

# Home Automation with Gesture Recognition

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**Abstract-** With the rapid advancements in the field of technology, home automation systems are growing in popularity. Amazon's Alexa and Google Home have taken the market by storm. A Smart Home System gives access to all controllable household appliances and can help render the electricity supply in a household, reducing consumption by controlling usage. Existing innovations in this field operate predominantly on sound. This paper presents a system, which relies on gestures to control household devices. A device with sensors & Arduino microcontroller works as the central hub. Performing gestures while the device being in specified lengths performs certain tasks.

**Keywords-** Home Automation, Internet of Things (IoT), Gesture Recognition, Human Computer Interface.

## I. INTRODUCTION

Gesture and speech recognition technologies, a couple of years back, were deemed as futuristic concepts. Recently those technologies have rapidly advanced with software and hardware technologies and have integrated with speech and gesture. Such as Google Home, Amazon Echo, smart home gadgets like Philip Hue, Ecobee thermostat, etc. These technologies will offer the facility for people to enhance their lives comfort. The proposed system is specially focusing not only on normal people but also on people who need an external aid for their lives.

## II. LITERATURE SURVEY

Sr.No	Paper Name	Paper Concept	Advantage
1	“Gesture Controlled Home Automation System Using Internet of Things-”  SmrutiKshirsagar, SrushtiSachdev, Navjyot Singh, Anushka Tiwari, YugchhayaDhote	<ul style="list-style-type: none"> <li>This paper presents a system, which relies on gestures to control household devices.</li> <li>A glove with sensors &amp; Arduino microcontroller works as the central hub. Performing gestures while wearing the glove performs certain tasks</li> </ul>	<p>The system can be expanded to provide unique identification using RFID tags, which will be embedded on glove.</p> <p>An LCD screen can be attached on the glove itself for ease of use and displaying notifications</p>
2	“IoT based Home Automation using Gesture”  Mitangi Patel Dr.Sharnil Pandya Satvik	In this paper, the main point that is automatic control of home appliances (On/Off) in the home and make home is smart. Existing system is control the home appliances using remote control and internet.	In addition to this, we have also tried to address these gesture recognition challenges by proposing certain algorithm
3	IoT Based Smart Security and Home Automation System”  Ravi Kishore Kodali, Vishal Jain, Suvadeep Bose and	This IoT project focuses on building a smart wireless home security system, which sends alerts to the owner by using Internet in case of any trespass and raises an alarm optionally. Besides, the same can also be utilized	Home automation is becoming a prominent research area in the field of human machine interaction and researchers draw their attention to analysing, modelling, and

	Lakshmi Boppana	for home automation by making use of the same set of sensors.	recognizing.
4	Home Automation System Based on Gesture Recognition System”  Priyanka D. HatwarIDES’sCOET, Maharashtra, India	This paper presents an effective method to overcome these problems. We have designed and implemented a low-cost, reliable, efficient and secure speech operated system for home appliances especially for persons with disabilities to do their work at home. This system is both software and hardware designed using MATLAB  In this paper, we propose a Voice and Gesture Operated home automation system with a central controller that	The objective of this seminar is to develop such a system, which will help physically impaired to control home appliances by hand gestures using accelerometer.
5	Voice and Gesture Integrated Home Automation System”.  K. A. S. V. RathnayakeCodeGen International (Pvt) Ltd., Sri Lanka.	allows disabled people to manipulate household appliances with their own voice and gesture commands	Home automation is becoming a prominent research area in the field of human machine interaction and researchers draw their attention to analysing, modelling, and recognizing gestures as well as voice recognition
6	“Gesture Controlled Home Automation System Using Internet of Things”  SmrutiKshirsagar, SrushtiSachdev, Navjyot Singh, Anushka Tiwari, YugchhayaDhote	This paper presents a system, which relies on gestures to control household devices. A glove with sensors & Arduino microcontroller works as the central hub. Performing gestures while wearing the glove performs certain tasks. Additionally, there is a machine-learning module to predict the electricity bill based on usage. With such technology, we can truly usher in the digital age.	To operate home security system the user need not have data connection enabled in his phone. The system runs fine with the launchpad connected to wifi at home/office.

7	<p>Vision Based Hand Gesture Recognition for Real Time Home Automation Application”</p> <p>SagarShimpi, DashrathMundkar, RishikeshShinde, PrajaktaNivangune,PriyankaLanjewar,Asst. Prof. A. R. Sonawane</p>	<p>Vision-based automatic hand gesture recognition has been a very industrious research area in recent years with interesting applications such as human computer interaction (HCI), robot control, home automation, and sign language interpretation.</p>	<p>The hand regions are sectioned, and then inference is made on the movement of the fingers involved in the gesture.</p>
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III. EXISTING SYSTEM APPROACH

The current Home Automation systems are mostly in the early experimental stages and accuracy is a major issue. Gesture-based system is better in terms of accuracy and rarely gives an incorrect output.

**Disadvantages:**

Home automation is becoming a prominent research area in the field of human machine interaction and researchers draw their attention to analysing, modelling, and recognizing gestures as well as voice recognition when developing a home automation system, since it is the most natural way of communicating and interacting with hardware systems.

IV. PROPOSED SYSTEM APPROACH

The current Home Automation systems are mostly in the early experimental stages and accuracy is a major issue. This project proposes a gesture-based device in order to control home appliances without having to move from place to place which will be effective in case of old or disabled ones.

**Advantages:**

1. To design, implementation, and evaluation of an end-to-end cyber physical home automation system for physical disabilities.
2. The system, a gesture sensor, utilizes components of gesture recognition solving the issues of cost, intrusiveness, and accuracy while providing a framework for additions to the system.

**System Architecture:**

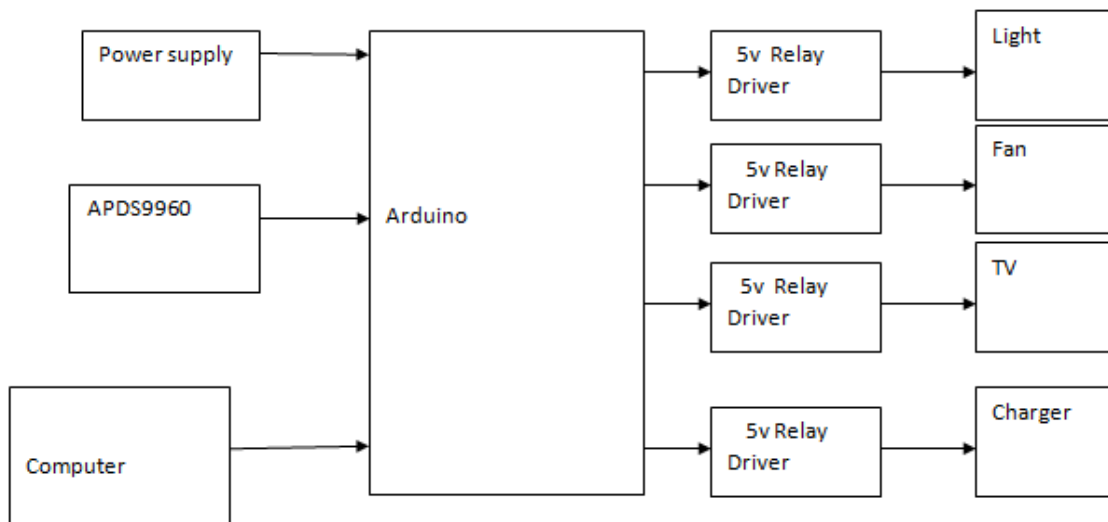


Fig.1: System Architecture of Proposed System

## V. CONCLUSION

Gesture recognition algorithm, which is used for sensing and recognition the gesture for better performance, and provide the accuracy. In addition to this, we have also tried to address these gesture recognition challenges by proposing certain algorithm. These techniques could play an important role in achieving better results.

## VI. REFERENCES

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