SMART HOME CONTROLLER THROUGH GOOGLE ASSISTANT AND MOBILE APP

Hemalatha Ikutti
V Goutham Prakash

[1]Hemalatha Ikutti, M.Tech,CSE, Vemu Institute of Technology
2 V Goutham Prakash, Associate Professor, CSE, Vemu Institute of Technology

[1]hemalatha.grace@gmail.com
[2]goutham.vprakash@gmail.com

Abstract— Majority of the buildings in domestic and commercial areas are becoming smarter and smarter with the integration of IoT with Machine Learning. The amenities provided covers saving, safety, flexibility and comfort. Here we present concurrent applications for smart buildings which makes smart homes. Here we present a blue print that makes use of sensors and other kits related to Arduino along with Image processing in Machine learning for smart applications. The core idea is to control the luminosity of the rooms in the houses based on the availability of the light, and to notify the entries with date time stamp regarding roommates with their names, identities, arrival, departures etc. The prototype contains a real world house model, and user interface for controlling the sensors and devices, a camera for capturing pictures of the people, and Image processing APIs in Machine Learning. Our results narrates a promising approach for realistic applications and future work related to scaling for large buildings and apartments

Keywords— IoT, Home Automation, Google Assistant, Firebase, Dialog Flow, Mobile Application

I. INTRODUCTION

The IoT is trending in implementing machine to machine communication. Billions of devices all over the world are connected with IoT and they can share information for accomplishing automation. The Internet of Things (IoT), as per the ITU Recommendation ITU-T Y.2060, has been defined as: "a global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies." The definition of the Internet of things has evolved due to convergence of multiple technologies, real-time analytics, machine learning, commodity sensors, and embedded systems. Traditional fields of embedded systems, Wireless Sensor Networks ,control systems, automation (including home and building automation), and others all contribute to enabling the Internet of things. The concept of a

network of smart devices was discussed as early as 1982, with a modified Coke machine at Carnegie Mellon University becoming the first Internet-connected appliance able to report its inventory and whether newly loaded drinks were cold. Mark Weiser's 1991 paper on ubiquitous computing, "The Computer of the 21st Century", as well as academic venues such as UbiComp and PerCom produced the contemporary vision of IoT. In 1994, The term "Internet of things" was likely coined by Kevin Ashton of Procter & Gamble, later MIT's Auto-ID Center, in 1999, though he prefers the phrase "Internet *for* things."

II. ARCHITECTURE
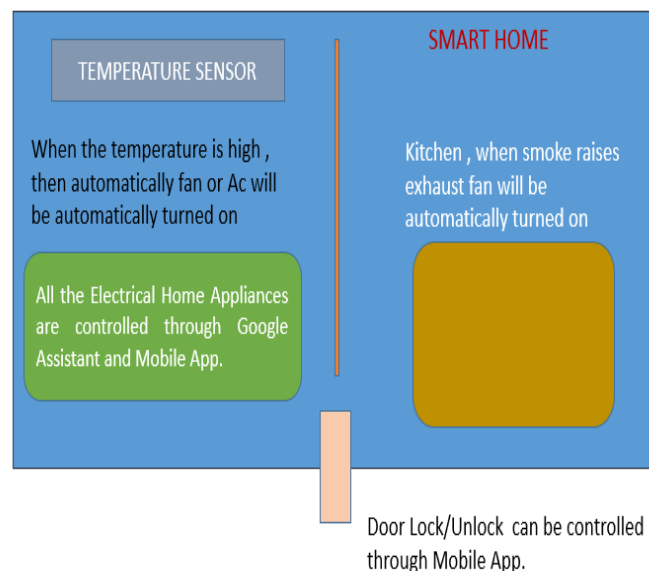
The Architecture covers making a home smart with the use of current cutting edge technologies such as Door Lock/ Unlock with the notification to the mobile user. When the Smoke raises with the Kitchen, Exhaust fan will be turned automatically on clearing that smoke there by creates comfort

Temperature Sensor senses and turns on the Fan/ AC based of the temperature being sensed. All the Electrical Home Appliances will be controlled through Google Assistant in integration with Firebase and Dialog flow.

III. MODULES

Admin Module: This module is meant for creating the users who are about to use this Project or Idea to make their homes or buildings smarter. Permissions/ Authentications given to the users are under the total control of admin. Sign-in and Registration are vital components of this module. The admin has all the rights to remove/add permissions depends on the requirements of the users.

Automation Module: This module provides the actual implementation for automating Lights in different rooms with variant luminosities depending on the availability of the light and temperatures. This also provides a mechanism for identifying how many are there in the room, identities and entry/ exit time stamps.

Sign-in Module: This module is connected with Database for validating against credentials.

Registration-Module: This module is concerned about registering new users with the smart services that are about to be provided.

IV. IMPLEMENTATION
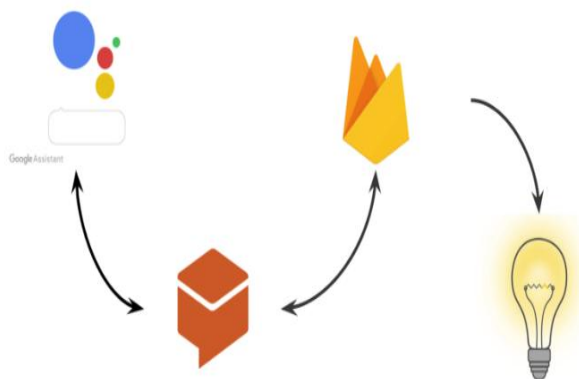
- Google Assistant is a service provided by Google Inc. where things can be controlled through commands.
- Dialog flow is a Machine Learning Framework/ Architecture required for accepting the commands from the Google Assistant.
- Firebase a Cloud Environment for storing the databases in JSON Format (Key: Value Pairs).
- With these Values dynamically we can control the Home Electrical Appliances.

V. CONCLUSION

The project makes the homes smarter which are very vital part of smart-cities. This gives an insight for observing the gestures of the people residing in the rooms to identify their moods and to take further decisions. This also can be extended to Schools, Restaurants etc.… to find the occupancy of the classes, hotels and to decide whether they are regular or occasional customers. References

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VII AUTHORS

1. Hemalatha Ikutty, MTech, CSE, Vemu Insitute of Technology, P Kothakota, Chittoor

2. V Goutham Prakash, MTech CSE , Associate Professor, Vemu Institute of Technology, P Kothakota, Chittoor.