



# International Journal of Innovative Research in Computer and Communication Engineering

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## Intelligence Communication Protocol Based Monitoring and Control Home Appliances

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**ABSTRACT:** With numerous connected devices and appliances, the smart home is one of the representative fields of Internet of Things (IoT). As the complexity of devices/appliances increase, numerous buttons (sometimes dozens) are designed on the remote controller in home spaces even if several of them are seldom used. A user may be confused with the controller even if he or she only intends to perform a simple operation. To address these problems, an intelligent universal remote control system for home appliances named Point-n-Press is proposed. Point-n-Press addresses the directionality feature, which enables easy and intuitive control by pointing to the target device to display the target's control interface on the screen of the remote controller. By leveraging the state dependencies of home device/appliance operations, only functional buttons that are relevant to the current context are utilized. Two real prototypes are implemented to verify the feasibility of the proposed scheme. The evaluation results show that Point-n-Press is a useful and suitable control scheme for IoT-based smart homes.

**KEYWORDS :-**Raspberry, relay, RF, buzzer, PIR, temp sensor, LDR sensor

### I. INTRODUCTION

The inspiration for creating savvy home frameworks originates from many reasons, yet most unmistakable are comfort, security, vitality administration, network and extravagance. Shrewd Home frameworks are one of the fresher ranges of research that have not been completely coordinated into our general public. This is on the grounds that the examination requires numerous different controls of research and designing to create a useful shrewd home. The cost of introducing a brilliant home is additionally an extensive prevention to the rise of savvy home frameworks into the market. The additional cost of the introduce is from the way that despite the fact that a greater part of homes were implicit the close past, innovation has been developing exponentially. This implies most homes were worked before this innovation was accessible, and this makes a hindrance for the advancement and offers of shrewd home frameworks. However the innovation is turning out to be better and less expensive, and this will make savvy home frameworks a cost worth having when new homes are being manufactured.

### II. PROBLEM STATEMENT

Home computerization is picking up fame as a standout amongst the most eminent utilization's of Internet of Things. Savvy homes include various contraptions and sensors which convey and act self-governingly. One noteworthy test for shrewd homes is guaranteeing their rightness and security. Imagine a scenario where the controller of one gadget mistakenly sends orders to another gadget. Imagine a scenario where individual data about the proprietor is sent to the cloud without authorization or appropriate anonymization.

### III. LITERATURE SURVEY

Point-n-Press: An Intelligent Universal Remote Control System for Home Appliances[1]. Author proposed an intuitive control system with a set of user-friendly operations, called Point-n-Press, for controlling connected devices/appliances in IoT-based smart homes. The proposed scheme leverages the directionality characteristic of IR to enable easy and



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intuitive control of devices (i.e., controlling an appliance in smart homes by pointing to it). A user-friendly UI is designed by considering the state dependencies between each control operation. the demonstration of two real prototypes with controlling appliances in smart homes, the feasibility of an intelligent universal remote control system for home appliances with intuitive and user-friendly features is verified. Review of Smart Homes Past, Present, and Future[2] A smart home is an application of ubiquitous computing in which the home environment is monitored by ambient intelligence to provide context-aware services and facilitate remote home control. A brief discussion on the building blocks of smart homes and their interrelationships is presented. It describes collective information about sensors, multimedia devices, communication protocols, and systems, which are widely used in smart home implementation. Advantages : Dwellings for comfort, Healthcare, Safety, Security, Energy conservation. Disadvantages: Necessary to healthcare service provider will consider the smart home an effective way of providing remote healthcare services. Especially to the elderly and disabled who do not require intensive healthcare support. Twist Tap: Text Entry for TV Remotes Using Easy-to-Learn Wrist Motion and Key Operation[3]. Author proposed Twist Tap as a new text entry method suitable for the relaxed styles common in watching TV. The proposed method uses a handheld device in one hand and uses a combination of two simple motions: tapping the four direction keys and five levels of twist control of the wrist. In an experiment, the text entry speed of Twist Tap doesn't drop after changing to the condition in which subjects could not see the device. A Multi-Channel Remote Controller For Home and Office Appliances[4] A Multi-Channel Remote Controller for home and office automation was designed and implemented on prototype circuit. MCRC provides remote user access in any condition when one of the communication channels is available only. Using common platform, common password, PC independent auxiliary controller and an effective data sharing algorithm are the main advantages of MCRC. From the point of cost, the preferred RC channel is directly access via Web, and from the point of security, the preferred channel is GSM based access. User-Friendly Home Automation Based on 3D Virtual World.[5] Author proposed a user-friendly home automation system based on a 3D virtual world. Through the use of the proposed architecture, this home automation user interface is more user friendly, intuitive, and realistic compared to previous works . To show the feasibility of the proposed home automation, they implemented the metaverse client, the metaverse server, and the home server. The metaverse client and server provide a 3D virtual world that is based on the users actual home. The home server controls connected home devices in the home. To exchange control messages between the metaverse server and the home server, we configured XML schema of the MPEG-V standard along with a user defined protocol. Advanced Universal Remote Controller for Home Automation and Security[6]. Authors present an advanced universal remote controller (URC) with the total solution for home automation and security. All kinds of home appliances can be controlled with the URC, which can be also connected to a PC dealing with Internet as well. To use the URC, we need several receivers with wired or wireless communication methods to be connected to all appliances. The receivers have many channels and IDs to control many appliances at the same time and to support multi-zone services. This system is based on various controlling techniques such as several RF receivers, Wi-Fi, ZigBee protocol to control all kinds of appliances in the ubiquitous environment. A Remote Pointing Device by Using Modulated IR Signals with a 2-D Striped Pattern[7]. Handheld pointing devices are increasingly in demand in digital TV market to provide intuitive human device interfaces (HDIs). HDIs with directional buttons, joysticks, and trackballs are not very intuitive owing to their limited motions. To overcome this problem, cameras, gyroscopes, or ultrasonic sensors have been incorporated into HDIs at the expense of higher power consumption. With less mental effort, more natural, operation than the conventional devices. In low power Performance. Advantages:- Low power consumption, Natural operation. Brain Machine Interface System Automation Considering User Preferences and Error Perception Feedback[8].

## IV. SYSTEM ARCHITECTURE

Temperature sensor, gas sensor and LDR sensor recognize the estimation of temperature, smoke and light intensity. PIR sensor distinguish the protest or individual than signal is on. these information send to portable application by wifi. RF module send sensor data to Arduino. in Arduino bulb and fan control by Relay and SCR trigger circuit. Raspberry pi 3 board: Raspberry Pi is a charge card estimated single board PC created in the UK by Raspberry Pi establishment with the expectation of invigorating the instructing of essential software engineering in schools.

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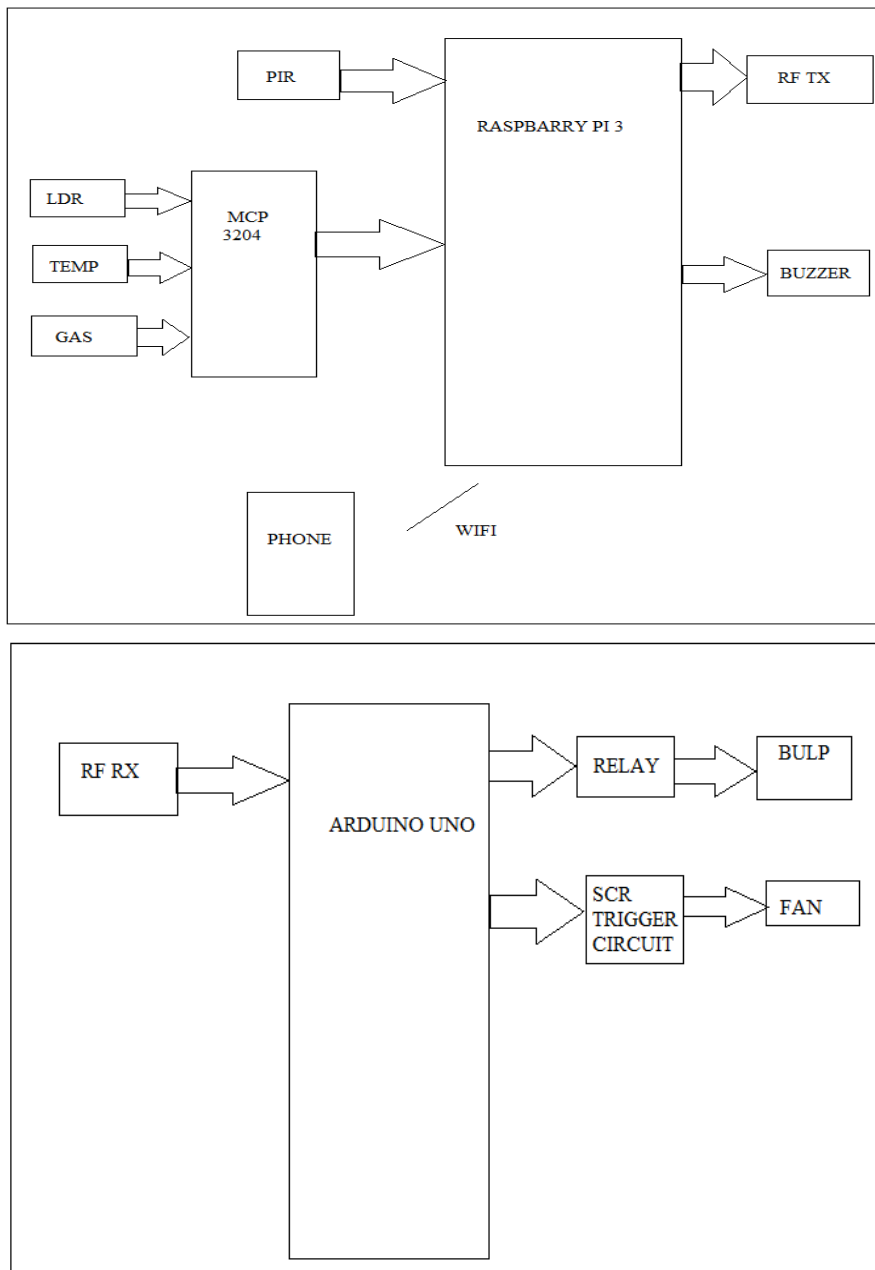


Fig. System Architecture

## V. IMPLEMENTATION SYSTEM

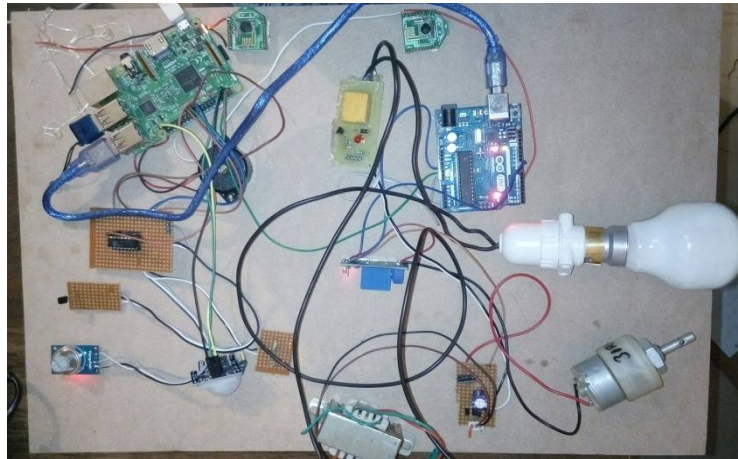
In current implementation module we made arduino uno node in that we interface e the relay for drive the lamp for that we design relay driving circuit which is amplify current for relay for that bc547 transistor is used. And fan is interface with arduino both hardware are tested and its work as per expected. For programming arduino ide software is used.

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## VI. PERFORMANCE MEASURE

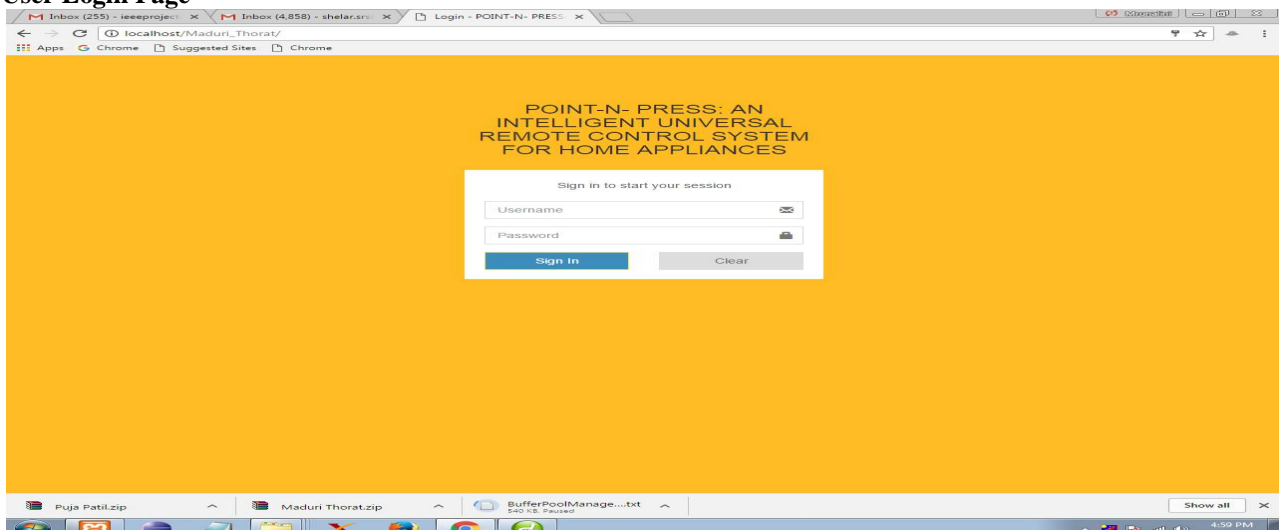
1. If gas is detected that means GAS sensor value is greater than threshold then buzzer is on automatically.
2. If temperature sensor is exceeded the limit then fan is on which is connected to arduino node.
3. On web page we provide the gui buttons for on and off the fan and lamp both devices is control from those buttons remotely.
4. And also on GUI all sensors reading temperature, gas, ldr and pir is shown.

## VII. COMPARISON WITH SIMILAR SYSTEM

In existing system they are use ir remote for controlling the node but there is limitation of range and obstacle and it is necessary tx and rx of ir both are must be in front of each other But in our proposed system we replace ir remote by RF Tran receiver. Using this module we overcome the drawback of existing system And also interface temperature, gas, ldr , pir for monitor home parameter which is not present on existing system.

## VIII. RESULTS

### User Login Page





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## Update Profile

Back Home > Account Details

Update Account Details

Full Name  
Admin Admin

Username  
admin

Change Password  
Type new password

Confirm New Password  
Type new password

Enter Old Password to confirm changes  
Type old password

Save Clear

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## Home Page / Automatic sensor Value Display

Temp	LDR	PIR	GAS
37	20	80	1

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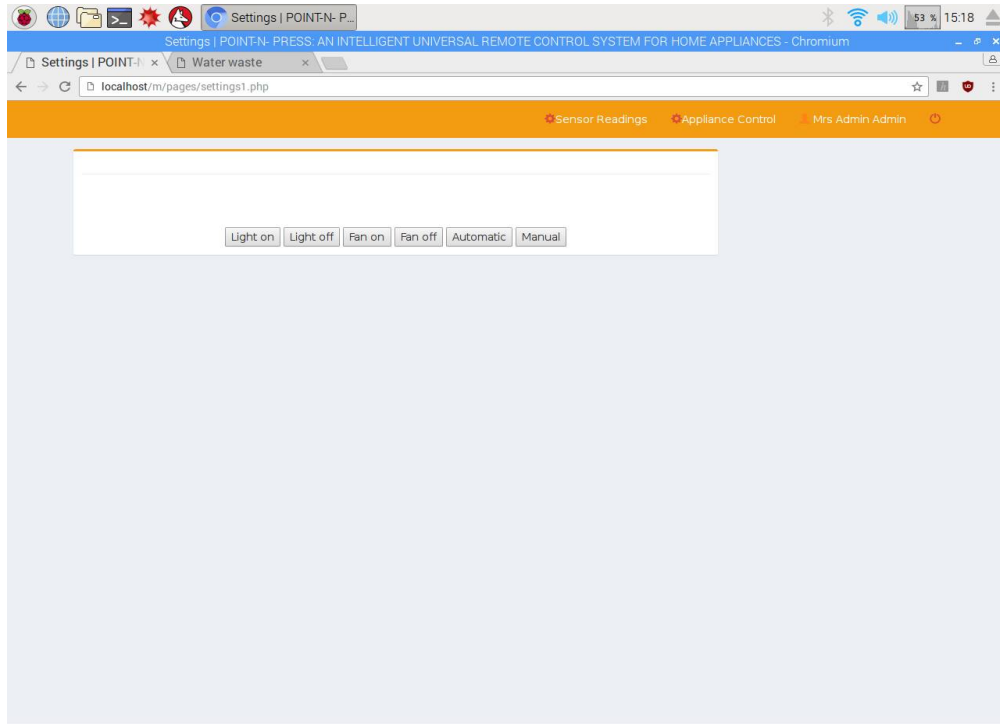
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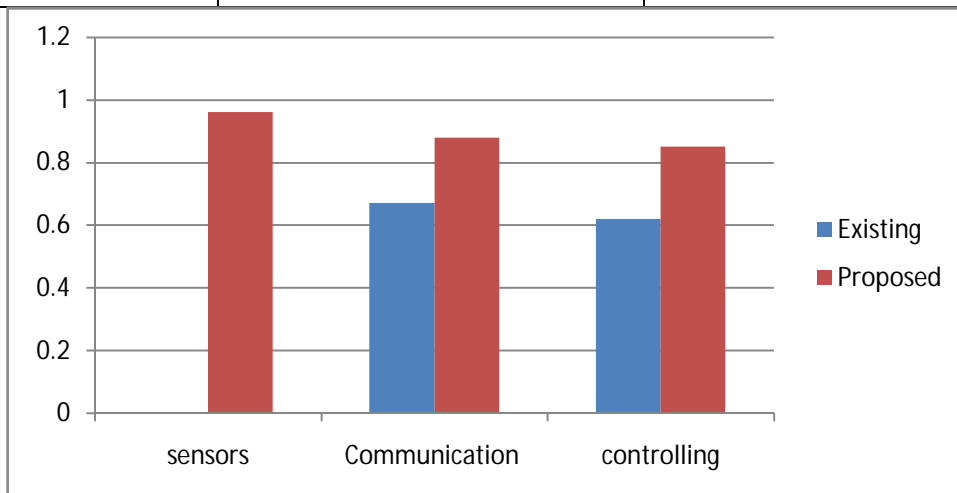
## Manually On / OFF



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## Efficiency calculation:-

Parameter	Existing	Proposed
Sensors	Not present	96%
Communication	67%	88%
Controlling	62%	85%





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## IX. CONCLUSION

An intuitive control system with a set of user-friendly operations, called Point-n-Press, is proposed for controlling connected devices/appliances in IoT-based smart homes. The proposed scheme leverages the directionality characteristic of RF to enable easy and intuitive control of devices (i.e., controlling an appliance in smart homes by pointing to it). A user-friendly UI is designed by considering the state dependencies between each control operation. With the demonstration of two real prototypes with controlling appliances in smart homes, the proposed control system significantly reduces the bandwidth consumption while multiple users simultaneously control numerous appliances. Consequently, the proposed Point-n-Press control system not only enhances the features of intuition and user-friendliness but also establishes a less bandwidth-consumptive control system. Nevertheless, the implementation of the proposed control system is currently limited to IR sensors so I used RF module. Moreover, state dependencies of devices/appliances must be manually and automatically control home appliances.

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