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A
Project Synopsis
On

“Integrated Industrial Automation System”

Bachelor of Technology
In
Electronics & Communication Engineering

Under the guidance of
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1. TITLE OF THE PROJECT:

“Integrated Industrial Automation System”

2. OBJECTIVE:

Automation was initially used in Industries to reduce the human exposure to hazardous situations and to have work done more effectively and efficiently. Its use reduced the man-power required, and also helped in handling complex systems more effectively. In this project we have tried to bring a model of Industrial Automation for integrated purpose which is simple, reliable and cost-effective. By making use of the fact that mobile phones have become an inseparable part of our lives, in this model we have kept the mobile phone at the centre of our system i.e. we have tried to automate the entire system with the help of a mobile phone. This Integrated Automation System is hugely expandable and is capable of handling several complex tasks in parallel. The idea behind making this project is to get a feeling of how an automation system can be automated completely with the help of a mobile phone.

3. INTRODUCTION:

Automation is the use of machines, control systems and information technologies to optimize productivity in the production of goods and delivery of services. In the scope of industrialization, automation is a step beyond mechanization. Automation plays an increasingly important role in the world economy and in daily experience. Slowly automation has started penetrating our homes. Its presence can be felt in the TV remote controls, fire alarm systems, water tank management systems, and also in security systems. We have started relying on Automation to make our lives easy and secure. Automating Home helps in saving electricity, reduces manual labor, increases reliability and efficiency, and also helps in tackling security. Home automation for the elderly and disabled can provide increased quality of life for persons who might otherwise require caregivers or institutional care. The popularity of automation systems has been increasing greatly in recent years due to much higher affordability and simplicity though Smartphone and tablet connectivity. The concept of the "Internet of Things" has tied in closely with the popularization of the Integrated Automation System.

4. BRIEF DESCRIPTION:

Smart Institute, Home automation, Home control and digital home are just different names for comfort, convenience, security and power saving. These systems are of increasing importance these days. Even though such systems are very expensive in general, they can also be very economical if

one designs and constructs them for very specific needs. There are many ways to control a smart home system, including wireless communication over the internet. This project will help in creating a new generation of smart automation system in which users can control the home appliances such as Refrigerator, Air Conditioner, Fans, and Bulbs Industrial Appliances and Institutional things also can controle . whenever they want and from wherever they are with the aid of the Internet. This can be extended to mobile apps also in the open source platforms like Android. The apps can be used to create a user interface using which one will be able to control all kinds of appliances via their Smartphone.

There are 3 major modules which are required to build this system, that are: Client Server, Radio Frequency Transceiver and Microcontroller. This system can be accessed by the internet by using a Personal Computer or Smartphone. This project consists of two parts: Hardware and Software. Hardware refers to the development of the device itself including circuit construction, printed circuit board etching and soldering process. Software part refers to the designing algorithms, coding and compilation. It also includes development of the user interface.

5. COMPONENTS REQUIRED:

- NodeMCU
- Sensors
- Relay Board

6. SOFTWARE TOOLS / PROGRAMMING LANGUAGES:

- Arduino IDE
- Fritzing
- AUTODESK Tinkercad
- Blynk App Creator

7. REFERENCES:

- https://learn.adafruit.com/all-the-internet-of-things-episode-four-adafruit-io
- https://www.researchgate.net/publication/221270872_Amarino_A_toolkit_for_the_rapid_prototyping_of_mobile_ubiquitous_computing
- https://search.arduino.cc/search?q=home%20automation%20arduino&tab=projecthub
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- https://iotcircuithub.com/nodemcu-esp8266-blynk-home-automation/

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