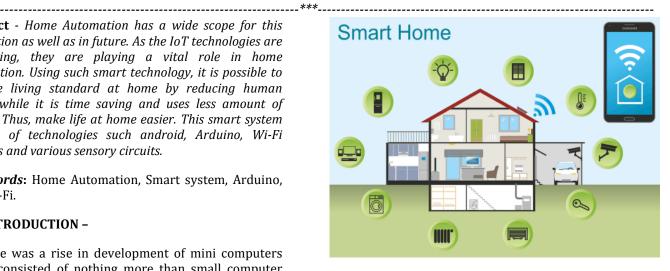# Smart Home Technology

Mr. Thomson John

Student, Dept. of Information Technology, Keraleeya Samajam (REGD.) Model College Maharashtra, India

---***---

Abstract - *Home Automation has a wide scope for this Generation as well as in future. As the IoT technologies are developing, they are playing a vital role in home automation. Using such smart technology, it is possible to improve living standard at home by reducing human efforts while it is time saving and uses less amount of energy. Thus, make life at home easier. This smart system consists of technologies such android, Arduino, Wi-Fi modules and various sensory circuits.*

Key Words: Home Automation, Smart system, Arduino, IoT, Wi-Fi.

1. INTRODUCTION –

As there was a rise in development of mini computers which consisted of nothing more than small computer chips, made it possible to create IOT devices. With the help of such technologies it has become easier to build smart home automation systems. These systems are commonly used to define resident that uses controller to integrate various automation technologies. Merging the home automation systems allows them to communicate with each other through home controller, enabling simple control over entire home which can be pre programmed for various scenarios. Home automation is exactly as it sounds like, Auto mating the ability to control home appliances around the house. All the appliances and devices in such systems are receivers and are means of controlling the systems such as transmitters and sensors. Altogether, these technologies make it possible for a user to control his entire home appliances easily according his need. Even though the user is out of his home for any reason, he can check the status of his home via internet using laptop or smart phone. Apart from this, these smart systems play a key role in the life of those people who are physically disabled. It is simple and comparatively inexpensive.

2. EXISTING PROBLEMS –

Today, people travel to different places away from their home for many reasons. While travelling they have a fear of getting their houses robbed or any leakage of gas /water, etc. So, they want to control their home when they are far away. The main things people want control are: -

- Checking any intruder/visitor entering their premises
- Turning on/off appliances at home
- Filling of the water tank

3. TYPES OF HOME AUTOMATION SYSTEMS –

A. Smart Lighting –

Smart lighting gives user the flexibility to control the lights using various smart technologies and is energy efficient. Smart home light system is one of the main features of the smart homes and places where frequent control is needed. Combination of various LED lights with integrated control provides an efficient lighting mode for better user experience.

B. Intelligent HVAC-

HVAC stands for heating ventilation and air conditioning, depending on the location they can be a major expense in building management and homes. So, to better control these expenses and ensure effective working of HVAC users are adopting smart automation systems. These HVAC can be

---

controlled using various IOT devices. These IOT based HVAC systems can automatically switch appliances on and off at predefined time, monitors room and environmental temperature and alerts the user when the measurement thresholds are exceeded and even provide information related to energy consumption.

C.   Multimedia –

Multimedia feature of Smart Home Automations Technology control TV's, STB's, Music-Systems, Blu-ray players, Speakers, Gaming consoles and much more appliances with a single remote. These all appliances can be controlled by many different types of controllers such as Infrared control, voice control and multi-room audio control. Apart from this, there is another technology that is, Wireless Video Streaming which converts any TV into a Smart TV, where we can stream content from smartphone to our TV.

D.   Security –

Security is the major aspect in building this Smart Home Automation Technology as everyone in today's world require security for their homes. So, to protect homes from intruders and keep an eye on visitors there are many security mechanisms available in market. These systems work on locking-unlocking of doors from anywhere and getting instant notifications on your smartphone. Some of the security mechanisms are as follows:-

I.   Alarm System –

Alarm systems can be used in many ways form security purpose at home. It can be used as Door/Window sensors for sensing open/close movements, as motion sensors for sensing indoor movements, as Fire/Smoke sensors for detecting fires, as Gas Leakage Sensors for detecting LPG leakages, etc. Main Key features of alarm systems are: -

- It uses wireless remotes for turning on/off security
- It works without power/internet connectivity
- It is an easy to use system
- It configures zone-level security

II.   Video Doorbell –

This mechanism helps you to get instant alerts on your phone when someone enters your house premises. We can answer our visitors from smartphones. So, we can keep a watch on visitors at our house from anywhere in the world. Makes it possible to stimulates home presence if you're away from home.

III.   Smart Lock –

This system uses wireless device to lock/unlock your doors using smartphone. It has a keypad that uses passcode to unlock the doors which means it is a keyless entry. As we can schedule some security mechanism to the smart lock such as minimum 3 incorrect passcode entries, etc then it can alert the user when there is a forced entry in your house. Apart from this system your traditional key entry/lock remains unchanged.

IV.   Intuitive Sensing –

This mechanism involves some sensors such as Vibration sensors, Temperature sensors and Water/Leakage sensors.

- **Vibration Sensors** can sense a knock at the door, breaking of a glass or even sense an earthquake.
- **Temperature Sensors** can sense temperature variations for preventive alerts to the user.
- **Water/Leakage Sensors** can instantly alert when there is a flood/water emergency at home.

4. ADVANTAGES OF SMART HOME TECHNOLOGY –

- Saves time and energy
- Saves money and increases convenience
- Increases consciousness through smart security
- Secures home from intruders through automated door locks
- Builds safety via appliance and lighting control
- Increases convenience through temperature control and adjustment

5. FUTURE SCOPE –

Smart Home is a future of digital natives. With the inventions of new IOT and AI technologies for home automation, one can execute multiple tasks with just a single click or verbal instructions. These emerging technologies can be helpful in building fully functional smart home devices including smart lights, connected thermostats, smart security and appliances.

6. ACKNOWLEDGEMENT –

The Research has placed an important part to explore the practical work, to learn in detail part from the theoretical studies.

I would sincerely like to thank all the Teachers who helped me throughout the research.

I thank all the respondents for their cooperation and time in completing this research, without whom, it would not have been successful.

7. REFERENCES –

i. https://www.hindawi.com/journals/js/2018/6464036/
ii. https://www.slideshare.net/LMLWORLD/smart-home-automation-by-ldce-student
iii. https://www.slideshare.net/abdulrehman458/security-systems-for-your-smart-home