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# A Survey on Smart Switches used in Home Automation

Sakshi Mirikar[1], Dr. Amit Gadekar[2]
[1]*Sandip University, School of Computer Science & Engineering, Nashik, India*
[2]*Professor Sandip University, School of Computer Science & Engineering, Nashik, India*

***Abstract:*** ***IOT is playing in very important role in the current digital world. Everyone wants to live a digital life, in which digitalisation and internet of things is the main concept which can be used and implemented to live a digital life. In this paper we will be studying about the smart city concept which includes home automation concepts in which smart switches are used. Everyone wants a smart home, but as home being smart also comes with a great cost being implemented for the smartness. Speaking of the sensors actuators devices, which will be including for building a smart home.***
***Keywords: IOT, Smart Home, Home Automation, Smart Switches, sensors, Actuators.***

## I. INTRODUCTION

In today's emerging world, digitalisation and internet of things plays a vital role. Everyone is moving towards a smarter way of living which we call living in a smart city. In this paper we will be surveying about the smart city concept for home. Living in a smart home With the digitalisation. Smart city or smart home is a major topic which is followed in various places in which internet of things is playing. An important role .We will be studying about the part in a smart home that is smart switches. We will be serving the cost, quality and functionality of the switches and try to find out the best and cheapest way of turning our home into a smart home and a reliable place to live in.

Let's have a look over the sensors being used for building a smart home or a home automation. Also, let's get into detail about the smart switches. Its applications. Its current uses.

## II. IOT

IOT, the abbreviation which stands for internet of things is a concept which is in boom these days. This is a concept in which we make use of the internet by using the sensors, actuators, micro processors to connect to any device and make that device into a smart thing to be used and to make life digital. We can build secure devices and applications by using the Smart home, which will also be a part of the cloud computing platforms.

### *A. Benefits of IOT*

*1)* Business opportunities and new advanced analytics.
*2)* Digitalisation.
*3)* Smart homes.
*4)* Smart switches.
*5)* Responses which are rapid.
*6)* Streams through which we can have new revenues.
*7)* The improved controls of operations and processes.
*8)* Predictive analysis.

## III. SMART HOME

Smart home is basically a place or the functionality in and home which can be managed and controlled using a smart device or a mobile phone through which we can use an application which is well designed and can follow the functionalities for which it is built, and can be digitally used. The electric appliances in the home, can assure about the security and also reduce the manual work load by using digitalisation.

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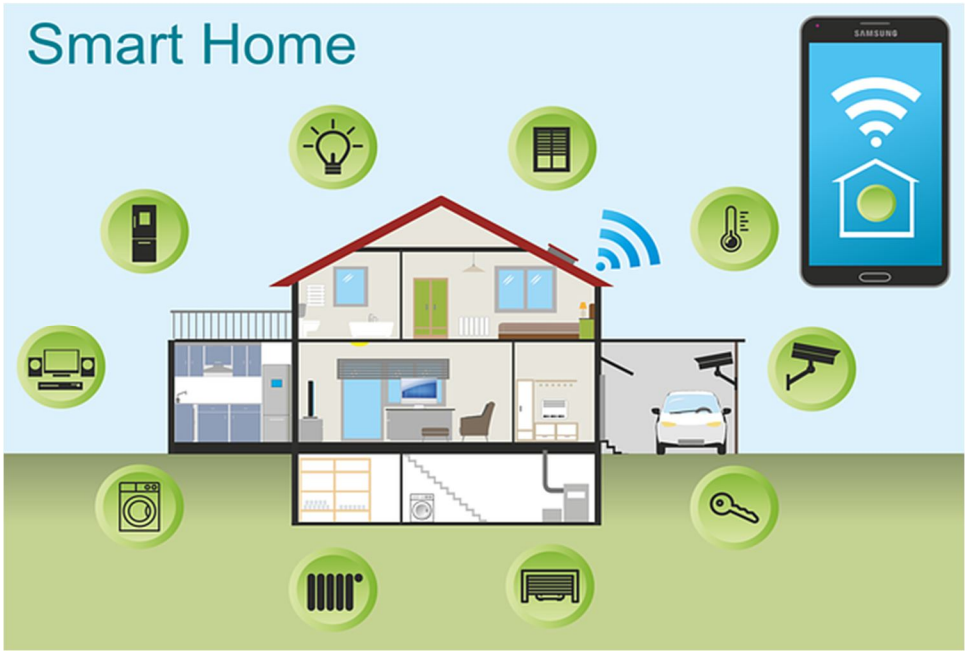



Fig. 1.1 Design of Smart Home (Credits: Google)

*A. Need for Smart Home*

*1)* To manage all the applications of the home in one place.
*2)* Flexibility to use all the devices.
*3)* To maximise the home securities.
*4)* Remotely control the home functions.
*5)* Increased energy efficiency in the home.
*6)* Improving the functionalities of the applications.

*B. Smart Switches*

Recently, the home switches are been Inc with using the embedded devices and customer appliances into a software system. This results in building of a smart switch which can be used in a house or a building anywhere any time to solve a lot of problems of the users which are basically concern towards the use of resources and the energy consumption.

The switches also boost the security in the place.

Normal switchboard can be converted to a smart switch by embedding the micro controller sensors and uploading the code over them to make it work much more efficiently and provide security and ease of use to the consumers.

This switch basically can be embedded with the Smart home assistance devices, which through which we can give a command to the device, and the device will be connected to the Smart switch, and will be performing the desired function or the command which we will give to it.

*C. List of Smart Home Assistance Devices*

*1)* Amazon Echo
*2)* Amazon Alexa,
*3)* Wink hub 2
*4)* Google assistant.
*5)* Samsung smart thing hub
*6)* Echobee4
*7)* Philips Hue
*8)* LG Smart TV

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*D. Security Attacks which can happen on Smart Homes/ Smart Switches*

| Smart-Home Services | Harms Area | Security attack options |
|---|---|---|
| Care for people with disabilities | Requires attention | Sensors, video surveillance, communication systems etc. |
| Health-cares | Don't take medicine, pacemaker, malfunctioning etc. | Sensors, communication system, external communications, video surveillance. |
| Home Environment | Fire, gas leakage. | Sensors, video surveillances, communication system, external communications. |
| Privacy | Violations of privacy, data gathering | Video surveillance, integrating and communications systems. (It is not security attack only dangerous.) |
| Smart-home appliance | Turns on or off wrong times. | Sensors, integrating system, video surveillances, communications systems. |

Source : Research paper on smart home by Vinit Kumar

## IV. HARDWARE USED IN BUILDING THE SMART SWITCHES

*1)* ESP8266–01 Wi-Fi module.
*2)* Hi – link 5 V, power supply.
*3)* Four channel relay module.
*4)* AMS1117 IC
*5)* Capacitive touch sensor module (TTP22).

*A. Advantages Of Smart Switches*

*1)* AI facilities
*2)* Improve customer engagement.
*3)* Reduced waste and energy consumption.
*4)* Data collection can be enhanced.

*B. Disadvantages Of Smart Switches*

*1)* Security and privacy.
*2)* Cost issues.
*3)* Installation issues

## V. CONCLUSION

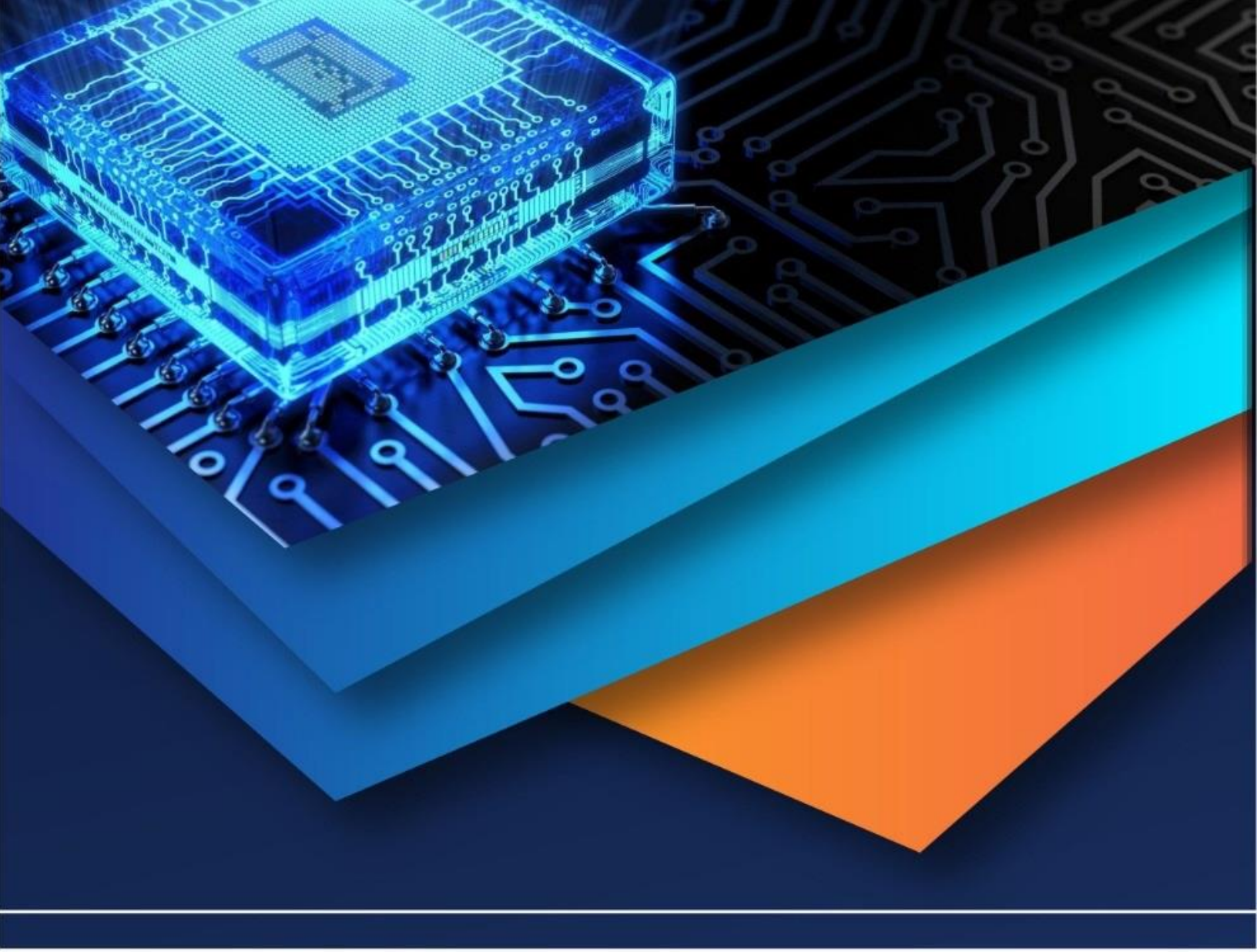
In this review or survey paper we studied about the smart homes, home, automation and smart switches. We can use this information to build up a smart switch which can be cost-effective and which will be fulfilling all the necessary necessities in the home automation and also providing a secure environment also helping in reducing the energy consumption and building a smart home in a cost efficient environment which can be used by a normal middle class family man also.
The disadvantages can be considered and worked on to improvise the system or the application and device to make it cost efficient.

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