SMART INDOOR USING IOT

***Mohammed Mahboob Hussain**

Assistant Professor (MCA)
Aurora's Pg College, Punjagutta, Hyderabad.

***Abstract*: Smart Indoor systems achieved great popularity in the last decades as they increase the comfort and quality of life. Most smart home systems are controlled by smartphones and microcontrollers. A smartphone application is used to control and monitor home functions using wireless communication techniques. We explore the concept of smart home with the integration of IoT services and cloud computing to it, by embedding intelligence into sensors and actuators, networking of smart things using the corresponding technology, facilitating interactions with smart things using cloud computing for easy access in different locations, increasing computation power, storage space and improving data exchange efficiency. In this chapter we present a composition of three components to build a robust approach of an advanced smart home concept and implementation.**

***Keywords*: Internet of things, Smart indoor, Cloud computing, Home appliances, Smart indoor automation.**

Introduction

Classic smart home, internet of things, cloud computing and rule-based event processing, are the building blocks of our proposed advanced smart home integrated compound. Each component contributes its core attributes and technologies to the proposed composition. IoT contributes the internet connection and remote management of mobile appliances, incorporated with a variety of sensors. Sensors may be attached to home related appliances, such as air-conditioning, lights and other environmental devices. And so, it embeds computer intelligence into home devices to provide ways to measure home conditions and monitor home appliances' functionality. Cloud computing provides scalable computing power, storage space and applications, for developing, maintaining, running home services, and accessing home devices anywhere at any time. The rule-based event processing system provides the control and orchestration of the entire advanced smart home composition.

Combining technologies in order to generate a best of breed product, already appear in recent literature in various ways. Christos Stergioua et al. [1] merge cloud computing and IoT to show how the cloud computing technology improves the functionality of the IoT. Majid Al-Kuwari [2] focus on embedded IoT for using analyzed data to remotely execute commands of home appliances in a smart home. Trisha Datta et al. [3] propose a privacy-preserving library to embed traffic shaping in home appliances. Jian Mao et al. [4] enhance machine learning algorithms to play a role in the security in a smart home ecosystem. Faisal Saeed et al. [5] propose using sensors to sense and provide in real-time, fire detection with high accuracy.

In this chapter we explain the integration of classic smart home, IoT and cloud computing. Starting by analyzing the basics of smart home, IoT, cloud computing and event processing systems. We discuss their complementarity and synergy, detailing what is currently driving to their integration. We also discuss what is already available in terms of platforms, and projects implementing the smart home, cloud and IoT paradigm. From the connectivity perspective, the added IoT appliances and the cloud, are connected to the internet and in this context also to the home local area network. These connections complement the overall setup to a complete unified and interconnected composition with extended processing power, powerful 3rd party tools, comprehensive applications and an extensive storage space.

Internet of things [IoT] overview

The internet of things (IoT) paradigm refers to devices connected to the internet. Devices are objects such as sensors and actuators, equipped with a telecommunication interface, a processing unit, limited storage and software applications. It enables the integration of objects into the internet, establishing the interaction between people and devices among devices. The key technology of IoT includes radio frequency identification (RFID), sensor technology and intelligence technology. RFID is the foundation and networking core of the construction of IoT. Its processing and communication capabilities along with unique algorithms allows the integration of a variety of elements to operate as an integrated unit but at the same time allow easy addition and removal of components with minimum impact, making IoT robust but flexible to absorb changes in the environment and user preferences. To minimize bandwidth usage, it is using JSON, a lightweight version of XML, for inter components and external messaging.

Cloud computing and its contribution to IoT and smart home

Cloud computing is a shared pool of computing resources ready to provide a variety of computing services in different levels, from basic infrastructure to most sophisticated application services, easily allocated and released with minimal efforts or service provider

interaction [6,7]. In practice, it manages computing, storage, and communication resources that are shared by multiple users in a virtualized and isolated environment. Figure 2 depicts the overall cloud paradigm. What is IoT Smart indoor?

We all are experiencing new things every single day as time passes. Of all, most come with the invention of the computer and the arrival of the internet. The more we rely on them the easier things get. Nevertheless, as we all know, new things bring new challenges.
In a way of starting a new era, Internet of Things as a term has hopped into our lives and started to dominate the field pretty well. In every facet of life, we can come across with the **smart indoor** **IoT applications**, but how many of us are familiar with the concept? Not much, huh? So, let's have a look.

It is necessary to start with the question "what is **IoT smart indoor**?". In the modern world, electronic devices and machines take over the job from humans' shoulders. Since saving time for other things is now possible with this, we rearrange the way how we live. We reset our schedules. Now we have more time to create.
But in time, to rely on too many devices triggers the necessity of controlling them without making an extra effort or wasting time. Therefore, we have started to talk about new concepts like a smart home. Creating a smart home enables us to control all the devices we have remotely by using a network system in which we can assign a task to be done later.

The Emergence of Smart indoor System

If we need to look back on the **smart indoor system**, it can be said that every single move to carry us a step further on living with the machines has contributed to reaching this point as we are now in. Human beings adopted a settled life, and they have been upgrading their way of living since then.

They have been trying to find an easier way of doing things. In fact, laziness took the lead, and still, have an impact on it. So of course, it has been inevitable to come up with an invention for each. And this is how we met with home appliances. During the times of the Industrial Revolution, the first one was introduced. After that, the evolution of the appliances began.

As for home automation technology, the need for it was felt around the 1960s before Echo IV was created. But not until 1998, it was popular. Before the appliances we now have, humans spent much more time to finish a task. Washing dishes, cleaning the house, doing laundry, preparing and mixing ingredients for a meal, etc. took so many hours in a day than it should be.

Considering the fact that all these are daily housework, it is easy to say that housekeeping is a huge burden on the households' shoulders. To prevent this and save time for better things, we needed a **smart home system** to control the devices we have.

What is Smart indoor Automation?

Smart indoor automation is simply what we saw in science fiction. Automatic devices such as lights, thermostat, doors or windows, and so many other things are considered as a part of a smart home. Time switch enables us to save energy and money since sensors won't let them be left open while we do not use them.

Smart indoor Automation Using IoT

Building **smart indoor automation using IoT** helps us manage our lives. We have already used many devices to make it easier, but as the time flies, the main aim of the manufacturers and designers changes their working principles into minimizing the controlling and monitoring methods for all functions of the smart applications.

The notion "internet of things" comes into our lives and enables all devices to use internet connection and cloud storing platforms to work wirelessly and sometimes task-based. Moreover, when it needs, to work interactively.

The utilization of IoT on home appliances to create a smart world is a huge step and changes the view of life in time. Because people couldn't imagine to let some other things do their jobs before. Laundry, for instance, now can be done before you arrive home if you set a watch for it to start to work.

When sensors are attached to them, the appliances designed by the intent of the smart home concept are able to be used without touching. We can control the system with the help of the applications on smartphones or other devices as well as with the voice recognition option.

Smart Indoor Solutions for the Future

Yes, we are enjoying the **smart home appliances** we have now. But how about tomorrow? What awaits us in the future? There have been some given **smart indoor solutions** for the existing or potential circumstances in the future. These are just predictions now, but it is the first step of the birth of a new concept: to dream. As time passes, more manufacturers invest in smart home business. According to this, it can be said that living with smart gadgets will become ordinary.

To avoid chaos considering this, we need to take care of security problems since our privacy is already at risk. More kitchen devices are expected to be used remotely and time adjusted. Above all, energy and cost-efficient devices will be early in the list.

REFERENCES:

1. Menachem Domb
Submitted: September 17th, 2018Reviewed: February 1st, 2019Published: February 28th, 2019
DOI: 10.5772/intechopen.84894

2. https://iot5.net/iot-applications/smart-home-iot-applications/