Automation In Wired Houses With Automated And Manual Operations

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Abstract- *The automation system seen now a day is as expensive as a mid-range car in the countries like India, Pakistan and other third and second world countries. This can an expensive and are difficult to be fitted in the old residence, they may require new fitting and construction with wiring to be done. To eliminate the issues the system focuses on the cost efficient product with issues to be solved altogether. Automation is provided by the server made efficient components. Most likely 80% system runs on wireless network.*

Keywords- IoT, Home Automation, Alexa, Automation

I. INTRODUCTION

The project incorporates the factors mentioned below.

- Cost
- Design
- Safety
- Efficiency
- Network
- UI (User-Interface)

This factor plays an important role in designing the system throughout the residence. Each factor reflects the hardware and the software part of the system to be incorporated in the building. Parts to design to operate lights are electromechanically driven. Many of them also consist of MOSFETs, and Motors.

II. LITERATURE REVIEW

B. Singh, B.N. Singh, A.Chandra (2003) In this paper they analysed that using SS Components (Solid State) help and improves Power Quality and provides constant voltage.

Y. Panov, M. Jovanovic (2004) Using optocoupler in a power supply helps providing isolation to the AC and the DC traces on the PCB. This isolation is need for the best power delivery without any interference on the AC input.

Shancang Li, Li Da Xu, Xinheng Wang (2012). This paper investigates how CS can provide new insights into data sampling and acquisition in wireless sensor networks and IoT. First, we briefly introduce the CS theory with respect to the sampling and transmission coordination during the network lifetime through providing a compressed sampling process with low computation costs. Then, a CS-based framework is proposed for IoT, in which the end nodes measure, transmit, and store the sampled data in the framework.

Soumya Kanti Datta, Christian Bonnet, Navid Nikaein (2014). This paper proposes an innovative Internet of Things (IoT) architecture that allows real time interaction between mobile clients and smart/legacy things (sensors and actuators) via a wireless gateway.

Rafiullah Khan, Sarmad Ulla Khan, Rifaqat Zaheer (2012). This paper addresses the existing development trends, the generic architecture of IoT, its distinguishing features and possible future applications. This paper also forecast the key challenges associated with the development of IoT. The IoT is getting increasing popularity for academia, industry as well as government that has the potential to bring significant personal, professional and economic benefits.

Zhi-Kai Zhang, Michael Cheng Yi Cho, Chia-Wei Wang (2014). In this paper, we begin with general information security background of IoT and continue on with information security related challenges that IoT will encountered. Finally, we will also point out research directions that could be the future work for the solutions to the security challenges that IoT encounters.

Urs Hunkeler. Hong Linh Truong, Andy Stanford-Clark (2008). This paper describes MQTT-S, an extension of the open publish/subscribe protocol Message Queuing Telemetry Transport (MQTT) to WSNs. MQTT-S is designed in such a way that it can be run on low-end and battery-operated sensor/actuator devices and operate over bandwidth-constraint WSNs such as ZigBee-based networks. Various protocol design points are discussed and compared. MQTT-S has been implemented and is currently being tested on the IBM wireless sensor networking testbed. Implementation aspects, open challenges and future work are also presented.

III. STUDY FINDINGS

From the power point of view the isolation standards are to be followed to make the power supply to be more efficient. The isolation also plays an important role in the safety of the system. The system has to be protected from sort circuits and overloading the components. We also found that the usability of Solid state components are more reliable in long term use. They prove to be safe on the long period of time. The hardware used in the system requires LDO (Low Drop Out) Current which can only be provided by the solid state LDO IC's.

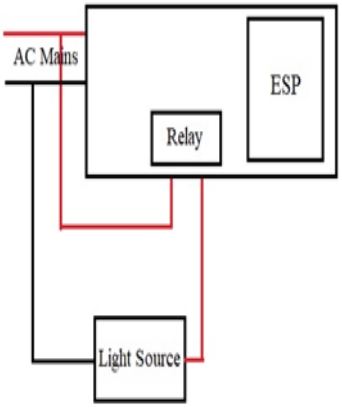
Network here are managed by the mess networking of the router and the server connected to it. This server also host a MQTT broker to the device which helps the device to identify itself and work accordingly to the task given to them, also help in regulation the devices according ther specific devices, logs generated by the system can also be user-friendly.

IV. METHODOLOGY

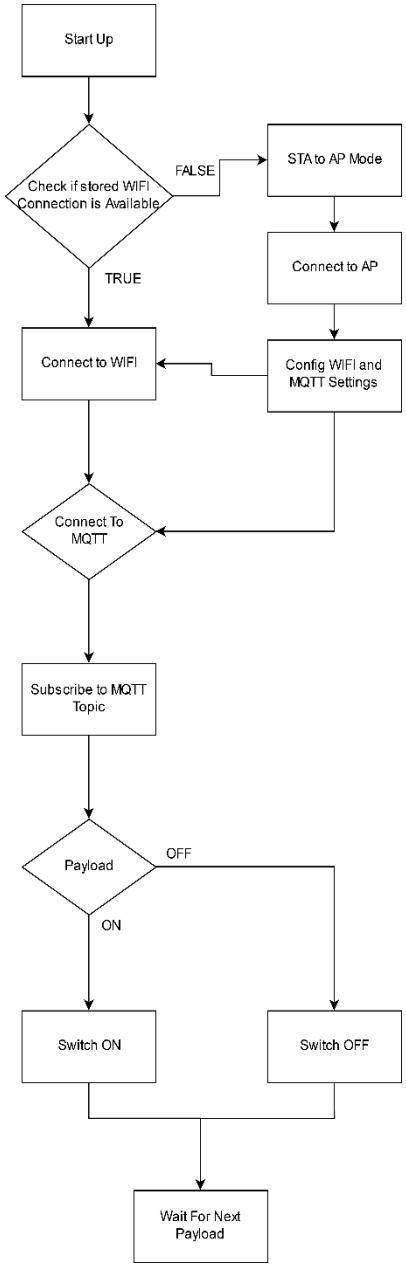
Hardware Connections.

1. The device have to be powered by mains voltage.
2. Main connections are totally isolated from the components of the device which provide safety from interfacing.
3. The Extra connectors on the devices are for the Lighting Instruments and plugs.
4. In some devices there may be extra plug for Manual Switch mode.
5. LED Module also need to be adjusted to 3.3V before using the device. Instruction on the device Itself.

By the above method all the problem related to the new wiring has been solved.



Configuring Device.



As shown in the above figure following steps are to be carried out for configuration.

1. Star up the device.
2. Upon start up if there is no store configuration WIFI Module will switch to AP mode.
3. Connect to AP mode with the help of mobile device and connect to Local IP assigned to it.
4. Configure WIFI and MQTT Setting.
5. Reboot
6.

The UI design is User friendly and can be configured in any case of failure too.

V. CONCLUSION

The research focuses on applying automation with the AC wiring of the present house with the DC appliance with the minimal use of appliances so that it could be cost efficient. The design is carried on in such a way that it can be fitted in the old switch boards and with efficiency of 85-95 %. This helps to reduce the cost of new fittings to be installed. System also removes the risk of changing the entire system in case of any failure or parts failure or any kind of failure which enable the operation.

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