AUTOMATIC CAR HEADLIGHT TURNOFF CIRCUIT

A MINOR PROJECT- II REPORT

Submitted by

ARTHI M	**927622BEC016**
DEEPIKA S	**927622BEC029**
DIVYADHARSHINI D	**927622BEC045**
GOPIKA S	**927622BEC058**

BACHELOR OF ENGINEERING

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BONAFIDE CERTIFICATE

Certified that this **18ECP104L-Minor Project II** report "**AUTOMATIC CAR HEADLIGHT TURNOFF CIRCUIT"** is the Bonafide work of ARTHI M (927622BEC016), DEEPIKA.S (927622BEC029), DIVYADHARSHINI D (927622BEC045), GOPIKA S(927622BEC058) who carried out the project work under my supervision in the academic year 2023-2024 – EVEN SEM.

SIGNATURE	**SIGNATURE**
Dr.A.KAVITHA B.E., M.E., Ph.D.,	**Dr.A.MAHESHWARI B.E.,M.E.,Ph.D.,**
HEAD OF THE DEPARTMENT,	**SUPERVISOR,**
Professor,	Assistant Professor,
Department of Electronics and	Department of Electronics and
Communication Engineering,	Communication Engineering,
M.Kumarasamy College of Engineering,	M.Kumarasamy College of Engineering,
Thalavapalayam,	Thalavapalayam,
Karur-639113.	Karur-639113.

This report has been submitted for the **18ECP104L – Minor Project-II** final review heldat M. Kumarasamy College of Engineering, Karur on Final Review on _________

PROJECT COORDINATOR

INSTITUTION VISION AND MISSION

Vision

To emerge as a leader among the top institutions in the field of technical education.

Mission

M1: Produce smart technocrats with empirical knowledge who can surmount the global challenges.

M2: Create a diverse, fully -engaged, learner -centric campus environment to provide quality education to the students.

M3: Maintain mutually beneficial partnerships with our alumni, industry and professional associations

DEPARTMENT VISION, MISSION, PEO, PO AND PSO

Vision

To empower the Electronics and Communication Engineering students with emerging technologies, professionalism, innovative research and social responsibility.

Mission

M1: Attain the academic excellence through innovative teaching learning process, research areas & laboratories and Consultancy projects.

M2: Inculcate the students in problem solving and lifelong learning ability.

M3: Provide entrepreneurial skills and leadership qualities.

M4: Render the technical knowledge and skills of faculty members.

Program Educational Objectives

PEO1: Core Competence: Graduates will have a successful career in academia or industry associated with Electronics and Communication Engineering

PEO2: Professionalism: Graduates will provide feasible solutions for the challenging problems through comprehensive research and innovation in the allied areas of Electronics and Communication Engineering.

PEO3: Lifelong Learning: Graduates will contribute to the social needs through lifelong learning, practicing professional ethics and leadership quality

Program Outcomes

PO 1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO 2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO 3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO 4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO 5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO 6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO 7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO 8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO 9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO 11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO 12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes

PSO1: Applying knowledge in various areas, like Electronics, Communications, Signal processing, VLSI, Embedded systems etc., in the design and implementation of Engineering application.

PSO2: Able to solve complex problems in Electronics and Communication Engineering with analytical and managerial skills either independently or in team using latest hardware and software tools to fulfil the industrial expectations.

Abstract	**Matching with POs, PSOs**
Headlights Dimmer, Light Dependent Resistor (LDR), Troxler Effects, Human Eye	**PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2**

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ABSTRACT

AUTOMATIC CAR HEADLIGHT TURNOFF CIRCUIT

Headlights of vehicles pose a great danger during night driving. The drivers of most vehicles use high, bright beam while driving at night. This causes a discomfort to the person travelling from the opposite direction and therefore experiences a sudden glare for a short period of time. This is caused due to the high intense headlight beam from the other vehicle coming towards the one from the opposite direction. In this project, an automatic headlight dimmer which uses a Light Dependent Resistor (LDR) sensor has been designed to dim the headlight of on-coming vehicles to avoid human eye effects. This automatically switched the high beam into low beam, therefore reducing the glare effect by sensing the light intensity value of approaching vehicle and also eliminated the requirement of manual switching by the driver which was not done at all times. MATLAB software was employed in designing the project. The Keil software was also employed to program the microcontroller. At the time the spread light from other sources reached the sensor, its intensity would be very much reduced below the triggering threshold level. The sensitivity of a photo detector determined the relationship between the light falling on the device and the resulting output signal. A server module could be included to this system for receiving and storing headlight rays parameters information in a database application.

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LIST OF ABBREVIATIONS

ACRONYM		ABBREVIATION
LDR	-	Light Dependent Resistor
ADC	-	Analog to Digital Convertor
AHS	-	Adaptive Headlight System
nm	-	nanometer

CHAPTER 1

INTRODUCTION

Light is electromagnetic radiation within a certain portion of the electromagnetic spectrum. [1] C. S. Martinez, S. L. Macknik and D. H. Hubel, The Role of Fixational Eye Movements in Visual Perception, Nature Reviews Neuroscience 5, 2004, pp.229-240. The word usually refers to visible light, which is visible to the human eye and it is responsible for the sense of sight. Visible light is usually defined as having wavelengths in the range of 400–700 nanometers (nm), or 400×10^{-9} m to 700×10^{-9} m, between the infrared (with longer wavelengths) and the ultraviolet (with shorter wavelengths). Light can be produced by nature or by humans. [2] R. Kanai, Y. Kamitani and U. Utrecht, Time-locked Perceptual Fading Induced by Visual Transients, unpublished. "Artificial" light is typically produced by lighting systems that transform electrical energy into light. The human eye is a very sensitive organ. It works almost an entire day without any rest. The human eyes are adaptable to a particular range of vision. There are two visions namely the scotopic and photopic vision. [3] S. Aishwarya, Bright Headlights: A Major Cause of Accidents, The Hindu, Online edition, May 02, 2006.

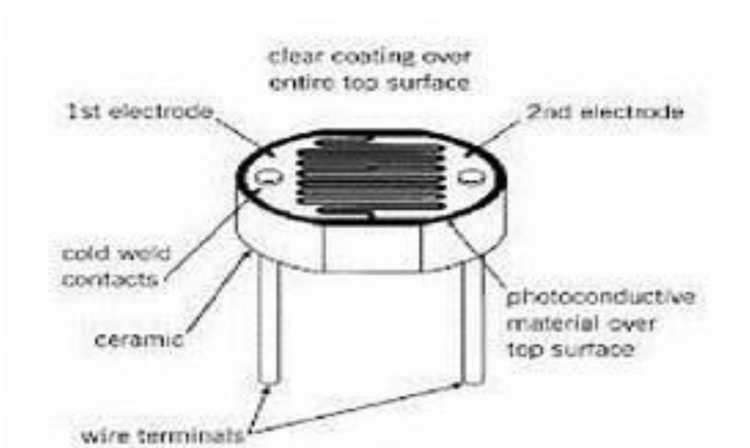
This is the photopic vision. It takes 4 seconds for our eyes to change from photopic vision to scotopic vision. This is also an example of Troxler effect. As the brightness increases, the strain to focus on an object increases. This will increase the response of that person. The requirement of headlight is very common during night travel. The same headlight which assists the driver for better vision during night travel is also responsible for many accidents that are being caused. [4] C. Guttman, High Intensity Headlights could cause road accidents by dazzling oncoming drivers, Eurotimes, April 2003.

The driver has the control of the headlight which can be switched from high beam (bright) to low beam (dim). The headlight has to be adjusted according to the light requirement by the driver .During p itch black conditions where there are no other sources of light, high beam is used. In all other cases, low beam is preferred. But in a two-way traffic, there are vehicles plying on both sides of the road. So when the bright light from the headlight of a vehicle coming from the opposite direction falls on a person, it glares him for a certain amount of time. This causes disorientation to that driver. This discomfort will result in involuntary closing of the driver's eyes momentarily. [5] J. J. F azzalaro, Limitations on Headlight brightness, OLD research report, Br. J. Ophthalmol, 87(1), 2003, pp.113-117.This fraction of distraction is the prime cause of many road accidents. The prototype that has been designed to reduce this problem by actually dimming down the bright headlight of our vehicle to low beam automatically when it senses a vehicle at close proximity approaching from the other direction. The entire working of the dimmer is a simple electronic circuitry arrangement which senses and switches the headlight according to the conditions required .

1.1 PROJECT DETAILS

Motorists face a huge problem due to high beam light which falls directly onto their eyes when driving at night or during foggy conditions. This effect includes temporary blindness, glare, fading effect of image and sometimes causing accident leading to loss of many lives. This effect contributes to a terminology known as Troxler Effect. Troxler effect is used to describe a kind of temporary blindness. It is otherwise known as the 'fading effect'. This glare is produced due to over exposure of the rods and cones inside our eye. Even after the source of glare is removed, an after-image remains in our eye that creates a blind spot. This phenomenon is called Troxler effect. This means to react to a hazard and will stop within 41 feet. Due to Troxler effect, the same person travelling under the same conditions will take 0.9 seconds longer to react and hence will come to a complete halt only at 123 feet. There is a huge difference of 82 feet. This is more than enough to cause a disaster on the road. This Troxler effect is across all ages. Any one exposed to sudden bright light experiences this Troxler effect. Hence there is a need to design and construct a prototype of this device that automatically dims the headlights for on-coming vehicles using light dependent resistor sensing technique to help solve this problem.For example, let us assume a motorist travelling at 60 miles per hour takes 0.5 seconds.

Construction of LDR:



1.2 BASICS OF LDR

1. OVERVIEW OF LIGHT DEPENDENT RESISTOR (LDR)

Light Dependent Resistor (LDR) is a type of semiconductor and its conductivity changes with proportional change in the intensity of light. A light dependent resistor (LDR) is a resistor whose resistance decreases with increasing incident light intensity; thus , it exhibits photoconductivity. Light Dependent Resistors are very useful especially in light/dark sensor circuits Normally the resistance of an LDR is very high, sometimes as high as 1000 000 ohms, but when they are illuminated with light resistance drops dramatically. A Light Dependent Resistor is made of a high resistance semiconductor. If light falling on the device is of high enough frequency, photons absorbed by the semiconductor give bound electrons enough energy to jump into the conduction band. The resulting free electron and its hole partner conduct electricity, thereby lowering resistance. The light sensitive part of the LDR is a wavy track of Cadmium Sulphide. Cadmium Sulphide cells rely on the materials ability to vary its resistance according to the amount of light striking the cell.
below shows the Construction of LDR.

LDR is employed in the circuit to convert the intensity of the high beam headlight of the approaching vehicle into electrical signal. The advantages of LDRs are as follows: they are cheap and are readily available in many sizes and shapes, practical LDRs are available in variety of sizes and package styles, the most popular size having a face diameter of roughly 10mm and finally they need very small power and voltage for their operations.

CHAPTER 2

LITERATURE REVIEW

1. ADAPTIVE HEADLIGHT SYSTEM FOR ACCIDENT PREVENTION

Published in: 2014 International Conference on Recent Trends in Information Technology Shreyas S, Kirthanaa Raghuraman, Padmavathy AP, S Arun Prasad, G. Devaradjane Madras Institute of Technology, Anna University Chennai, India

1) The work in this paper is focusing on the design and operation of a microcontroller-based Adaptive Headlight System (AHS) for automobiles is the subject of this study. The major goal of this system is to provide a cost estimate. When driving in the dark, this is an efficient strategy for illuminating blind spots. during the night and when visibility is obstructed order to make the objects visible in those dimly lit areas as a result, accidents are avoided. The concept of adaptive headlamps is not new in high end cars like Volvo, BMW, Audi etc. The components that are used to implement the adaptive headlight system are Microcontroller unit, DC Generator, Photo diode, Stepper motor etc. limitation is the maximum degree of turn achieved on the left headlamp is 37 degrees and on the right-hand side is 43 degrees.

2) Intelligent Automatic High Beam Light Controller Mohammed Alsumady and Shadi. A. Alboon Hijjawi Faculty for Engineering Technology, Electronics Engineering Department, Yarmouk University, Irbid, 21163, Jordan Published by license under the OCP Science imprint, a member of the Old City Publishing Group. The work in this paper focusing on an automatic high beam light controller is required to make night time driving safer and more friendly to other cars on the road. This study provides a simple, low-cost, and easy-to-implement method. Install and build an intelligent high beam light controller that turns on and off automatically. They are using simple LDR sensor, which is sense simple light intensity. The technology was developed and tested on a real car that was driven at night. The

results of the experiments suggest that the system can detect incoming car lights from a distance of roughly 230 meters.

3) Night Time Vehicle Detection for Driving Assistance Light Beam Controller P. F. Alcantarilla, L. M. Bergasa, P. Jim´enez, M. A. Sotelo, I. Parra, D. Fern´andez Department of Electronics. University of Alcal´a de Henares (Madrid), Spain pablo.alcantarilla, bergasa, pjimenez, sotelo, parra. S.S. MayoralFICO MIRRORS, SA - Research Department Mollet del Vall´es (Barcelona), Spain Silvia. They demonstrate a successful system for recognising cars in front of a camera-assisted vehicle (preceding vehicles moving in the same direction and oncoming vehicles travelling in the opposite direction) under nighttime driving conditions so that vehicle head lights can be automatically changed. Avoiding glares by switching between low and high beams for the motorists. In this paper they are studied on Clustering Process, Distance Estimation, Black Hat Transformation, Classification Using Support Vector Machines etc. On the one hand, the system's performance for headlights is excellent (detection distances of 300 m to 500 m), while on the other hand. Limitation is the performance of tail lights (distance from the vehicle) the detecting range (50 m - 80 m) has to be expanded.

4) Temporal Coherence Analysis for Intelligent Headlight Control Antonio Lopez ´, Jorg Hilgenstock, Andreas Busses, Ramon Baldrich ´, Felipe Lumbreras, Joan Serrat. January 2008. The work in this paper focusing on, even when the traffic situation requires it, drivers use high lights sparingly at night. As a result, intelligent automatic regulation of vehicle headlights is critical. Because dazzling other drivers is prohibited. In this paper they are mostly studied on “Algorithm”. The key problem in the application at hand is distinguishing between picture spots caused by vehicle lights and those caused by reflections in various structures.

2. FUZZY HEADLIGHT INTENSITY CONTROLLER USING WIRELESS SENSOR NETWORK VICTOR NUTT ELECTRICAL ENGINEERING

1) Arkansas State University Jonesboro, USA. Shubhalaxmi Kher Electrical Engineering Arkansas State University Jonesboro, USA. Mehul Raval Pattern Recognition and Image Processing Group DAIICT Gandhinagar, India. IEEE International Conference on Fuzzy Systems · July 2013. The work in this paper is focusing on, the data acquired by a wireless sensor network is used to create a fuzzy controller (WSN). Low latency enables for faster adjustment of illumination intensity, reducing momentary blindness. For controller design, a number of factors are taken into account. The results reveal that the controller output is practically instantaneous and continuously generates a control signal. They are mainly studied on Headlight Intensity Controller, Design issues, Fuzzy inference system, Data acquisition etc. When both drivers use a greater lamp intensity setting, the problem becomes even worse. Increased speed as a result of lower traffic levels at night also enhances the severity of accidents.

2) A Multi Featured Automatic Head Light Systems Prototype for Automotive Safety Mr. Sandip S. Jadhav, Department of Automobile Engineering, Rajarambapu Institute of Technology, Islampur, Shivaji University Kolhapur, M.S. INDIA. Prof. Ansar A. Mulla Assistant Professor, Department of Automobile Engineering, Rajarambapu Institute of Technology, Islampur, Shivaji University Kolhapur, M.S. INDIA. The work in this paper is focusing on, the driver has control over the headlamp, which can be altered from high to low beam (brightness) (dim). The headlight must be adjusted to the lighting conditions. The driver's required the prototype that has been created, reduces the problem by lowering the light. our vehicle's bright headlights to low beam automatically when it detects a vehicle approaching in close proximity in the opposite direction The dimmer's full operation is a using a sensor to create a simple electronic circuit Arduino, which detects and controls the headlight in accordance with the necessary conditions. Automatic

switch is used in this project. In this project there is some limitation, When the relative humidity in the atmosphere is greater than 195, the immediate fog lamp turns on. In the event that there is less moisture or It will get if the humidity in the atmosphere is less than 195.

3)Multi featured Automatic Headlight Switching System for Human Safety Mrs. A. Geetha, J. Pravin Balaji, M. Prakash Raj, V. Pravin Kumar. Assistant Professor, Department of Electronics and Communication Engineering, SSM Institute of Engineering and Technology, Dindigul UG Scholars, Department of Electronics and Communication Engineering, SSM Institute of Engineering and Technology. The work in this paper focusing on Arduino Board, LDR and Ultrasonic Sensor. Based on the detection of On-Coming, the system intends to automatically manage a vehicle's beam condition during nighttime driving. This project includes a reverse parking sensor, which detects when the car is approaching an object while in reverse mode and emits a sound from a specific distance. In this project there are some limitations which is When driving at night or in foggy conditions, motorists suffer a significant disadvantage due to the ray of light that falls straight upon their eyes. These phenomena have medicinal implications.

4) Automatic Vehicle Headlight Management System to Prevent Accidents Due to Headlight Glare Lakshmi K, Nevetha R, Ilakkiya S N, Ganesan R. International Journal of Innovative Technology and Exploring Engineering (IJITEE), ISSN: 2278-3075, Volume-8 Issue-9, July 2019. The work in this paper is based on headlight, vehicle, temporary blindness, LDR. During night driving, the high beam from the headlight creates a perilous condition. It causes momentary blindness in drivers, which can result in a collision or, in rare cases, an accident. The information is supplied to the microcontroller when a high beam falls on the surface of LDR. In this project there are some limitations which is when driving at night or in foggy conditions, motorists suffer a significant disadvantage due to the ray of light that falls straight upon their eyes.

CHAPTER 3

EXISTING SYSTEM

1. OVERVIEW OF HEADLAMP SYSTEMS

This invention relates to vehicle headlamp systems and in particular to a system for automatically controlling the switching of the headlamps between the low beam and high beam settings. Improved automotive control systems have freed drivers from performing a number of tasks that formerly required manual operations. Such systems relieve drivers from the distractions of these auxiliary systems and often results in improved concentration as well as reduced driver fatigue. One such system which has seen limited use is an automatic headlamp dimmer system for controlling the headlamps of a vehicle. In particular, an automatic headlamp dimmer system is designed to automatically dim the headlamps (switch from high beam to low beam) in the presence of lights from other vehicles. Since a vehicle's headlamps should be dimmed for both on-coming traffic as well as traffic being approached from behind, it is necessary for an automatic headlamp dimmer system to accurately sense both the presence of another vehicle's headlamps or tail lamps. While numerous automatic headlamp dimmer control systems have been developed, in general, these systems have had serious drawbacks due to poor performance, complexity or cost. These shortcomings, particularly in the area of performance, have been directly responsible for the limited use of automatic headlamp dimmer systems to date. Since these systems must sense light from headlamps as well as tail lamps from other vehicles, a key performance requirement is the system's capability to distinguish this light from extraneous in-coming light. Examples of such unwanted light include reflections from road signs, light from street lamps, or light from vehicles on other roadways. The problem of avoiding false responses to extraneous light signals is especially troublesome when it is considered that the intensity of these extraneous light signals can be many times greater than the intensity of the light signal from a tail lamp. As a result, some prior art systems simply do not attempt to detect valid tail lamp signals, but rather are designed to respond only to the light from on-coming headlamps which, of course, presents a much stronger signal. Other systems with sufficient sensitivity to detect the light from tail lamps are susceptible to false triggering which degrades performance and leads to a lack of driver confidence in the system. As a result, users frequently disable the systems entirely and revert to manual control. Spurious responses in automatic headlamp dimmer systems are also encountered in the presence of overhead flashing lights. Such flashing may be produced, for instance, by blinking overhead traffic lights, or by blinking construction lights or arrows. These flashes, when detected by conventional automatic headlamp dimmer sensors, can cause the system to undesirably cycle between high and low beams in synchronization with the flashing light. A similar situation is also encountered when windshield wipers are operated if the light sensor for the automatic headlamp dimmer system is positioned behind the windshield within the sweep of the wipers. Such placement is desirable because the sensor is not exposed to exterior debris, and further because the sensor's view is likely to be as unobstructed and clear as the driver's view. However, when the windshield wipers are operated, the sensor's field of view is the periodically occluded by the wiper blade. This may cause the headlamp dimmer system (when in the low beam mode) to cycle to the high beam mode while the wiper is obstructing the view, and conversely to return back to the low beam mode when the wiper is not obstructing the sensor's field of view. Obviously, cycling of the automatic headlamp dimmer in response to flashing lights and windshield wiper activity is highly annoying and contributes to the low usage of such systems . It is accordingly, a primary object of the present invention to provide an improved automatic headlamp dimmer system that is responsive to both the headlamps and tail lamps of other vehicles, and yet is able to reliably distinguish between valid light signals and extraneous light signals. It is another primary object of the present invention to provide an improved automatic headlamp dimmer system that is able to disregard blinking lights from stop lights and the like and thereby avoid spurious activation of the headlamp dimmer in response thereto. Generally, these objects are accomplished by providing a system that is sensitive to light only in the near infrared region, and which excludes other wavelengths including light in the visible region. More particularly, it has been determined that light from headlamps and tail lamps contains a significant amount of signal information in the infrared region. On the other hand, light from extraneous light sources such as treet lamps, reflections from road signs, etc., predominate in the visible region and contain very little signal information in the infrared band. Accordingly, by responding only to light in the near infrared region, the signal to noise ratio of the present system is greatly enhanced, thereby enabling the system to accurately recognize a tail lamp signal in the presence of extraneous light signals several orders of magnitude greater in intensity. Additionally, the automatic headlamp dimmer, according to the present invention, is able to detect the presence of a spurious periodically varying light signal and temporarily disable its switching capabilities to effectively ignore the spurious signal. In one embodiment of the present invention, the automatic headlamp dimmer system is provided with the capability of determining if periodic variations in the input light signal are characteristic of variations expected by operation of the vehicle's windshield wipers. If the received signal exhibits a predefined repetitive pattern, the system will respond by not allowing switching from low beam to high beam to occur during the time that the wipers block the field of view of the sensor. Benefits and advantages of the present invention will become apparent to those skilled in the art to which this invention relates from the subsequent description of the preferred embodiments and the appended claims, taken in conjunction with the accompanying drawing.

CHAPTER 4

PROPOSED SYSTEM

The following criteria must be considered when placing the device in a real vehicle:

1. It should be kept at a safe place, protected from external environment like rain, and dust.

2. The placement of this circuit should be in line with the eye of the driver, so that it responds exactly in the same way how a driver would react to the bright light.

3. The circuit should have a constant supply whenever the headlights are turned ON.

4. It should be compact and easy to install.

This device should be place in all the vehicles. By installing this device, each vehicle can independently operate on its own. From the above discussions, it has been concluded that the device can be concealed in front of the car, near the wipers, at the base of the windscreen. The device is denoted as a red dot.

By using suitable adjustable resistors, the circuit's sensitivity can be tuned to the appropriate requirement. It can be made sensitive for a wide range of light beam by just varying the balance condition of the potential divider the network. Therefore, the driver can manually adjust the sensitivity level so that it can be customized for his personal driving comfort.

CHAPTER 5

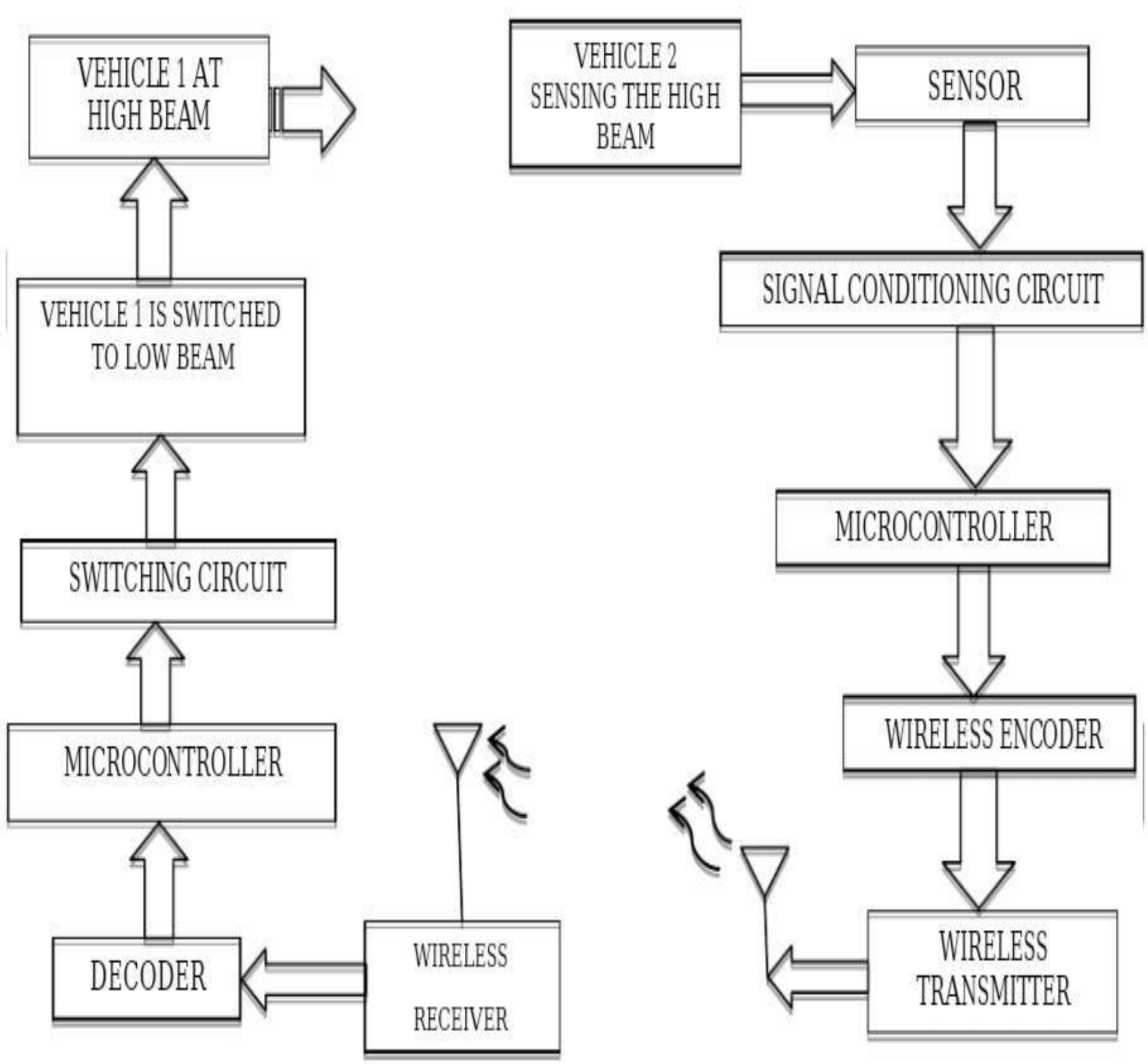
CROSS COMPLIERS

The execution of code in the microcontroller takes place in a hexadecimal code format. The cross compilers act as a bridge between the programming software and microcontrollers. In converts into hexadecimal code which is understood and executed by microcontroller. The advantage of using cross compilers is that in case of some applications programming, the microcontroller using assembly language will become bulk and tedious. When cross compilers are used, the microcontroller can be programmed in any other language which is easy to program and debug.

CHAPTER 6

METHODOLOGY

The block diagram was designed using MATLAB software. In designing the block diagram, the software had menu that contains various figures. Rectangular and square boxes were chosen to represent the various components used for the prototype.



1. The vehicle 2 senses the high beam of vehicle 1 with the help of the Light Dependent Resistor (LDR) sensors and converts the light intensity into electrical signal and send it to the signal conditioner or Analog to Digital Converter (ADC).

2.The ADC converts the analog signal at it input into digital signal for the microcontroller to work with.

3. The Microcontroller block functions as the main control unit which will monitor the data from ADC and operates the Zigbee Transceiver & relay when the sensing values go beyond the set point.

ADVANTAGES:

1.Provide safe driving during bad weather conditions.

2.Economical to be installed.

.

3.Maintenance cost is low

CHAPTER 7

RESULTS AND DISCUSSION

The circuit had been designed to be a working model. Until the vehicle is encountered by an opposite vehicle, it can travel with high beam. Once it encounters an opposite vehicle, each of light. As the vehicles cross over other, the intensity of light falling on the sensor decreases of the automatic light the two vehicles senses the opposite vehicle's light. Thus if either of the vehicles are using high beam, it switches to low beam. If the headlight is already in low beam, then no change occurs. As the vehicles cross each other, the intensity of light falling on the sensor decreases and the headlights switch back to their original mode. There might be a question of other sources of light in the road like sign boards, street lights and buildings. But as LDR is used as the source and the placement of the device is highly directional, it is not affected by any other light sources which might be present in the vicinity. The other sources will be located far away from the road and hence their spread angle will be very high. Hence by the time the spread light from other sources reach the sensor its intensity will be very much reduced below the triggering threshold level. The sensitivity of a photo detector is considered to be the relationship between the light falling on the device and the resulting output signal. However, for the photocell, the relationship between the incident light and the corresponding resistance of the cell is considered. Therefore, a graph of Resistance versus is plotted which shows a negative slope.

CHAPTER 8

CONCLUSION:

An automatic headlamp dimmer of on-coming vehicles had been designed using LDR sensing technique. Thus, the system device automatically switches the headlight to low beam when it senses a vehicle approaching from the opposite side using Light Dependent Resistor (LDR) sensor. Glare during driving is a serious problem for drivers and therefore caused by the sudden exposure of our eyes to a very bright light of the headlights of vehicles. This causes a temporary blindness called the Troxler effect. Eventually this has become the major reason for accidents occurring at night and also during bad conditions such as rainy and foggy conditions. The driver should have turned down the bright lights immediately to avoid glare to the other person, however they find it difficult to do. Hence, the idea for the design and development of a prototype circuit called the automatic headlight dimmer. It enables the driver to use high beam light when required and also automatically switches the headlight to low beam when it senses a vehicle approaching from the opposite side. Thus, the implementation of this device in every vehicle does not only avoid accidents but also provide a safe and a comfortable driving. A server module could be included to this system for receiving and storing headlight rays parameters information in a database application.

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OUTCOME

This prototype is implemented and located to be helpful to the drivers in automatically switching the headlight from low beam ray to high beam ray and vice-versa. The prototype not only reduces fatigue but also provides comfort and increases the drivers’ concentration in other areas while driving. The circuit consists of easy and economical components that are easily available within the market and simple to be installed .The implementation of this prototype brings automation to the automotive industry.