

## ADVANCEMENT IN HOME AUTOMATION USING LI-FI TECHNOLOGY

**Ganesh Udmale, Kiran Adamane, Abhimanyu Jadhav, Harshwardhan Gughane,  
Prof . Soumitra Das, Prof. Ashwini Navale**  
**Department of Computer Engineering, Dr. D. Y. Patil School of Engineering,  
Pune, India.**

**Abstract:** *A prototype Li-Fi system which will help to monitor home status using Web Application. Which comes with two module first module consists of sensors such as temperature (LM35), Gas leakage (MQ7), light intensity (LDR) which are connected to the Raspberry Pi. After analysing home status by different sensor it is send to receiving side Raspberry Pi processor. In second module user can control devices like lights and fan manually with the help of Web application.*

**Keywords :** *LI-Fi, Raspberry Pi,Arduino, LM35, MQ7,LDR.*

### 1. INTRODUCTION

Li-Fi is transmission of information through a LED light that differs in force speedier than the human eye can take after. At the point when LED ON, advanced 1 is transmitted and when it's OFF, computerized 0, The system consist of two modules 1<sup>st</sup> one is for Monitoring the home Status. 2<sup>nd</sup> one is for controlling electronics devices manually with the help of Web application. There are two side in this framework we use Raspberry Pi microprocessor and Ardino microcontroller. One is for transmission and other for receiving purpose. In the 1<sup>st</sup> Module at the transmission side there are three sensors for sensing Temperature, gas leakage and light intensity. In the 2<sup>nd</sup> Module user can manually operate electronic appliances like Fan, Lights etc. with Web application.

### 2. PROPOSED SYSTEM

A system architecture is the conceptual model that defines the structure, behaviour, and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviours of the system.

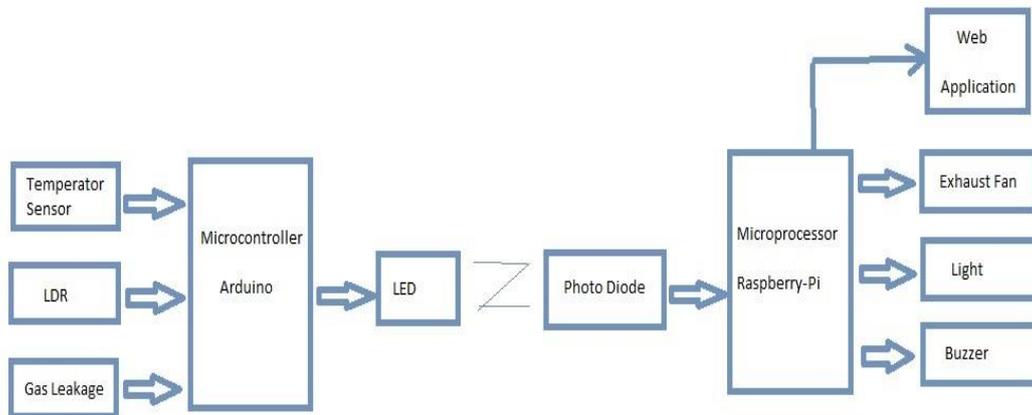


Fig 1 .Propose System

The above fig 1 shows Li-Fi Prototype. Which comes with two module first module consists of sensors such as temperature (LM35), Gas leakage (MQ7), light intensity (LDR) which are connected to the Arduino. After detecting home status by different sensor it is send to transmitter side Raspberry Pi controller. In second Module Raspberry pi work as router user can control devices like lights and fan manually with the help of Web app.

#### **SOFTWARE REQUIREMENT:**

- IP Scanner
- VNC Viewer
- Web Application
- Programming language – Python

#### **HARDWARE REQUIREMENT:**

- Raspberry Pi-3
- Temperature Sensor – LM35
- Gas detection Sensor – MQ7
- LED Light
- Photo Diode
- Light Dependant Resistor (LDR)
- Exhaust Fan
- Buzzer
- Lamp
- Relay



## DISADVANTAGES:

- Because it uses visible light, and light cannot penetrate walls, the signal's range is limited by physical barriers.
- A whole Infrastructure for lifi would need to be constructed.

## 5. CONCLUSION & FUTURE SCOPE

The proposed *IOT* system, which incorporates Li-Fi module in a Raspberry Pi 3 Model B, has been successfully implemented. Li-Fi technology made the wireless communication of the meter data possible. The transmitted data were received by the Server LiFi and controlling of home appliances is done by checking current status of home condition i.e temperature, gas leakage, and intensity of light. In Future it is possible to transfer the net connectivity through Raspberry-Pi (when user will use Raspberry-pi to the transmission side) connected with RJ45 cable.

## 6. ACKNOWLEDGEMENT

We would like to showcase our gratitude and deep appreciations from our heart to all of them who helped us including our parents, mentor, friends etc. Further we would like to express special thanks to our Director Dr. M.Z.Shaikh, Head of Department, and our project guide Prof. Soumitra Das & Co-Guide Prof. Ashwini Navale & project coordinator Ms. Monika Dangore for their valuable support, guidance and encouragement along with stimulating our inner talent to write this paper.

## REFERENCES

- [1] Noof Al Abdulsalam, Raya Al Hajri, Zahra Al Abri, Zainab Al Lawati, and Mohammed M. Bait-Suwailam, "Design and Implementation of a Vehicle to Vehicle Communication System Using Li-Fi Technology", 2015 International Conference on Information and Communication Technology Research (ICTRC2015).
- [2] G. VidhyaKrishn, R.Nagarajan, T. Durka, M.Kalaiselvi, M.Pushpa, S. Shanmugapriya, "Vehicle Communication System Using Li-Fi Technology", International Journal Of Engineering And Computer Science, Volume 6 Issue 3 March 2017, Page No. 20651-20657
- [3] Shubhankar Mali<sup>1</sup>, Sushant Patil<sup>2</sup>, Mrunal Pathak<sup>3</sup>, Hatim Chokwala<sup>4</sup>, Prof. Sonali Patil, "Vehicle to Vehicle Communication System Using Li- Fi Technology", IJSART, Volume 3 Issue 6 JUNE 2017 Page |34.
- [4] MuntazirMohdTali, Aarti Patil, SushmitaChavan, Prof. ShaileshJadhav, "Inter-Vehicle Communication Using Li-Fi Technology", International Journal of Advanced Research in Computer and Communication Engineering (IJARCCE) Vol. 6, Issue 3, March 2017, 5940
- [5] Rashmi Thakur, SnehaBalkawade, Vishakha More, Bhakti PatilY, "Inter Vehicular Communication Using Li-Fi", International Journal for Research in Applied Science & Engineering Technology (IJRASET), Volume 6 Issue 1, January 2018
- [6] Alberto Bemporad, Alessandro Giua, Carla Seatzu "Master-Slave Algorithm for the Optimal Control of Continuous-Time Switched Affine Systems", Proceedings of the 41st IEEE Conference on Decision and Control, December 2002 .