.

V. ADVANTAGES

1. Fully automatic switching of dipper system in vehicles.
2. Automatic turn indication system.
3. Automatic head lights turn ON and OFF system.
4. Increases human safety.
5. Circuit simple and low cost.
6. The circuit is Economic in power consumption.
7. Easily implementable.
8. Use of solar power leads to use of free energy resources.

FUTURE SCOPE

1. During fog conditions, the adaptive lighting system is not very reliable.
2. For improvements in current scenario features like automatic wiper, eye blinking sensor for driver safety, automobile security system.

CONCLUSIONS

From the smart vehicle project, we can avoid the probable accidents that might happen worldwide.
We will turn lights when vehicle about to turn this is helpful in many situations. As the material, we are using to develop this project is very low cost so this is also cost effective project. This can be easily implemented in all vehicles across worldwide.

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ACKNOWLEDGMENT

We wish to express our sincere gratitude to head of department Prof. N.B.Shaikh, of electrical engineering department for providing us an opportunity for presenting project topic smart vehicle. We sincerely thank our project guide Prof. Rahul.H and project coordinator Prof. K.P.Varade for their guidance and encouragement in the completion of project work. We also wish to express our gratitude to the official and our entire faculty. Who rendered their help during the period of our project. Last but not least we wish to avail ourselves of this opportunity, to express a sense of gratitude and love to my friend and my parents for their manual support, strength, and help for everything.

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