REVIEW OF LITERATURE ON -
IoT for Smart Home System

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I. Abstract:

Imagine a life where you don't have to move an inch to operate devices; when home appliances can read your mind and the smart phone becomes the remote control for your home. The Internet of Things (IoT) is making this possible by allowing objects to be sensed and controlled remotely across an existing network infrastructure. Connected devices can be accessed using a smart phone or a PC app. IoT is not just restricted to Internet and Wi-Fi; there are around 11 IoT protocols.IoT solutions can be sensor based or connected / IoT-based (Internet of Things) and also are affordable and easy to install. It detects your presence and turns lights and devices on/off accordingly, or lets your smart phone become the universal switch.

Keywords: Home Automation, Smartphone, IoT, sensors.

II. Introduction:

Most the daily life applications that we normally see are already smart but they are unable to communicate with each other and enabling them to communicate with each other and share useful information with each other will create a wide range of innovative applications These emerging applications with some autonomous capabilities would certainly improve the quality of our lives, by using the concept of information exchanges is possible due to IoT

III. Techniques used in Implementing Smart Home System under IoT:

Sensors -A hardware which senses the environment around a physical object. sensors like Infrared, Passive Infrared(PIR) and Ultrasonic Sensors. Image based solutions or RFID based solutions. The primary purpose of these sensors is to sense the area, The ultrasonic sensors can be wirelessly connected to raspberry pi using the ESP8266.

Some types of sensors are:

Accelerometers: Used for sensing temperature.

Magnetometers: Used for sensing proximity.

Gyroscopes: Used for sensing image.

Microcontroller- for processing the sensor's data.

Raspberry Pi- It is a tiny computer, to link or solder simple circuits and this circuits then can connect with software.

Services-The central services are used to process large amount data collected by a device, provide analytics and host the entire IoT ecosystem. CLOUD COMPUTING services are popularly used in IoT.

Network-IoT components use a wired or wireless computer network to connect and communicate with each other in the IoT ecosystem.

Near field communication (NFC)-It is a protocol for communication between electronic devices, typically mobile devices, which are held very close to each other.

Radio frequency Identification (RFID)- IoT uses radio transmitter-receivers to identify and track objects which have RFID tags embedded in them.

Example: Prepaid travel cards of Delhi metro rail service. The card is to be scanned by the RFID scanner on the railway station and your account is automatically credited/debited.

Radio protocols-These technologies are low-power but offer high throughput power of small local device networks without the typical costs.

Example: ZigBee, Z-Wave, Thread etc.

LTE-A- is an advanced version of LTE technology. It increases the coverage area and reduces latency rate.

Wi-Fi direct-It does not need an access point. It allows peer-to-peer (P-P) connections with the speed of Wi-Fi.

Mobile App-Mobile app works as an Interface between the users and the cloud to communicate important data. The purpose of this mobile application is to provide information

Processing Unit/Gateway- The processing unit acts like an intermediate between the sensors and cloud. All the sensors are wirelessly connected to the processing unit. A single raspberry pi unit comprises of 26 GPIO pins i.e. 26 different sensors can be connected to it. The number can be increased using MUX. python script running on

the chip that checks the status of various GPIO pins and updates this information onto the cloud. Data collected from various sensors is sent to the raspberry pi through the esp8266. The raspberry pi then transmits this data to the MQTT Server through MQTT protocol over a channel.

IV. Literature Review:

"Home Automation as a Service" by **Anindya Maiti** School of Computing Science & Engineering VIT University Vellore, India. presented in- IRACST – International Journal of Computer Networks and Wireless Communications (IJCNWC) ISSN: 2250-3501, Vol. 2, No. 3, June 2012 in this study Researcher had plan to add a multi-level cloud audio player for improving the security surveillance system, through social networking sites like Facebook and Google+. With the help of these online social networks, Researcher can and notify a user's friends in case of an intrusion event and thus make prevention theft more effective.

"A Low Cost Design & Monitoring Of Automatic Irrigation System Based On ZigBee Technology" by-Dhawan S. Thakur , Aditi Sharma , **Dileep Kumar Sharma**- ACET, Eternal University Presented in - International Journal of Engineering Research and Technology(IJERT)www.ijert.org ISSN 2278 – 0181Vol. 2 Issue 6, May -2013pages: ESRSA Publication © 2012, in this study researcher proposed a study of system which uses ZigBee network for automation of irrigation monitoring . Researcher has designed a Automatic Irrigation System which eliminate the complication of wiring and provide good operating range that ordinary system based on Bluetooth technology which can be flexibly customized as per individual requirements.

"Smart Home: Integrating Internet of Things with Web Services and Cloud Computing " by-**Moataz Soliman, Tobi Abiodun, Tarek Hamouda, Chung-Horng Lung**-Department of Systems and Computer Eng. Carleton University, Ottawa, Ontario, Canada, Jiehan Zhou- Department of Computer Science and Eng. University of Oulu, Finland Presented in-2013 IEEE International Conference on Cloud Computing Technology and Science IEEE computer society 978-0-7695-5095-4/13 $31.00 © 2013 IEEE DOI 10.1109/CloudCom.2013.155, December 2013,Pages: 317-320- in this study-Researcher has tried to design Smart Home system through integrating IoT with Web services and Cloud computing. Which consisted of embedding intelligence into sensors and actuators using Arduino platform using Zigbee technology, facilitating interactions with smart things using Cloud services from remote locations, and improving data exchange efficiency using JSON notation. The approach was successfully used for demonstrating services for measuring home conditions, monitoring home appliances, and controlling home access.

"Bluetooth Remote Home Automation System Using Android Application" by-**R.A.Ramlee, M.H.Leong, R.S.S.Singh, M.M.Ismail,**

M.A.Othman,H.A.Sulaiman, M.H.Misran, M.A.Meor Said Centre for Telecommunication Research and Innovation, Fakulti Kej. Elektronik dan Kej. Komputer, Universiti Teknikal Malaysia Melaka, 76100 Durian Tunggal, Hang Tuah Jaya, Melaka, Malaysia The International Journal of Engineering And Science (IJES) Volume 2 ,Issue 01 ,Pages 149-153, ISSN: 2319 – 1813, ISBN: 2319 – 1805, 2013 , in this study-Researcher has tried to design a Home Automation System (HAS) to assist and provide support elderly and disabled persons in home. the smart home concept in the system improves the standard living at home.

"Secure Smart Environment Using IOT based on RFID" by- **Jebah Jaykumar**- BNM Institute of Technology, Bangalore, **Abishlin Blessy** Chennai,India.Presented in - International Journal of Computer Science and Information Technologies, ISSN- 0975-9646, Vol. 5 (2) , 2014, 2493-2496 , in this study-Researcher has tried to design a "Secure Smart Environment" which relays on exchange of information through radio frequency identification(RFID) for "Kill Password" and "Access Password" approach to provide authentication, data confidentiality, and data integrity at the various levels of communication.

"Home Automation Using Internet of Things" by- **Vinay sagar K N, Kusuma S M-**Assistant Professor, Department of Telecommunication, MSRIT, Bangalore, India, Presented in- International Research Journal of Engineering and Technology, (IRJET)5www.irjet.net e-ISSN: 2395-0056 , p-ISSN: 2395-0072, Volume: 02 Issue: 03, Jan-2015, Pages: 1965- 1970, in this study- Researcher has tried to design a "Home Automation" (HAS) usingIntel Galileo that employs the integration of cloud networking, wireless communication, to provide the user the controlling of various house hold things such as lights, fans, and appliances within their home using remote control on the basis of sensors' researcher has tried to designed a economic system which can expand to allow a variety of devices to be controlled .

"Device Control Using Voice Recognition in Wireless Smart Home System", by- **M.R.manikandan, A.Raghuram, D.Saravanan, S.Vignesh, R.Thenmozhi Selvan-**Assistant Professor,Department of Electronics and Communication Engineering, Narasu's Sarathy Institute of Technology, Salem, Tamilnadu, India, presented in -International Journal of Innovative Research in Computer and Communication Engineering, (An ISO 3297: 2007 Certified Organization), ISSN(Online): 2320-9801, ISSN (Print): 2320-9798, Vol. 3, Special Issue 2, March 2015, in this study - Researcher has tried to design a smart Home system which uses a HM2007 software which recognizes the voice and converts into binary format and transmits to the main control device by using zigbee transceiver. Laplace software is used to process the main control of device to control the fan speed and light intensity by using the voice commands.

"MICROCONTROLLER BASED HOME AUTOMATION SYSTEMS" , by- **Mr. Eswaravel, E, Mr. Lokeshwaran, V, Mr. Prabu, D, Mr. SyedGhouse N, Mr. Sundar Ganesh, C S-**Assistant Professor, Department of Robotics and Automation

Engineering, PSG College of Technology, Coimbatore, Tamil Nadu, India. presented in - International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering (An ISO 3297: 2007 Certified Organization), ISSN (Print) : 2320 – 3765, ISSN (Online): 2278 – 8875,Vol. 4, Issue 4, April 2015 in this study -Researcher has tried to design a smart Home system which uses a Atmega 16A microcontroller. For safeguarding a home and makes homes more secure and safe.

"The Internet of Things- Where the Web and the Physical world will meet", by-**Vaishali Jain, Roopali Jain**-Information Technology Department Acropolis Institute of Technology and Research, Indore, India, presented in - International Journal of Computer Science and Information Technologies, (IJCSIT) www.ijcsit.com, ISSN 0975-9646, Vol. 6 (1) , 2015, pages:724-727   In this paper, researcher has discuss the chronicle of Internet of things, its different application areas, research challenges, open troubles concerned to the Internet of things and talk about the hereafter sight of IoT.

"UBIQUITOUS HOME CONTROL AND MONITORING SYSTEM USING INTERNET OF THINGS", by-**Mr.Chougule Salim F., Miss. Dardi Madhura Rajendra, Miss. Kumbhar Amruta Dilip, Prof. C.R. Dongarsane-** Assistant Professor, Department of E&TC,SETI,Panhala,India, presented in - International Research Journal of Engineering and Technology (IRJET) www.irjet.net, e-ISSN: 2395 -0056, p-ISSN: 2395-0072, Volume: 03 Issue: 02, Feb-2016, pages: 1091-1096, In this study -Researcher has implemented a system for developing a security system for Home which helps to Control & Monitor home , system is implemented . Using an Android App implemented in Java. This system requires pc based web server. To handle home appliances such as fan, light as well as has a provision for monitoring- temperature, humidity and current in home and also controls maintains security of Home by monitoring home activities and maintains work efficiency, comfort and security.

"Raspberry PI and Wi-Fi Based Home Automation System" by- **Kolhe Ujvala S.**, Department of Electronics and Telecommunication Engineering, Aditya Engineering College, Beed. presented in - Journal of Electronics and Communication Engineering (IOSR-JECE) www.iosrjournals.org, e-ISSN: 2278-2834, p- ISSN: 2278-8735., Volume 11, Issue 3, Ver. III, (May-Jun .2016), PP 25-30. in this study -Researcher has implemented a system for developing a home automation system which provides a remote control of home appliances and also provide security against intrusion when the home host is not at home. These kinds of home automation systems are required because human can make mistakes and forgot to switch off the appliances .This project describes raspberry pi module and presents its potential deployment in smart home environment.

"IOT –The Smarter Way to Life" by-**Vinay Kumar** -Assistant Professor, DAV College for Women, Ferozepur Cantt., Punjab, India, presented in - International Journal of Computer Science and Information Technologies, (IJCSIT) www.ijcsit.com, ISSN 0975-9646, Vol. 7 (6) , 2016, pages: 2554-2555, in this study

-Researcher has implemented a system for developing a automation system based on sensor based technologies where information is travelling from one point to another point using public and private networks, Transferring data using Bluetooth and Wi-Fi connections This research paper deals with functioning of the internet of things and how it contributing to the smart world.

"Internet of Things", BY- **Sivangula Manogna, Harith Reddy** Dakannagari-Assistant Professor, Dept of CSE,St. Martin's Engineering College, Dhulapally, Hyderabad, TS, India, presented in - International Journal of Computer Science and Information Technologies, (IJCSIT) www.ijcsit.com, ISSN 0975-9646, Vol. 7 (3), 2016, pages: 1567-1570. in this study -Researcher has presented study of Internet of Things and its application, and its relation with Wireless Sensor Network (WSN), common operating picture (COP) ,RFID embedded sensor and actuator nodes, connection to real world of things.

"IOT Based Smart Home System Technologies" by- V.**Jyothi, M. Gopi Krishna, B. Raveendranadh, Debashree Rupalin** Assistant Professor, Department of ECE, Vardhaman College of Engg, Hyderabad TS, India.presented in - International Journal of Engineering Research and Development, e-ISSN: 2278-067X, p-ISSN: 2278-800X, www.ijerd.com, Volume 13, Issue 2 (February 2017), PP.31-37. in this study -The researcher has design and implemented a system for Home Automation which induce technology for home atmosphere which is usage to provide ease and protection to its occupants.

"Home Automation System Using Android via Bluetooth" by- **Jay Kumar, Anshul Sengar, Mohit Kumar Sharma, Manoj Kumar Patel,Simant Rahul Singh**-Head of Department, Department of Electrical Engineering, Raja Balwant Singh Engineering Technical Campus,Bichpuri , Agra , India, presented in - International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering (An ISO 3297: 2007 Certified Organization), ISSN (Print) : 2320 – 3765, ISSN (Online): 2278 – 8875, Website: www.ijareeie.com , Vol. 6, Issue 4, April 2017, in this study -The researcher has design and implemented a system for Home Automation and Controlling by using Bluetooth for Android mobile phone The purpose of this is to use mobile phone's inbuilt Bluetooth, for automation of Home Appliances.

"Internet of Things based Home automation using Raspberry Pi" by- **Ramesh G, Dr Venkatratnam** P-VTU Extension centre, UTL Technologies Ltd. presented in - International e-Journal For Technology And Research-2017, International Digital Library Of Technology & Research IDL - www.dbpublications.org, Volume 1, Issue 5, May 2017 , Copyright@IDL-2017. in this study -The researcher has design and implemented a system for Home Automation using Internet of Things(IoT). And atomizing home, housework or household activity. Proposed implementation of home automation include centralized control of lighting, heating, ventilation and it is fully control by using smart phone using particular android application. Using Raspberry pi.

"IoT based Simple Home Automation using Raspberry Pi" by- **Aditya Vikram Jajodia,Suprabhat Das**, Bachelor of Technology in Computer Science and EngineeringAmity University Kolkata, Major Arterial Road, Action Area II, Rajarhat, New Town, Kolkata, West Bengal, India. presented in - International Journal of Engineering Trends and Technology (IJETT) – www.ijettjournal.org , ISSN: 2231-5381, Volume 53 Number 3, pages: 124-125, November 2017. in this study -Researcher has developed a IOT based home automation system which focuses on the idea of creating and deploying a simple home automation system with minimum cost and simple programming using Raspberry Pi

"**Smart Home System using Raspberry Pi**" by-**Danesh Marolia, Abhishek Khadse, Akshay Lemos, Godson Lemos** -Computer Engineering, Xavier Institute of Engineering, Mumbai, India. presented in - International Journal of Computer Science and Information Technologies, (IJCSIT) www.ijcsit.com, ISSN 0975-9646, Vol. 8 (2) , 2017, pages: 302-305. in this study - Researcher has developed a computerized system which controllers home appliances and home security via a smart phone and can be operated from any remote place around the world also allows to supervise the house's devices. When the user is out, the using a Raspberry Pi kit which will notify the household appliances directly from smartphone using internet also provides facility to monitor the house's.

"Internet of Things Based Home Automation Control System Using Raspberry Pi" by - **E. Rammohana Reddy , K. Sankara-** Assistant Professor, Department of MCA, Sree Vidyanikethan Institute of Management, A.Rangampeta, Tirupati, Andhra Pradesh, India. presented in - International Journal of Scientific Research in Computer Science, Engineering and Information Technology IJSRCSEIT, http://ijsrcseit.com, ISSN : 2456-3307, Vol. 3 , Issue. 4, © 2018. in this study -Researcher has tried to design a Home Automation System using The internet of things (IOT) to control multiple electronic devices using a PC laptop or mobile.

"Home automation system using internet of Things" , by- **Shweta Singh, Kishore Kumar Ray**, Rvs College of Engineering and Technology,Jamshedpur. presented in - International Journal of Computer Engineering and Applications, Special Edition, ISSN 2321-3469, www.ijcea.com. in this study -Researcher has tried to design a Home Automation System using IoT architecture.

" Internet of Things (IoT) – Ubiquitous Home Control and Monitoring System Using Android based Smart Phone", by- **Mithun Prasad R, Kesavamoorthy M, Gunasekaran S and Prof. B.M.Prabhu-**Assistant Professor Department of Electrical and Electronics Engineering, Angel College of Engineering and Technology, Tiruppur, Tamilnadu, India. International Journal of Trend in Research and Development, Volume 3(2),ISSN:2394-9333 www.ijtrd.com, in this study -Researcher has tried to design a Home AutomationSystem for home management and monitoring using android platform.

IV. Research Gaps:

Researcher has found considerable study in this area but a special study is not done related to IoT for Smart Home System specifically to automate the kitchen devices therefore the researcher intends to design and develop an IoT for Smart Home System.

V. Conclusion:

IoT can provide dynamic solutions for Home Automation with which one can be able to remotely control home appliances and equipments as per once needs.

IoT can provide dynamic solutions for Proper monitoring of utility meters, energy and water supply can help saving resources and detecting unexpected overloading, water leaks etc. Gardening sensors can be able to measure the light, humidity, temperature, moisture and other gardening vitals, as well as it will water the plants according to their needs.

IoT can provide dynamic solutions for monitoring the house's security and control the household appliances directly from the smart phone through this project

IoT can provide dynamic solutions for Smart home based automations considering all the factors such as power consumption, cost, Monitoring, security on atomizing and optimizing concept of intelligent homes i.e. smart houses with smart rooms and smart appliances monitoring and controlling everything automatically

VI. References:

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5) B. Muniswamy Naik et all "**Speech Recognition Module for Home Automation System Based On ZigBee", (**IJCSMC**),** ISSN 2320–088X,Vol.3 Issue.8, August- 2014,