

## High End Security System Based On Internet of Things (IOT)

Shubhangi Dongre, Shivali Ghag, Shraddha Satpute, Nikhil Todankar,  
Prof. Prajakta Pawar, Assistant Professor

Dept. Electromics and Telecommunication, Atharva College of Engg., Malad, Mumbai-95,India

Dept. Electromics and Telecommunication, Atharva College of Engg., Malad, Mumbai-95,India

Dept. Electromics and Telecommunication, Atharva College of Engg., Malad, Mumbai-95,India

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**Abstract:** Automation is a trending topic in the 21st century making it play an important role in our daily lives. The main attraction of any automated system is reducing human labour, effort, time and errors due to human negligence. With the development of modern technology, smartphones have become a necessity for every person on this planet. Applications are being developed on Android systems that are useful to us in various ways. Natural language is the another upcoming technology which enables us to control electronics device using voice command. Combining all of these, our project presents a microcontroller based voice controlled home automation system using smartphones. Every application in his/her home will be control by user with their voice.

**Keywords** - IOT, Microcontroller, Wireless, Automation, Relay, Wi-Fi module, DC Motor.

### I. INTRODUCTION

The foremost aim of technology has been to increase efficiency and decrease effort. With the advent of "Internet of Things" in the last decade, we have been pushing for ubiquitous computing in all spheres of life. It thus is of extreme importance to simplify human interfacing with technology. Automation is one such area that aims that achieves simplicity with increasing efficiency. Voice controlled Home Automation System aims to further the cause of automation so as to achieve the goal of simplicity. Voice controlled Automation System uses the human voice to control electronics devices. Android is being used as the operating system for over 80% of the smartphones. Voice controlled Home Automation System leverages the power of Arduino to provide a holistic voice controlled automation system.

### II. BLOCK DIAGRAM OF HIGH END SECURITY SYSTEM BASED ON IOT

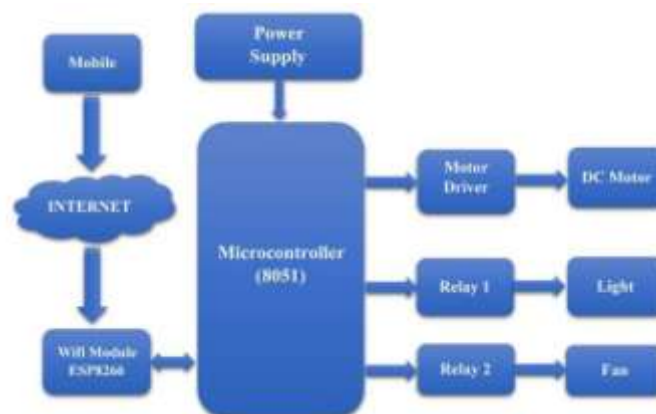


Fig.1[High End Security System Based on IOT Block Diagram]

### III. BLOCK DIAGRAM DESCRIPTION

The main part of the project is to control electronics appliances through voice command. To control such appliances, we give voice command through android phone (i.e. Light ON or Light OFF etc.). These appliances are connected through various components such as DC motors and Relay which helps to start and stop such application. Such controlling of those applications are done by 8051 Microcontroller which is connected to the Wi-fi Module. The android software which we are using has a voice command software which will identify human language which will then send machine command to the wi-fi module through internet. The

signal which is send to the wi-fi module is then given to microcontroller(8051) which we have programmed to do specific task. The whole project is powered by 5V Power supply.

#### IV. IOT (INTERNET OF THINGS)



Fig.2[Internet of Things]

Internetworking of physical devices is internet of things (IOT). The concept was simple but powerful. If all objects in daily life were equipped with identifiers and wireless connectivity, these objects could be communicating with each other and be managed by computers.

The Three Cs of IoT:

Communication -It is the interconnection between the user and system/device.

Control and Automation - It is programmed once as if any changes in output parameter it will alert the uses and hence it can be control or it can be automated for any particular work.

Cost Savings - Many companies will adopt IoT to save money. As when a machine loses to fulfill a company product on time the company will lose its money. With new sensor information, IoT can help a company to save money by reducing equipment failure and allowing the business to perform perfectly.

#### V. MICROCONTROLLER (AT89S52)



Fig.3[Microcontroller AT89S52]

Microcontroller are also called as “embedded controller” which is embedded inside some other device so that they can control the features. A small computer on single integrated circuit is a microcontroller. It is dedicated to one task and run one specific program. The program is stored in ROM which does not change. It contain one or more CPUs along with memory and programmable input/output peripherals. Microcontroller support devices like program memory, data memory, I/O ports, serial communication interface etc integrated together. A low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory is AT89S52. The on-chip Flash allows the program memory to be reprogrammed in-system memory programmer. Microcontroller is designed for embedded applications. Microcontroller which provides a highly-flexible and cost-effective solution to many embedded control applications is Atmel AT89S52.

#### VI. MOTOR DRIVER IC L293D



Fig.4[Motor Driver IC L293D]

Low-current control signal is converted into high current signal through motor driver that can drive a motor. The most commonly used motor driver IC's are from the L293 series such as L293D, L293NE, etc. These ICs are designed to control 2 DC motors simultaneously. L293D consist of two H-bridge. H-bridge is the simplest circuit for controlling a low current rated motor. We will be referring the motor driver IC as L293D only. L293D has 16 pins.

## **VII. RELAY**



**Fig. 5[Relay]**

A relay is an electrical switch that uses an electromagnet to turn switch from off position to on position. It takes a relatively small amount of power to turn on a relay but the relay can control something that draws much more power. Input and Output are the two parts which are divided in relay switch. A coil which generates magnetic field is at input side when a small voltage from an electronic circuit is applied to it. This voltage is called the operating voltage. Contactors which connect or disconnect mechanically is situated at output side. In a basic relay there are three contactors: normally open (NO), normally closed (NC) and common (COM). The COM is connected to NC, at no input state. The coil gets energized and the COM changes contact to NO when the operating voltage is applied to the relay. Different relay configurations are available like SPST, SPDT, DPDT etc, which have different number of changeover contacts. The electrical circuit can be switched on and off by combination of contactors.

## **VIII. WIFI MODULE**

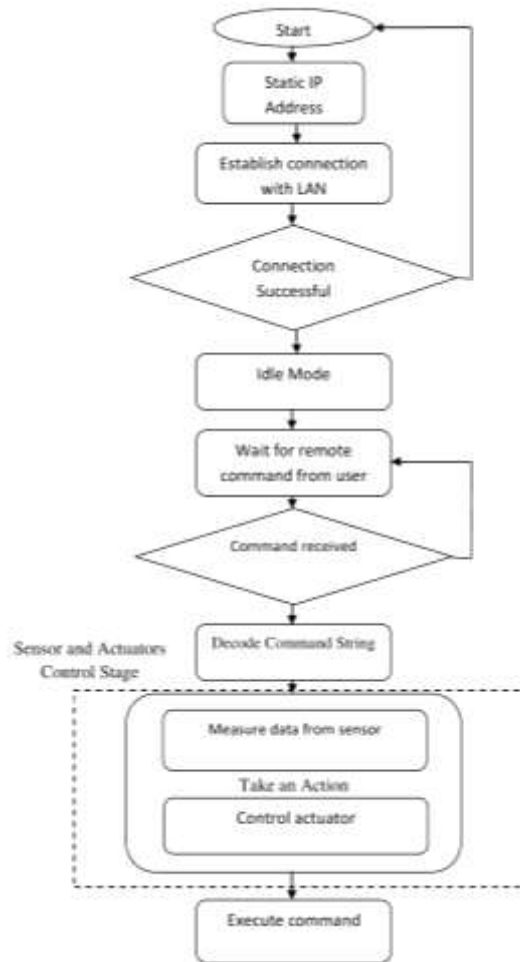


**Fig.6[WIFI Module ESP8266]**

A set of high performance, high integration wireless SOCs, designed for space and power constrained mobile platform designers are Espressif Systems' Smart Connectivity Platform (ESCP). It function as a standalone application, with the lowest cost, and minimal space requirement. The ESP8266 series presently includes the ESP8266EX and ESP8285 chips.

ESP8266EX (simply referred to as ESP8266) is a system-on-chip (SoC) which integrates a 32-bit Tensilica microcontroller, standard digital peripheral interfaces, antenna switches, RF balun, power amplifier, low noise receive amplifier, filters and power management modules into a small package. It provides capabilities for 2.4 GHz Wi-Fi (802.11 b/g/n, supporting WPA/WPA2), general-purpose input/output (16 GPIO), Inter-Integrated Circuit (I<sup>2</sup>C), analog-to-digital conversion (10-bit ADC), Serial Peripheral Interface (SPI), I<sup>2</sup>S interfaces with DMA (sharing pins with GPIO), UART (on dedicated pins, plus a transmit-only UART can be enabled on GPIO2), and pulse-width modulation (PWM). 64 KB boot ROM is available, 64 KB instruction RAM and 96 KB data RAM.

**IX. FLOWCHART OF MICROCONTROLLER BASED WIRELESS HIGH END SECURITY**



**Fig. 7**[Microcontroller Based Wireless High End Security System Flow Chart]

At the start the mobile application is open. To access ID and Password of the project application is entered. Once the ID and Password is entered properly and internet connection is established then only the project operation is going to work otherwise no such operation is going to take place.

Once the Connection is established and login is successful then only further operation is going to take place.

Then when the user is going to give voice command through that login mobile phone then only as per command the necessary operation is going to take place.

If the voice command is not define then it will ask for appropriate voice command.

If the appropriate voice command is accepted then the microcontroller will take action as per the command.

For Example:

Voice Command: Turn ON the Lights or Lights ON.

Microcontroller: Will Glow the Light as per the received command.

**X. ADVANTAGES**

- [1] Less human effort.
- [2] Voice command based control.
- [3] Less cost, less complex.
- [4] Easy to use and efficient.

**XI. DISADVANTAGES**

- [1] Less Reliability.
- [2] Losing security and privacy.

## **XII. APPLICATIONS**

This project can be implement anywhere, where automation is required

- [1] Home
- [2] Industry
- [3] School and colleges
- [4] Shopping malls.

## **XIII. FUTURE SCOPE**

- [1] Automation of more appliances can be added.
- [2] Hand gestures can be used for controlling appliances.
- [3] Sensor based automation

## **XIV. CONCLUSIONS**

In this project, a method for estimating the IOT based High End Security controlled through Voice Command is presented. By recognizing human voice the necessary action is taking by the project. The project is implemented successfully and results are satisfactory.

## **ACKNOWLEDGEMENT**

We are grateful to ATHARVA COLLEGE OF ENGINEERING for giving us the opportunity to do the B.E. Project work in Department of Electronic and Telecommunication Engineering. We feel privileged to express our deepest sense of gratitude and sincere thanks to our project guide Prof. Prajakta Pawar for her continuous support and guidance throughout our project work.

We would also like to thank our H.O.D. Prof. Jyoti Kolap for approving our B.E. project. We also wish to thank them for their patience and co-operation, which proved beneficial for us. We don't have words to express our gratitude towards our parents for their encouragement and confidence on us which shaped our carrier in its present form.

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