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IOT Based Home Automation System Using Rasberry Pi

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Abstract:** This project presents the overall design of Home Automation System (HAS) with low cost and wireless system. It specifically focuses on the development of an IOT based home automation system that is able to control various components via internet or be automatically programmed to operate from ambient conditions. In this project, we design the development of a firmware for smart control which can successfully be automated minimizing human interaction to preserve the integrity within whole electrical devices in the home. We used Node MCU, a popular open source IOT platform, to execute the process of automation. Different components of the system will use different transmission mode that will be implemented to communicate the control of the devices by the user through Node MCU to the actual appliance. The main control system implements wireless technology to provide remote access from smart phone. We are using a cloud server-based communication that would add to the practicality of the project by enabling unrestricted access of the appliances to the user irrespective of the distance factor. We provided a data transmission network to create a stronger automation. The system intended to control electrical appliances and devices in house with relatively low cost design, user-friendly interface and ease of installation. The status of the appliance would be available, along with the control on an android platform. This system is designed to assist and provide support in order to 1fulfil the needs of elderly and disabled in home. Also, the smart home concept in the system improves the standard living at home.

I. INTRODUCTION

in this project presents the overall design of home automation system (has) with low cost and wireless system. it specifically focuses on the development of an iot based home automation system that is able to control various components via internet or be automatically programmed to operate from ambient conditions. in this project, we design the development of a firmware for smart control which can successfully be automated minimizing human interaction to preserve the integrity within whole electrical devices in the home. we used node mcu, a popular open source iot platform, to execute the process of automation. different components of the system will use different transmission mode that will be implemented to communicate the control of the devices by the user through node mcu to the actual appliance. the main control system implements wireless technology to provide remote access from smart phone. we are using a cloud server-based communication that would add to the practicality of the project by enabling unrestricted access of the appliances to the user irrespective of the distance factor. we provided a data transmission network to create a stronger automation. the system intended to control electrical appliances and devices in house with relatively low cost design, user-friendly interface and ease of installation. the status of the appliance would be available, along with the control on an android platform. this system is designed to assist and provide support in order to 1fulfil the needs of elderly and disabled in home. also, the smart home concept in the system improves the standard living at home

II. LITERATURE SURVEY

Our objective is to introduce an IOT Home Automation system on the Internet so that it will eventually allow potential users to query and obtain the desired services. System is to be portable & The next phase for the home automation market will occur based on a few key improvements in the technology available in automation, such as improvements in wireless. Automation solutions as well as lowering of price points as the market begins to accept home automation usage in larger volumes. There have been many works done by the existing method on home automation and security purposes. But our me thod is unique when you compare with existing method cost, security, and sustainability. Our proposed method gives data up-dates within 3 seconds that help to take a quick decision if any hazard occurs. Our system can be controlled via many ways like Voice control app, Smart-phone, internet, World Wide Web, and electrical switch that help all kinds of peoples (Specially disable persons) to control home appliances. Through IoT technology,our system can ensure security and comfort for all users. This paper provides a simple introduction to the IoT, its application and potential benefits to the society [1]. IoT has received much attention from scientists, industry and government all over the world for its potential in changing modern day living. IoT is envisioned as billions of sensors connected to the internet through wireless and other communication technologies.

The sensors would generate large amount of data which needs to be analysed, interpreted and utilized [2]. Home Automation System uses the technology of Internet of Things for monitoring and controlling of the electrical and electronic appliances at home from any remote location by simply using a Smartphone. Implementation of a low cost, flexible home automation system is presented. It enhances the use of wireless communication which provides the use

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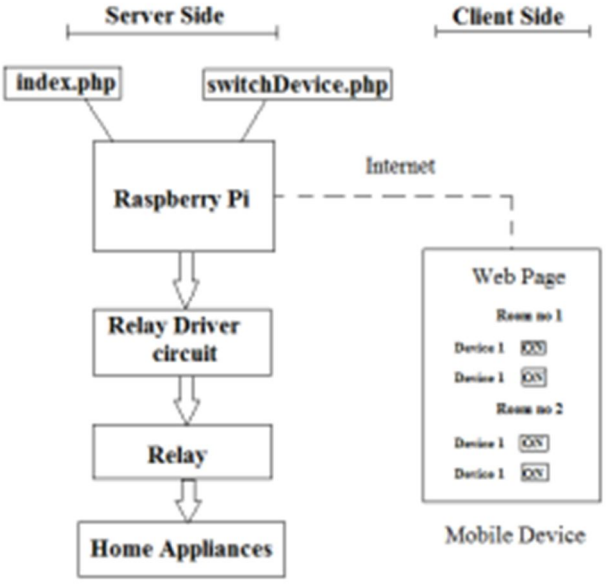
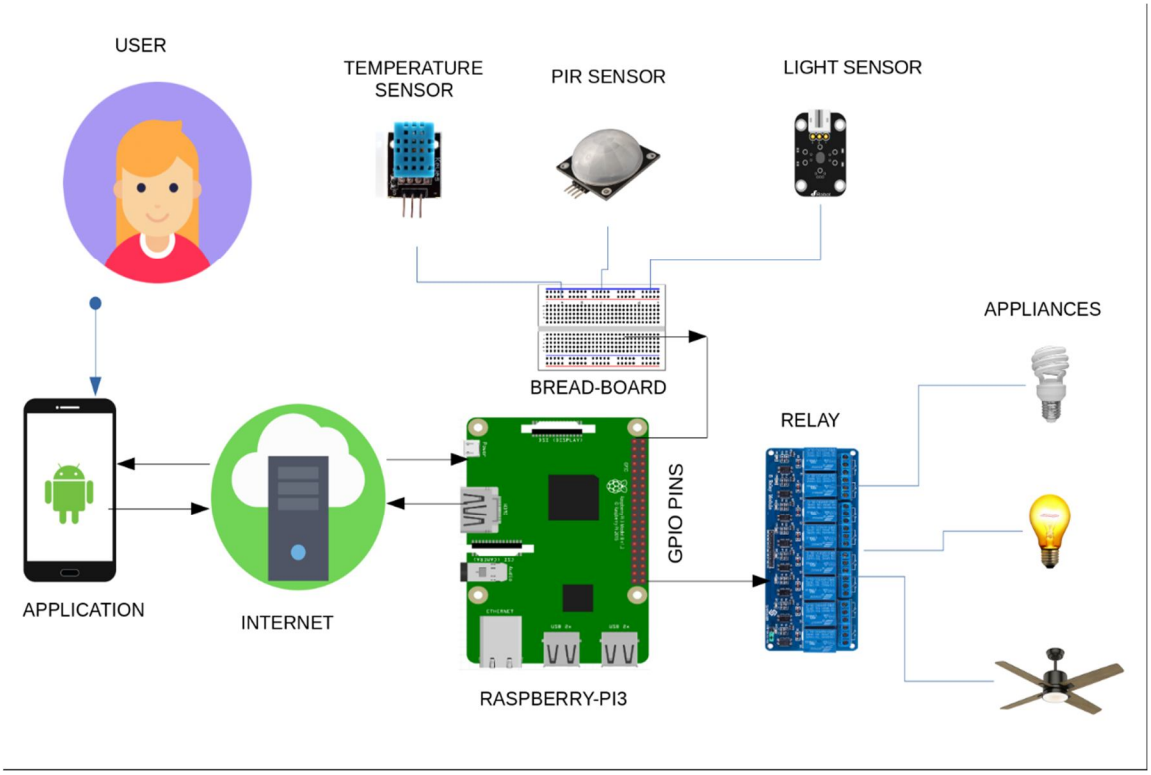
III.PROCESS MODEL

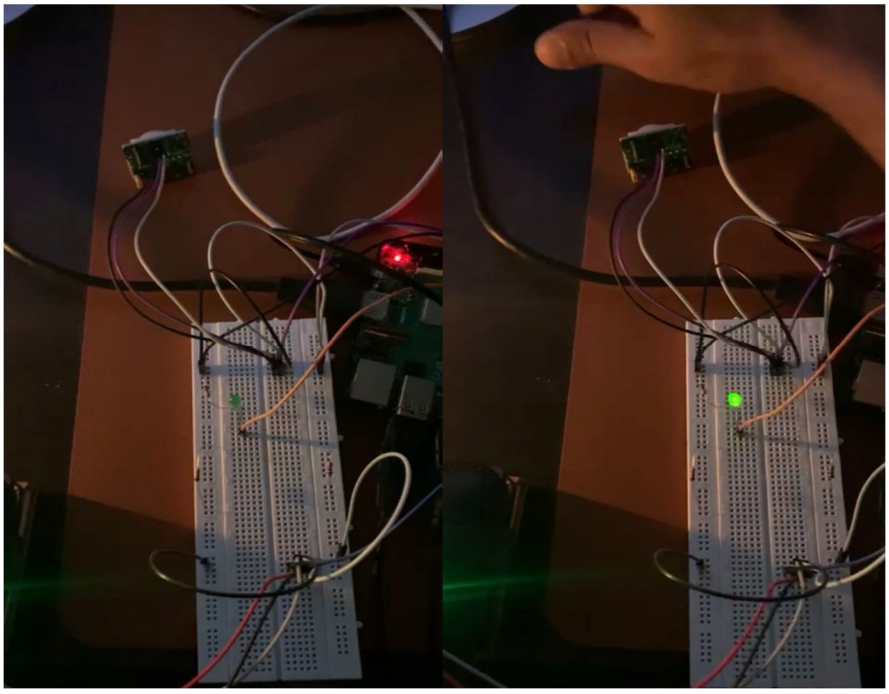




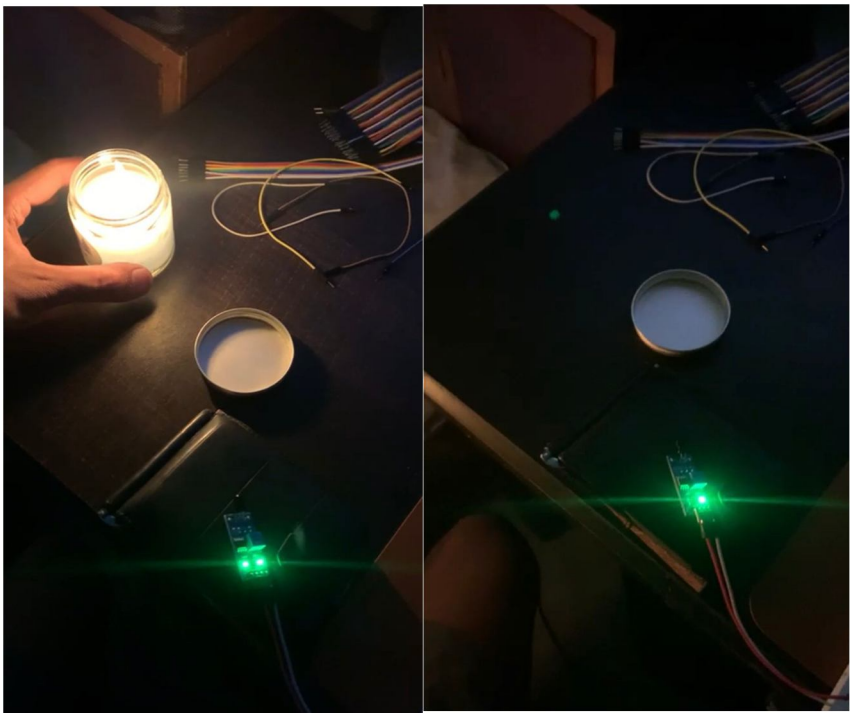
A. Architecture Diagram

The outline of the propounded structure is given in Figure 1. The various steps involved are explained as follows: The framework comprises of various sensors like movement, fire. In addition to that, the structure includes a set of hardware components such as WLAN module, Rasperry pi4, Fire detector, Motion sensor, relay, light sensors, Strip light surface light and a set of software components like Rasberry pi, Blynk IOT app.

IV.RESULTS



MOTION



Flame

V. CONCLUSION

The aim of this paper was to propose a cost effective voice controlled (Google Assistant) home automation controlling general appliances found in one's home. The approach discussed in the paper was successful as GACHA's (Google Assistant Controlled Home Automation) design was successfully implemented. This system is highly reliable and efficient for the aged people and differently abled person on a wheel chair who cannot reach the switch for the switching ON/OFF the device and are dependent on others

VI. ACKNOWLEDGMENT

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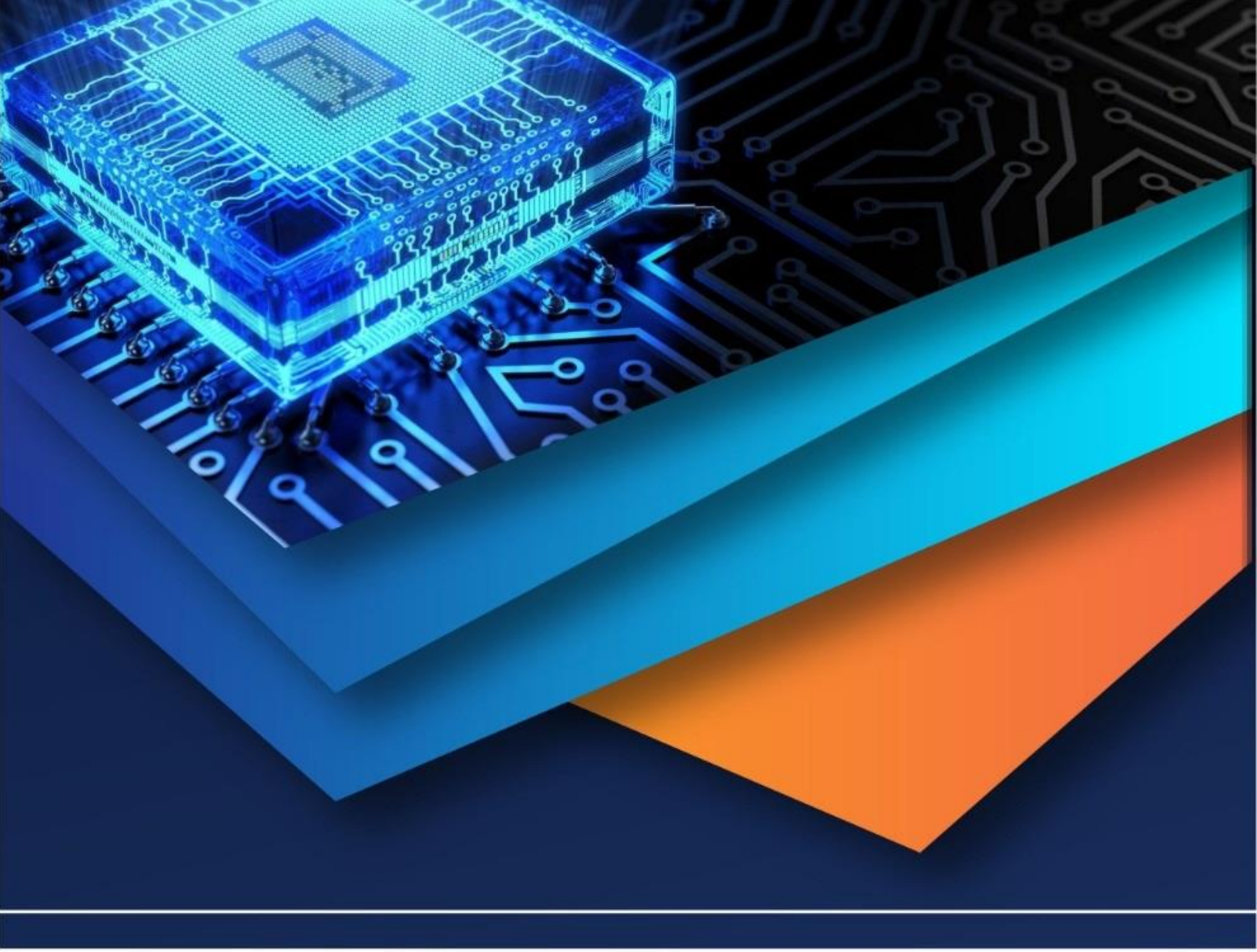

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