Modern Approach of Industrial Equipments Control Using Android App

[1]N.Rupavathi, [2]Dr.K.Ramesh, [3]N.Nagraj, [4]K.Naveenkumar, [5]M.Aravindraj

[1]Associate Professor, ECE, Jayam College of Engineering and Technology, Tamilnadu, India
[2]Professor, ECE, Jayam College of Engineering and Technology, Tamilnadu, India
[3,4,5]UG Scholar, ECE, Jayam College of Engineering and Technology, Tamilnadu, India

Abstract - **Smart device control system based on GUI App provides a modern alternative to the traditional key and access is generally managed by an online service. Typically the electrical devices themselves do not connect to the communication network directly, but communicate with a Smartphone app, which in turn talks to the online service. This system illustrates a non-traditional approach to system control focused on speech recognition using mobile apps and wireless application protocol. In all ways, life is becoming simple and simple with advancement in technology. New research is currently going on in every field to boost device efficiency and to make work simpler than previous ones. Automatic systems are favored over manual systems in today's world. One of them is speech recognition based interface control. It consists of a BT (Bluetooth) control board, a relay circuit and a Smartphone app. This allows devices to be operated by users by just sitting in one position. A significant advantage of this method is the control of machines, i.e. making them on and off as per user requirements. This user can save as well as discourage excessive use of energy by using it. Device access is restricted to a single user, so that protection is not compromised. The smart phone touch to text generator APP is used to generate the text character. The pre-stored character in controller memory is compared with present text character. The authentication text is generated by the APP if compared text is valid. The text of the APP is transmitted from smart phone to microcontroller through Bluetooth device (Wireless application protocol). The controller is received the text from Bluetooth device and compare the text with predefined text parameter. The controller is enables the relay switching unit for turn on and off the electrical appliances.**

Keywords: GUI app, Bluetooth, Nuvoton controller, Industrial Equipments.

I. INTRODUCTION

In today's society, our smart phones are an extremely useful device when we are on the go and away from our homes or all places. All kind of application like communication, shopping, banking process are successfully operated at own place by using smart phones. Here we developed and introduced one more application design for controlling the all type of electronic devices through remotely with the help of wireless communication protocol (Bluetooth) present in smart phone. Smart devices are gaining popularity and becoming more ubiquitous in our lives. There has been a significant growth of Smart APP controlled devices over the past few years, but this new market has gained a reputation for churning out insecure systems. In every field of science until now, speech recognition technology has played an important role and it also has future aspects of speaker vigor, context and surrounding noise elimination promises to achieve system effectiveness. In speech recognition, the machine detects and responds to voice commands accordingly.

There is hand-free access and control of different equipment due to the use of voice as data. There is another factor that is now playing an important role in the development of technology, along with remote access. The wireless LAN has played a major and central role in this system. We know the wireless local area network has made it easy to connect to any corner of the globe. Together with other consumer electrical equipment such as fan, light, motor or it is touch operated control. To operate, an android app is created. Text is transmitted through the APP (Touch to text) via Bluetooth. This project is created by taking into account the end user. Without getting another work hamper, devices can be operated from anywhere in local access point. Technology for speech recognition is something that has been dreamt of and worked on for decades. User-to-user applications can vary. There are many applications, especially for domestic use. One of them is speech recognition based interface control.

II. EXISTING METHODOLOGY

This system focuses on the typical business scenario of intelligent factory, it includes the manufacturing process, carries out hierarchical security protection, forms a full coverage industrial control security protection network, completes multi-means industrial control security direct

protection, at the same time, it utilizes big data analysis, dynamically analyzes the network security situation, completes security early warning, realizes indirect protection, and finally builds a self sensing and self-adjusting industrial network security protection system It provides a reliable reference for the development of intelligent manufacturing industry. Problem identification: Need large memory constraints for Network data operation, Required more channel routing for parallel processing.

III. LITERATURE SURVEY

Yali Tian Jiangsu Jari Information Technology, Gang Li Jiangsu Jari Information Technology Analysis on solid protection system of industrial control network security in intelligent factory 2021 IEEE, This system focuses on the typical business scenario of intelligent factory, it includes the manufacturing process, carries out hierarchical security protection, forms a full coverage industrial control security protection network, completes multi-means industrial control security direct protection, at the same time, it utilizes big data analysis, dynamically analyzes the network security situation, completes security early warning, realizes indirect protection, and finally builds a self sensing and self-adjusting industrial network security protection system It provides a reliable reference for the development of intelligent manufacturing industry.

Thulluri Krishna Vamsi SRM Institute of Science and Technology, Tamil Nadu Face recognition based door unlocking system using Raspberry Pi International Journal of Advance Research, Ideas and Innovations in Technology 2019, Today we are facing security issues in every aspect. So we have to resolve these issues by using updated technology. In this project, we are using the Face recognition module to capture human images and to compare with stored database images. If it matches with the authorized user then the system will unlock the door by an electromagnetic lock. The need for facial recognition system that is fast and accurate that continuously increasing which can detect intruders and restricts all unauthorized users from highly secured areas and aids in minimizing human error. Face recognition is one of the most Secured System than biometric pattern recognition technique which is used in a large spectrum of applications. The time and accuracy factor is considered about the major problem which specifies the performance of automatic face recognition in real-time environments.

Ayorinde Oduroye Adekola Olubukola D. Voice Recognition Door Access Control System research gate 2019, this study reviews how voice recognition can be used in making it easier for people with disabilities to access door systems and provide better security to lives and properties.

Popular Biometric technology includes iris scan, fingerprint scan and facial recognition. These biometric identifiers are unique and distinctive based on features and characteristics used to identify different individuals for the safety and security of their lives and properties. Unfortunately, this biometrics can be hacked. An individual's finger can be cut off to perform fingerprint scan, an eye ball can be removed to perform an iris scan, a pin or password can be hacked, and a picture of the individual can be used to perform facial recognition. These setbacks can be averted with voice recognition biometrics technology. Voice biometrics technology is more accurate, faster and more convenient. The goal of this research study is to develop a door access control system that uses voice recognition algorithms to provide people with a quick way to unlock their doors and at the same time ensure their safety and security.

IV. SYSTEM DESIGN

To overcome these problems in regional areas proposed system is designed to control the industrial equipments using Smart APP with WAN protocol. A centralized server (Microcontroller) will be responsible to see the electric pole status and control the pole activities to enable or disable the device power in particular area through WAN. As it is not feasible to monitor the central server full time, So the proposed system is designed to have emergency control system for remote monitoring and control with the help of a smart APP.
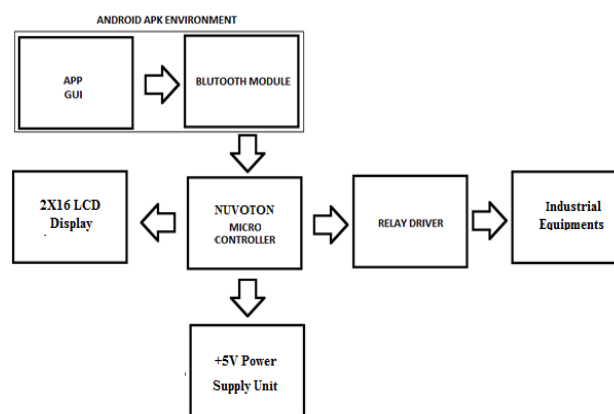

Figure 1: Functional diagram of system design

The system consists of Nuvoton microcontroller, HC-05 Bluetooth, Relay switching with transistor driver, 2X16 LCD display unit, Smartphone with APP and +5Vpower supply unit. The smart phone Touch to text generator APP is used to generate the single text character when the user touches the different appliances icon on the GUI APP. The text of the APP is transmitted from smart phone to microcontroller through Bluetooth device (Wireless application protocol). The controller is received the text from Bluetooth device and

compare the text with predefined text parameter. The controller is enables the relay driver for controlling the electrical appliances function. The 2X16 LCD is used to display the information about the system function.

V. RESULT AND DISCUSSION

5.1 Android Application

Here we develop an Android Application for sending communicating with the hardware base station. The user controls and Bluetooth connectivity is designed for the application using "Android SDK" software tool. The application was developed in eclipse using java. This app enables the smart phone to connect to a Bluetooth modem via Serial Port Profile (SPP). Software packages required include Java Development Kit (JDK), the Eclipse software environment, Android Development Tools (ADT) and Android SDK (Software Development Kit).
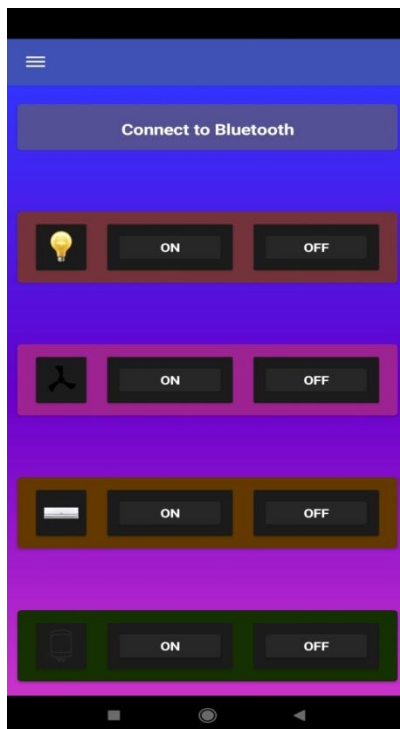

Figure 2: Android application software

An Android phone sends its command to the client Bluetooth-enabled devices through an embedded Bluetooth module. The phone is used as a host controller which establishes their communication with Bluetooth modules. The communication between the master and slave Bluetooth devices covers the processes of device power-up and data exchange whereas the protocol is established in the Bluetooth software stack. Bluetooth modem used here is HC-05 which is a Bluetooth Core V2.0 compliant module with SPP. The

module is designed to be embedded in a host system which requires cable replacement function.

5.2 Hardware Design

The signal driver is used to here signal conditioning unit as well as electrical isolator. The signal driver coupled transmission line between relay unit and power transformer which is used to sensing the electrical signal flows through transmission line between relay and power transformer. The output of the signal driver connects with microcontroller unit. The controller controls the particular relay switch when corresponding signal driver output does not exist. The relay circuit turns ON and turns OFF the equipments power. The power transformer is supplies the source to the load through relay circuit. One more signal driver unit is connected between relay unit and load. The liquid crystal display unit interfaced with microcontroller which is used to shows the information about equipment status. The Bluetooth device interfaced with microcontroller unit through UART which is used to send the monitoring information to user as well as command to controller for controlling the operation.

VI. CONCLUSION

The system has been successfully designed and prototyped to monitor and control the industrial equipments using an Android APP. It is concluded that Smart Living will gradually turn into a reality that consumers can control their home or industrial equipment remotely and wirelessly. Previous research into smart device operating schemes had found many types to be insecure, but did not show any technical vulnerability in Master control offering. We applied techniques from one researcher which broaden the scope of attack to the entire system, and ultimately found several significant vulnerabilities with the Master control Vault e-Locks service. Finally, our experience in conducting a responsible disclosure exercise shows that it is a valuable process. We successfully completed the new design structure for handling the different electrical appliances system in high accurate and smart.

REFERENCES

[1] AdekolaOlubukola D.1, AkinsanyaAdeoluwa1, Voice Recognition Door Access Control System IOSR Journal of Computer Engineering (IOSR-JCE) -ISSN: 2278-8727, Volume 21, Issue 5, Sep - Oct 2019.

[2] Thulluri Krishna Vamsi SRM Institute of Science and Technology, Tamil Nadu Face recognition based door unlocking system using Raspberry Pi International Journal of Advance Research, Ideas and Innovations in Technology 2019.

[3] Ayorinde Oduroye, AdekolaOlubukola D. Voice Recognition Door Access Control System research gate 2019.

[4] Mr. Lokesh M. Giripunje1, Suchita Sudke2, Pradnya Wadkar3, Krishna Ambure4, Department Of E&T C Engineering, DYPIEMR, IOT Based Smart Bank Locker Security System – IJRASET, November 2017.

[5] Pradeep Kumar; Saket Kumar; Singh An efficient multistage security system for user authentication IEEE 2016.

[6] Prof. Sandeep V, Guruprasad Hegde , Chetan N, Girish P Face Detection based Locker Security System using Raspberry Pi International Journal of Scientific & Engineering Research, Volume 7, Issue 5, May-2016.

[7] Harnani Hassan, Rosli Abu Bakar Face recognition based on auto-switching magnetic door lock system using microcontroller research gate 2012.

[8] Vinil Kumar.V, Divya.N, Mr. K.S.Vairavel Smart Door Lock Opening In Cars Using Face Recognition ISSN: 2455-7137 December – 2017.

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