

AN INDUSTRY ORIENTED MINI PROJECT REPORT
On
LI-FI BASED TEXT COMMUNICATION

*Submitted in partial fulfillment of the requirements
For the award of the degree of*

BACHELOR OF TECHNOLOGY

In

Electronics & Communication Engineering

By

Managari Shivani

(Regd No. 17891A0435)

Under the guidance of

Dr. N. Dinesh Kumar

Head of the department



DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VIGNAN INSTITUTE OF TECHNOLOGY AND SCIENCE

(Affiliated to Jawaharlal Nehru Technological University)

Deshmukhi(V), Pochampally(M), Yadadri-Bhuvanagiri District, Telangana, 508284.

Ph No: 08685-226128, 9866399776/861.

2020-2021

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

VIGNAN INSTITUTE OF TECHNOLOGY AND SCIENCE

(Affiliated to Jawaharlal Nehru Technological University)
Deshmukhi(V),Pochampally(M), Yadadri-Bhuvanagiri District,Telangana,508284.

Ph No: 08685-226128, 9866399776/861.

2020-2021

DECLARATION

I hereby declare that project entitled “**Lifi based text communication**” is bonafide work duly completed by us. It does not contain any part of the project or thesis submitted by any other candidate to this or any other institute of the university.

All such materials that have been obtained from other sources have been duly acknowledged.

Managari Shivani

Regd No. 17891A0435

VIGNAN INSTITUTE OF TECHNOLOGY AND SCIENCE



DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

CERTIFICATE

This is to certify that the thesis work titled “Dustbin Monitoring and Alerting System” submitted by **Ms. Managari Shivani (Regd No. 17891A0435)** in partial fulfillment of the requirements for the award of the degree of **Bachelor of Technology in Electronics & Communication Engineering** to the Vignan Institute of Technology and Science, Deshmukhi is a record of bonafide work carried out by him/her under my guidance and supervision.

The results embodied in this project report have not been submitted in any university for the award of any degree and the results are achieved satisfactorily.

DR. N. Dinesh Kumar
Head Of The Department

(External Examiner)

PREFACE

The project “Lifi based text communication”, In this we will be demonstrating Li-Fi communication using two Arduino. Here the text data is transmitted using LED and 4x4 keypad and it is decoded on the receiver side using LDR.

Chapter 1: Presents introduction, block diagram, components used, cost of the project, advantages, disadvantages, applications of the project.

Chapter 2: Presents the topic Literature survey. It explains about what is Lifi, need for Lifi, history.

Chapter 3: Presents the Methodology. It deals with the block diagram of the project, hardware description.

Chapter 4: Presents the software description, implementation, design considerations, procedural steps for compilation, simulation and dumping.

Chapter 5: Presents Results

Chapter 6: Presents conclusion and future scope of the project.

ACKNOWLEDGEMENT

This project would not have been possible without considerable guidance and support. So, we would like to acknowledge those who have enabled us to complete this seminar.

Firstly, we would like to express our gratitude to our CEO **Mr. Shravan Boyapati**, management and Principal **Dr. Durga Sukumar** for extending their support.

Secondly, my sincere thanks to our head of the department, **Dr. N. Dinesh Kumar**, who helped me in selecting the topic, correcting various documents with attention and care. He has taken the pain to go through the project and make necessary correction as and when needed.

Finally, we would also like to thank our staff members that we called upon for assistance since the genesis of this project. Their opinions and suggestions have helped us in realizing this seminar and with their support and sharing ideas during the progress. I also extend my heartfelt thanks to my parents and well wishes.

ABSTRACT

Abstract: The main objective of this project is to use Li-Fi for faster communication of the data.

Working: Li-Fi uses visible light as a communication medium for the transmission of data. A LED can act as a light source and the photodiode acts as a transceiver that receives light signals and transmits them back. By Controlling the light pulse at the transmitter side, we can send unique data patterns. This phenomenon occurs at extremely high speed and can't be seen through the human eye. Then at the receiver side, the photodiode or Light-dependent resistor (LDR) converts the data into useful information. In the transmitter part of Li-Fi communication, the keypad is used as input here. That means we'll be selecting the text to be transmitted using the keypad. Then the information is processed by the control unit, which is Arduino in our case. Arduino converts the information into binary pulses which can be fed to an LED source for transmission. Then these data are fed to LED light which sends the visible light pulses to the receiver side.

Applications: Li-Fi applications are varied as a result of its key features, such as directional lighting, energy efficiency, intrinsic security, high data rate capability, signal blocking by walls and integrated networking capability.

CONTENTS	PAGE NO
CERTIFICATE	i
DECLARATION	ii

PREFACE	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
CHAPTER 1: INTRODUCTION	1-4
1.1 Introduction of the project	1
1.2 Block diagram	2
1.3 Hardware requirements	2
1.4 Cost of the project	3
1.5 Advantages	3
1.6 Disadvantages	4
1.7 Applications	4
CHAPTER 2: LITERATURE SURVEY	5-6
2.1 About	5
2.2 History	5-6
2.3 Need for Li-Fi	6
CHAPTER 3: METHODOLOGY	8-13
3.1 Introduction with circuit diagrams	7-8
3.2 Hardware description	8-13
CHAPTER 4: SOFTWARE DESCRIPTION	14-20
4.1 Introduction	14-15
4.2 Transmitter code	15-18
4.3 Receiver code	18-20

CHAPTER 5 RESULTS	21
CHAPTER 6: CONCLUSION AND FUTURE SCOPE	22
APPENDIX	
Appendix A Arduino	23-29
Appendix B LDR Sensor	29-32
Appendix C 16x2 LCD Display	32-35
Appendix D LED	35-37
Appendix E IR Transmitter and Receiver	37-39
Appendix F Potentiometer	39-41
Appendix G Resistor	42-45
REFERENCES	46

LIST OF FIGURES	PAGE.NO
1.1 Block diagram of transmitter	2
1.2 Block diagram of Receiver	2
3.1.1 Circuit diagram of Transmitter	7
3.1.2 Circuit diagram of Receiver	8
3.2.1 Arduino UNO and MEGA	9
3.2.2 LDR Sensor	10
3.2.3 LCD Display	10
3.2.4 4X4 Keypad	11
3.3.5 LED	11
3.3.6 IR Transmitter and Receiver	12
3.3.7 Potentiometer.	12
3.2.8 Resistor (1K, 10K)	13
3.2.9 Breadboard	13
A1 Arduino UNO(Hardware)	24
A2 Arduino Software	25
A3 Pin diagram of Arduino	26
B1 LDR symbol	29
B2 LDR structure	30
B3 LDR construction	31
C1 LCD display	33
C2 LCD pins.	34
D1 Parts of LED.	36
D3 Electrical symbol and polarities of LED	37
E1 IR TX and RX	38
E2 IR pair Test Circuit	39

F1	40	
F2	41	
G1 Resistors		42
G2 Symbols of resistor		43
G3 Potentiometer and variable resistor		44