WWW.IJRPR.COM

**International Journal of Research Publication and Reviews**

Journal homepage: www.ijrpr.com ISSN 2582-7421

# Intelligent Stove Safety System Using IoT

***Prof Ashwini K, Dr Suganda P , Micheal Alwyn , Netravati D S , Sushmita R M***

Electronics and Communication, Rural Engineering College Hulkoti

**ABSTRACT**

In India, almost all the peoples are using liquefied petroleum gas (LPG) as a fuel for cooking. But in this field, the steps taken for safety purpose is very less. LPG is a flammable gas, it has the potential to cause fire accidents heavily. To avoid fire accidents, many researchers are applied their effort to design a new prototype model. An intelligent stove safety system using IoT uses different sensors and gas stove knob to avoid the fire accident in the kitchen. It will acquire input from the sensor and control the gas stove knob automatically either from High ignition to Medium or from Medium to Low.

If any Gas leakage and presents of moisture will enable the DC motor to rotate the gas stove knob automatically to stop the gas flow in the gas stove. If a gas leakage is detected then the alarm will get activated and it gives the signal to knob (receiver) to go for off position. We can control the knob level with the web page, it will show the status of the gas stove knob position on the web page. The proposed model also enables the user to analyze the usage of gas throughout the year.

## I. INTRODUCTION

The proposed intelligent device aims to prevent house fires by automatically turning off stoves when hazardous situations are detected. It consists of knob units attached to stove knobs and control units mounted on the ceiling above the stove. The control unit includes a gas sensor and smoke detector, which signal the knob unit to shut off the burner if a hazard is detected. Additionally, a smartphone app provides real-time monitoring and control of the stove's status.

## II. Literature survey

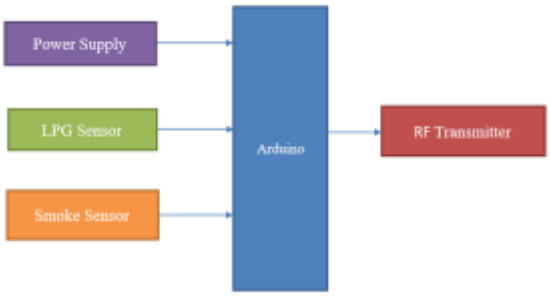
The literature survey examines various aspects of home automation systems, focusing on security and safety concerns. It discusses the evolution of security concepts, challenges in home automation security, and the attractiveness of these systems to attackers. Various technologies like WiFi, GSM, and RF-based systems are explored. Additionally, it mentions studies utilizing Arduino and RF modules for controlling devices and providing real-time feedback. The survey also presents innovative approaches, such as using TV remotes to control appliances. The development aims to enhance home safety and cooking experience through sensor integration and smart control mechanisms.

We used the sensors like MQ-6(LPG Sensor), MQ-2(Smoke Sensor) that can be used to detect the Gas/Smoke it help prevent house fires by turning stoves off before a hazardous situation can arise. By using Sensors, Motor, and certain coding algorithms to the Arduino microcontroller. The RF Transmitter & RF Receiver are used to inter connecting between The Control Unit and The Knob Unit. HT12E encoder and HT12D decoder with easy data and address selection DIP switches to change address on both transmitter and receiver.

## III. BLOCK DIAGRAM

**Proposed Method**

**1 THE CONTROL UNIT DIAGRAM**

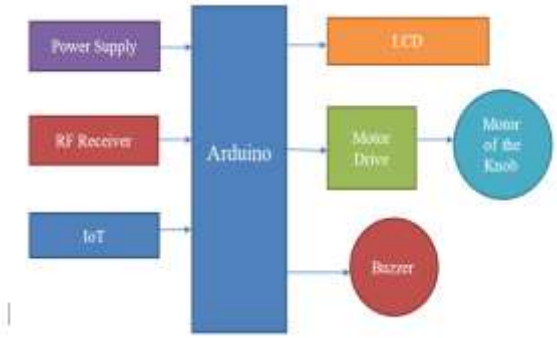



: Proposed The Control Unit Block Diagram.

It is the proposed The Control Unit is placed above the Intelligent stove to the ceiling roof of the building. It consistes of MQ-6(LPG Sensor), MQ-2(Smoke Sensor) that can be used to detect the Gas/Smoke and sends the signal to Arduino microcontroller then it sends acknowledgment signal RF Transmitter as shown in the fig 3.1, The RF Transmitter transfer the signals to RF Receiver.

**2 THE KNOB UNITS DIAGRAM**

**Proposed The Knob Unit Block Diagram**




It is the proposed The Knob Unit is connected to the Intelligent stove and also a web application can control the Intelligent stove through IoT. The RF Receiver receives the signal and sends the signal to the Arduino microcontroller then sends an acknowledgment signal to the motor driver that controls the motor to rotate the knob of the Intelligent stove as shown in the fig 3.2.

## IV. Result

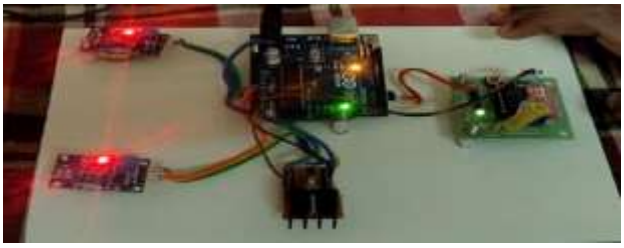
This stove is to conserve the gases, protecting the people and properties from accidents through gas cylinder explosion in houses using advanced technology sensors

**The Knob Unit of the Intelligent stove**

The device that lets to control the stove from the smartphone and helps to protect you and your loved ones from the devastating effects of house fires. Its combination of sensors and electronics enables it to not only detect high levels of smoke, natural gas, and lack of motion (or, you in the kitchen) but also react and turn the stove off to keep safe.

It also allows monitoring stove remotely and modulating the burner


The knob unit receives the signal from the control unit by RF receiver it sends to Arduino microcontroller it is connected to the DC Servo motor driver that transmits the signal to motor and it shows the status in LCD as shown in the fig 5.1



**The Control Unit of the Intelligent stove.**

The control unit consists of MQ-6(LPG Sensor) and MQ-2(Smoke Sensor) these two sensors are connected to the Arduino microcontroller it is connected to the RF Transmitter that transmits the signal to knob unit as shown in the fig 5.2.

## V. Conclusion

This stove normally used for cooking do! As soon as you turn it on, it automatically activates and monitors your kitchen for dangerous conditions. The control and knob unit indicate that you and your home are protected

**REFERENCES**


- https://www.kickstarter.com/projects/157070440/inirv-react-make-your- home-smarter-and-safer
- https://thegadgetflow.com/portfolio/inirv-react-smart-stove-sensor/
- https://lastminuteengineers.com/mq2-gas-senser-arduino-tutorial/
- https://components101.com/sensors/mq-6-gas-sensor-pinout-equivalent- datasheet
- https://robu.in/product/grade-a-quality-oranv-20-rpm-johnson- geared-dc-motor/
- https://www.elprocus.com/rf-module-transmitter-receiver/
- https://www.arduino.cc/