VISVESVARAYA TECHNOLOGICAL UNIVERSITY

JNANA SANGAMA, BELAGAVI-590018

A Seminar Report
On

"Visual Light Communication Using Li-Fi Technology"

submitted in partial fulfillment for technical seminar in

Bachelor of Engineering
In
Computer Science and Engineering

By

Sumit Kumar
USN: 1BG12CS101

Under the Guidance of

Dr. Divyashree B A
Professor
Department of Computer Science and Engineering

Vidyaya Amrutham Ashnuthe

B. N. M. Institute of Technology

12th Main, 27th Cross, Banashankari II Stage, Bengaluru 560070.

Department of Computer Science and Engineering

2015-2016

B. N. M. Institute of Technology

12th Main, 27th Cross, Banashankari II Stage, Bengaluru 560070.

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

2015-2016

Vidyaya Amrutham Ashnuthe

CERTIFICATE

Certified that the Seminar on topic **Visual Light Communication Using Li-Fi Technology** has been successfully presented at **BNM Institute of Technology** by **Sumit Kumar,** bearing 1BG12CS101**,** in partial fulfillment of the requirements for the *VIII Semester degree of* ***Bachelor of Engineering in Computer Science and Engineering*** *of Visvesvaraya Technological University, Belgaum* during academic year 2015-2016. It is certified that all corrections/suggestions indicated for Internal Assessment have been incorporated in the report deposited in the departmental library. The Seminar report has been approved as it satisfies the academic requirements in respect of Seminar work for the said degree.

Dr. Divyashree B A
Project Guide
Professor

Dr. Sahana D. Gowda
Professor and HOD

DECLARATION

I, **Sumit Kumar [USN: 1BG12CS101]**, student of VIII Semester BE, in Computer Science and Engineering, BNM Institute of Technology hereby declare that the Seminar entitled "Visual Light Communication Using Li-Fi Technology**"** has been carried out by me and submitted in partial fulfillment of the requirements for the *VIII Semester degree of* ***Bachelor of Engineering in Computer Science and Engineering*** *of Visvesvaraya Technological University, Belgaum* during academic year 2015-2016.

Date :

Place : Bengaluru

SUMIT KUMAR

1BG12CS101

ACKNOWLEDGEMENT

The satisfaction and euphoria that accompany the successful completion of any task would be incomplete without the mention of the people who made it possible, whose constant guidance and encouragement crowned the efforts with success.

I would like to thank **Management** of **BNM Institute of Technology** for providing such a healthy environment for the successful completion of Seminar work.

I would like to express my thanks to the Director **Prof. T. J. Ramamurthy** and the Principal **Dr. Krishnamurthy G N** for their encouragement that motivated me for the successful completion of Seminar work.

It gives me immense pleasure to thank **Dr. Sahana D Gowda,** Professor and Head of Department for her constant support and encouragement.

Also, I would like to express my deepest sense of gratitude to my Seminar Guide **Dr. Divyashree B A**, Professor, Department of Computer Science & Engineering for her constant support and guidance throughout the Seminar work.

I would also like to thank the Seminar Coordinator **Smt. Sreevidya R. C,** Associate Professor, Department of Computer Science & Engineering and all other teaching and non-teaching staff of Computer Science Department who has directly or indirectly helped me in the completion of the Seminar work.

Last, but not the least, I would hereby acknowledge and thank my parents who have been a source of inspiration and also instrumental in the successful completion of the seminar work.

Sumit Kumar

USN: 1BG12CS101

ABSTRACT

Whether you're using wireless internet in a coffee shop, stealing it from the guy next door, or competing for bandwidth at a conference, you've probably gotten frustrated at the slow speeds you face when more than one device is tapped into the network. As more and more people and their many devices access wireless internet, clogged airwaves are going to make it increasingly difficult to latch onto a reliable signal. Li-Fi is typically implemented using white LED light bulbs. These devices are normally used for illumination by applying a constant current through the LED. However, by fast and subtle variations of the current, the optical output can be made to vary at extremely high speeds. Unseen by the human eye, this variation is used to carry high-speed data. Li-Fi stands for Light-Fidelity. In this technology data is transmitted through illumination by sending data through an LED light bulb that varies in intensity faster than the human eye can follow. Wi-Fi is great for general wireless coverage within buildings, whereas Li-Fi is ideal for high density wireless data coverage in confined area and for relieving radio interferences issues. Li-Fi provides better bandwidth, efficiency, availability and security than Wi-Fi and has already achieved blisteringly high speed in lab. By leveraging the low-cost nature of LEDs and lighting units there are many opportunities to exploit this medium, from public internet access through street lamps to auto-piloted cars that communicated through their headlights. In future data for laptops, smart phones, and tablets will be transmitted through the light in a room. Visual Light Communication (VLC) system based on white LEDs has emerged as an eco-friendly IT green technology using visible light spectrum in provision of both lighting and wireless access. Using this technology for communication will proceed towards the cleaner, greener, safer and brighter future.

CONTENTS