



## IOT-BASED SMART HOME AUTOMATION SYSTEM WITH SENSORS

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**ABSTRACT:** In this paper, a system for interconnecting sensors, actuators, and other data sources with the purpose of multiple home automations is proposed. The Intelligent Home Automation System, security is one of the major factors that does not implement the home automation system. The hectic daily life routine sometimes makes them forgetful to switch off the devices at home. The clumsiness attitude plus with our packed daily routine life that sometimes makes ourselves such in hurry situation that sometimes makes us forgot to switch off the lamps. It will cause the electricity bill rose sharply. Besides, it is one of the electricity wastage that will lead the earth became an unhealthy one. The strength of this project is to control the devices such as lamp and door at home using a smartphone. The system is related to home appliances using NODEMCU. Home appliances that can help the user to control the devices at home and develop a good condition of house area that will prevent any loss and damage to the property of any

organization. The hardware that is being used in this project is a relay, servomotor, bulb holder and bulb.

Meanwhile for the software part is Telegram. Telegram is the main software that is being used in this project. Telegram application is being used as a platform to give the command. Most of the project that is related to home automation or known as home appliances most of it using the Blynk apps and rarely uses the telegram. This project is using a smartphone to give command compare to another project that is using tablet, laptop and others which is much more convenient touses.

### INTRODUCTION

Home automation has achieved a lot of popularity in recent years, as day-to-day life is getting simpler due to the rapid growth of technology. Almost everything has become digitalized and automatic. The Smart home known as House automation, with the use of new technology, to make the domestic activities more convenient, comfortable, secure and economical.



The Internet of things can be defined as connecting the various types of objects like smart phones, personal computer and Tablets to internet, which brings in very newfangled type of communication between things and people and also between things. With the introduction of IoTs, the research and development of home automation are becoming popular in the recent days. Many of the devices are controlled and monitored for helps the human being. Additionally various wireless technologies help in connecting from remote places to improve the intelligence of home environment. An advanced network of IoT is being formed when a human being is in need of connecting with other things. IoTs technology is used

to come in with innovative idea and great growth for smart homes to improve the living standards of life. Internet helps us to bring in with immediate solution for many problems and also able to connect from any of the remote places which contributes to overall cost reduction and energy consumption.

Ever since Kevin Ashton conceived the Internet of Things (IoT)[1], and with the speedy development of networking technologies and the IoT, human lives have been constantly changing from a physical dimension to a virtual dimension in which people can talk, chat, work, and interact with the connected objects. The smart home as an IoT application was introduced to facilitate human life and change the way we live, play, and do business. It is meant to make life more flexible, comfortable, and exciting.

However, apart from the benefits of smart homes, several security and privacy issues

### PROPOSED SYSTEM

In this project is more focusing about home appliances. A step by step procedure is done so that the project can be completed in time. This include circuit design and design mechanical part

As mention in previous chapter, the

design home controller with NODEMCU as the main controller. The design of the controller circuit using NODEMCU is realize using Proteus Software to try run the circuit.

Telegram application is being used in this project as a platform to give a command to the project by using Telegram.

Shows the circuit diagram of the whole system. First we need to insert /12345 as a first command to get the selection of the



command. If we insert the command other than /12345 then at the telegram will show unknown command please insert again. And then after insert the /12345 command then we can proceed to control either to control the door or lamp. If we want to switch on the lamp just click with one command then after a few second the lamp will turn on. In a few second at the telegram will notify the lamp has been switched on. But if we clicked a lot of command in the same time then the system will hang and the progress at the project will not work exact as the command. Then we need to clear up the command at place we give the command and start all over again.

### LITERATURE SURVEY

In Existing system, GSM based Home automation system if GPRS connection is not available then full system will not work. Cost effective: As we know most of systems are using GPRS system is expensive as compare to Wi-Fi. Data Pack requirement: Some systems are based on GPRS so for those system there is need of Data pack which we have to recharge every month. Some

architecture are using Wi-Fi concept but those architecture are mostly use Raspberry pi which is expensive in cost. Still home automation system is not having some basic features like automatic control of outside light. Home automation systems are also don't have notification facility, where user can easily take action according to that notification.

### 1. IoT-enabled smart lighting systems for smart cities

The goal of an SLS is to obtain an autonomous and more efficient lighting management system. In this paper, we provide an overview of the SLS and review different IoT-enabled communication protocols, which can be used to realize the SLS in the context of a smart city. Moreover, we analyzed different usage scenarios for IoT-enabled indoor and outdoor SLS and provide an analysis of the power consumption. Our results reveal that IoT-enabled smart lighting systems can reduce power consumption up to 33.33% in both indoor and outdoor settings. Finally, we discussed the future research directions in SLS in the smart city.

### 2. From internet to smart world

The development of informationization and



intelligentization prompts Internet developing toward a new era. A deep fusion among cyber space, physical space, social space, and thinking space brings a quaternionic cyber-physical-social-thinking hyperspace, based on which an embryo of smart world is being established through heterogeneous spaces. The smart world is expected to be an attractive perspective involving ubiquitous sensing, computing, and communication to achieve comprehensive interconnections of physical perception, cyber interaction, social correlation, and cognitive thinking. In this paper, evolution of the smart world is briefly introduced, and physical-based coordination, social-inspired interactivity, brain-abstracted cooperativity, and cyber-enabled homogeneity are, respectively, discussed as the main characteristics of the smart world.

### **1. Timestamp scheme to mitigate replay attacks in secure ZigBee networks**

ZigBee is one of the communication protocols used in the Internet of Things (IoT) applications. In typical deployment scenarios involving low-

UGC CARE Group-1,

cost and low-power IoT devices, many communication features are disabled, consequently affecting the security offered by ZigBee. The ZigBee specification assumes that deployment of frame counters is sufficient to mitigate replay attacks in secure ZigBee networks. However, we demonstrate that it is insufficient in this paper (i.e., the network is no longer secure after the coordinator restarts). As a countermeasure, we present a timestamp-based scheme to mitigate replay attacks. Our mitigation strategy does not consume power significantly, and fully powered devices will be responsible for providing power-constrained devices with the current timestamp. The proposed scheme is designed for all ZigBee topologies and different states of ZigBee End Devices (ZEDs). Findings from our evaluation show that the proposed scheme can successfully mitigate replay attacks, with no significant network performance degradation even assuming a worst-case scenario (i.e., many devices are sending data simultaneously). The ZigBee specification assumes that deployment of frame counters is sufficient to mitigate replay attacks



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## **2. Security analysis of emerging smart home applications**

Recently, several competing smart home programming frameworks that support third party app development have emerged. These frameworks provide tangible benefits to users, but can also expose users to significant security risks. This paper presents the first in-depth empirical security analysis of one such emerging smart home programming platform. We analyzed Samsung-owned SmartThings, which has the UGC CARE Group-1,

largest number of apps among currently available smart home platforms, and supports a broad range of devices including motion sensors, fire alarms, and door locks. SmartThings hosts the application runtime on a proprietary, closed-source cloud backend, making scrutiny challenging. We overcame the challenge with a static source code analysis of 499 SmartThings apps (called SmartApps) and 132 device handlers, and carefully crafted test cases that revealed many undocumented

### **RELATED WORK**

Preliminary investigation examine project feasibility, the likelihood the system will be useful to the organization. The main objective of the feasibility study is to test the Technical, Operational and Economical feasibility for adding new modules and debugging old running system. All system is feasible if they are unlimited resources and infinite time. There are aspects in the feasibility study portion of the preliminary investigation:

- Economical Feasibility
- Operational Feasibility



- Technical Feasibility

### **OPERATIONAL FEASIBILITY**

Proposed projects are beneficial only if they can be turned out into information system. That will meet the organization's operating

### **ECONOMIC FEASIBILITY**

A system can be developed technically and that will be used if installed must still be a good investment for the organization. In the economical feasibility, the development cost in creating the system is evaluated against the ultimate benefit derived from the new systems. Financial benefits must equal or exceed the costs.

The system is economically feasible. It does not require any addition hardware or software. Since the interface for this system is developed using the existing resources and technologies available at NIC, There is nominal expenditure and economical feasibility for certain.

requirements. Operational feasibility aspects of the project are to be taken as an important part of the project implementation. Some of the important issues raised are to test the operational feasibility of a project includes the following:

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- Is there sufficient support for the management from the users?
- Will the system be used and work properly if it is being developed and implemented?
- Will there be any resistance from the user that will undermine the possible application benefits?

This system is targeted to be in accordance with the above-mentioned issues. Beforehand,

### **TECHNICAL FEASIBILITY**

The technical issue usually raised during the feasibility stage of the investigation includes the following:

- Does the necessary technology exist to do what is suggested?
- Do the proposed equipments

have the technical capacity to hold the data required touse the new system?

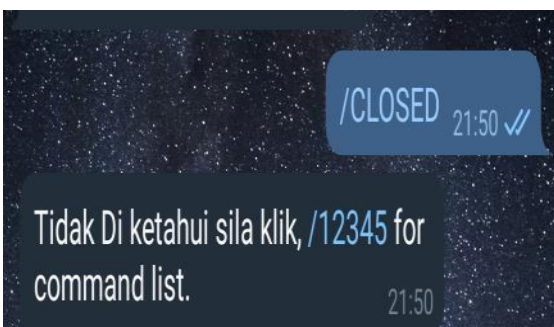
- Will the proposed system provide adequate response to inquiries, regardless of the number or location of users?
- Can the system be upgraded if developed?

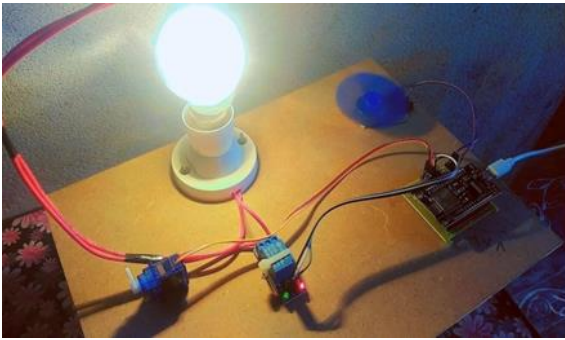
Are there technical guarantees of accuracy, reliability, ease of access and data security?

Earlier no system existed to cater to the needs of ‘Secure Infrastructure ImplementationSystem’. The current system developed is technically feasible. It is a web based user interface for audit workflow at NIC-CSD. Thus it provides an easy access to the users. The database’s purpose is to create, establish and maintain a workflow among various entities in order to facilitate all concerned users in their various capacities or roles.

Permission to the users wouldbe granted based on the roles specified.

**SAMPLE RESULTS**





## CONCLUSION

Nowadays, technologies is growing rapidly and it is same goes to the home automation. As for this project it highly recommended for everyone in this world especially for a user who is with disabilities and for the householder too. This recommendation will lead to a green world which is it can help to save and reduce on electricity bills. Plus, it will help and lead the diasabilities person can work independantly and help them to manage their house safety in more organized way. It will help to prevent any loss to a user or unwanted circumstances to a user.

However, apart from the benefits of smart homes, several security and privacy issues need to be considered while building and designing a smart home. While introducing new technologies aiming to make our homes smarter and more automated, cyberspace is also growing fast [2–5], surrounding our lives with billions of smart devices that can invoke privacy

and security issues [6–10]. Smart home technology, which is one of the most important and fastest-growing fields of the IoT, is being massively deployed by many manufacturers and companies. The

smart home includes home automation, home monitoring, and home security for the local users.

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