

Smart Visitor Access Entry System

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Abstract

In the era of modernization ICT is used in diverse application domains to ease and improve human life. Technology is also applied to strengthen the security in managing and controlling visitor access to restricted compounds such as higher learning institution. Normally, the details of the visitors are recorded manually in papers or visitor's logbooks. In most cases, the visitor also needs to leave their identity card or driving license and take a visitor pass at the main entrance. The procedure is inefficient and time-consuming especially during the peak hours when the number of visitors is high. In viewing these issues, the Smart Visitor Access Entry System is developed. The aim is to develop a prototype with a mobile application that focuses on acquiring details and monitoring of every visitor who is entering the campus. The project consists of the hardware components like Arduino Uno, Bluetooth Module, and ultrasonic sensor. The adoption of mobile application and cloud storage platform improve visitor access entry procedures as the visitors' data are recorded and displayed systematically. The security personnel receives an alert notification from the device to notify the presence of the visitor. By incorporating low-cost and off the shelf components with Internet of Things (IoT) concept, the system offers a solution which potential to be commercialized as it improve the entry procedure and increase the efficiency in managing visitors to the institution with a fraction of cost.

Keywords: Mobile Application, Access Entry System, IoT, Android

1. INTRODUCTION

Information and Communication Technology (ICT) enables modern computing that allows people and organizations to interact in the digital world. ICT has changed how people work, communicate, learn and live. With the current growth of Internet of Things (IoT) technology, ICT offers various opportunities, conveniences, and benefits in diverse application domains to ease and improve human life. This project focusses on application of IoT in strengthening the security of restricted compounds, buildings or places such as higher learning institutions. These days, the conventional approach to record visitor data is still practicing by many institutions. However, manual approach is not systematic and require physical space to store the records. Due to that reasons, the Smart Visitor Access Entry System is developed to improve the entry procedure.

2. OBJECTIVE

The aim of this project is to develop a system that utilise Android mobile application to enhance the visitor access entry procedure. The system focuses on acquiring details of every visitor who is entering the campus. The data of the visitor can be recorded quickly and easily with the integration of cloud storage in replacing the physical log book. The security personnel who is in charge receives an alert notification on the mobile application to notify the presence of the visitor.

3. NOVELTY & INVENTIVENESS

Figure 1 shows the system architecture of Smart Visitor Access Entry System. The ultrasonic sensor at the entrance detects an incoming visitor automatically. The sensor at the Arduino Uno sends alert to the mobile application via Bluetooth module that attached to the Arduino. The security personnel at the entrance inserts the visitor data such as car's registration number, date, time in and time out of the visitor. The information of the visitor will be automatically saved to the Firebase cloud storage platform. Figure 2 and 3 depict the complete prototype of the system and the interfaces of the mobile application.

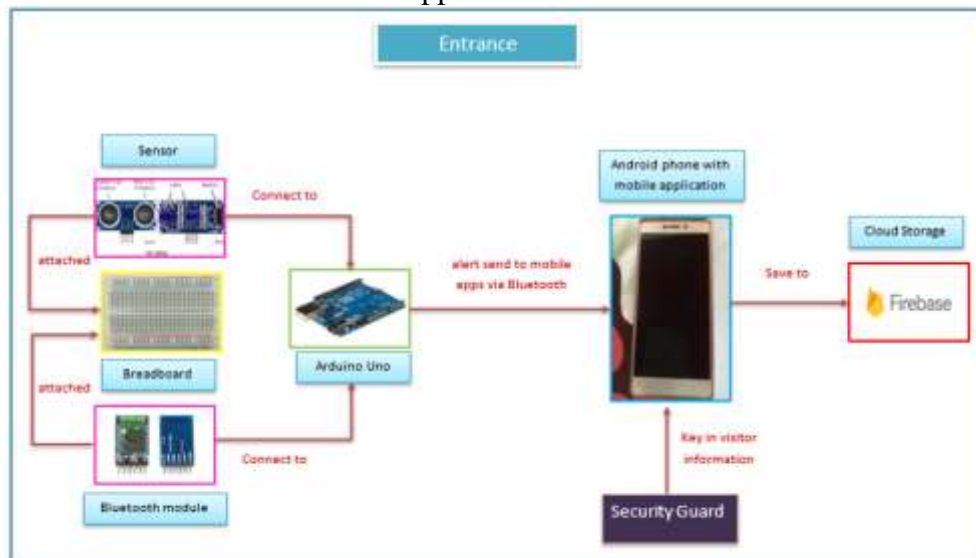


Figure 1: System Architecture

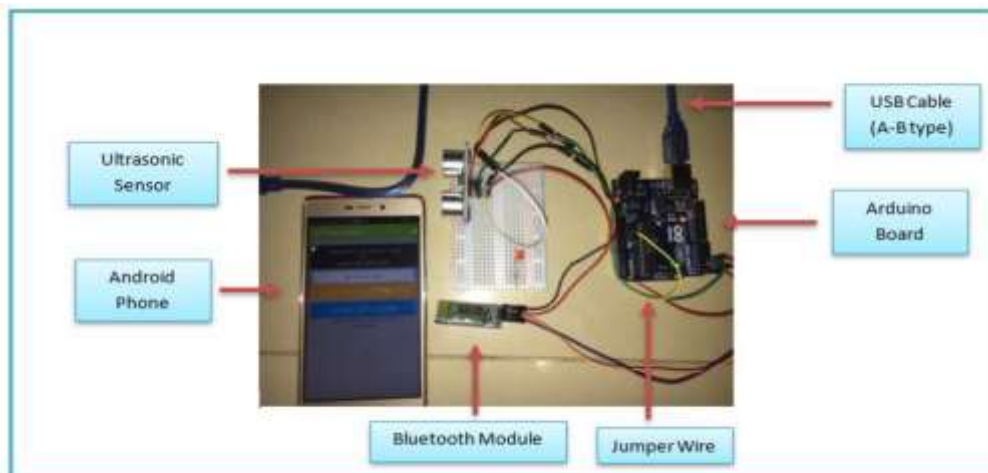


Figure 2: The prototype

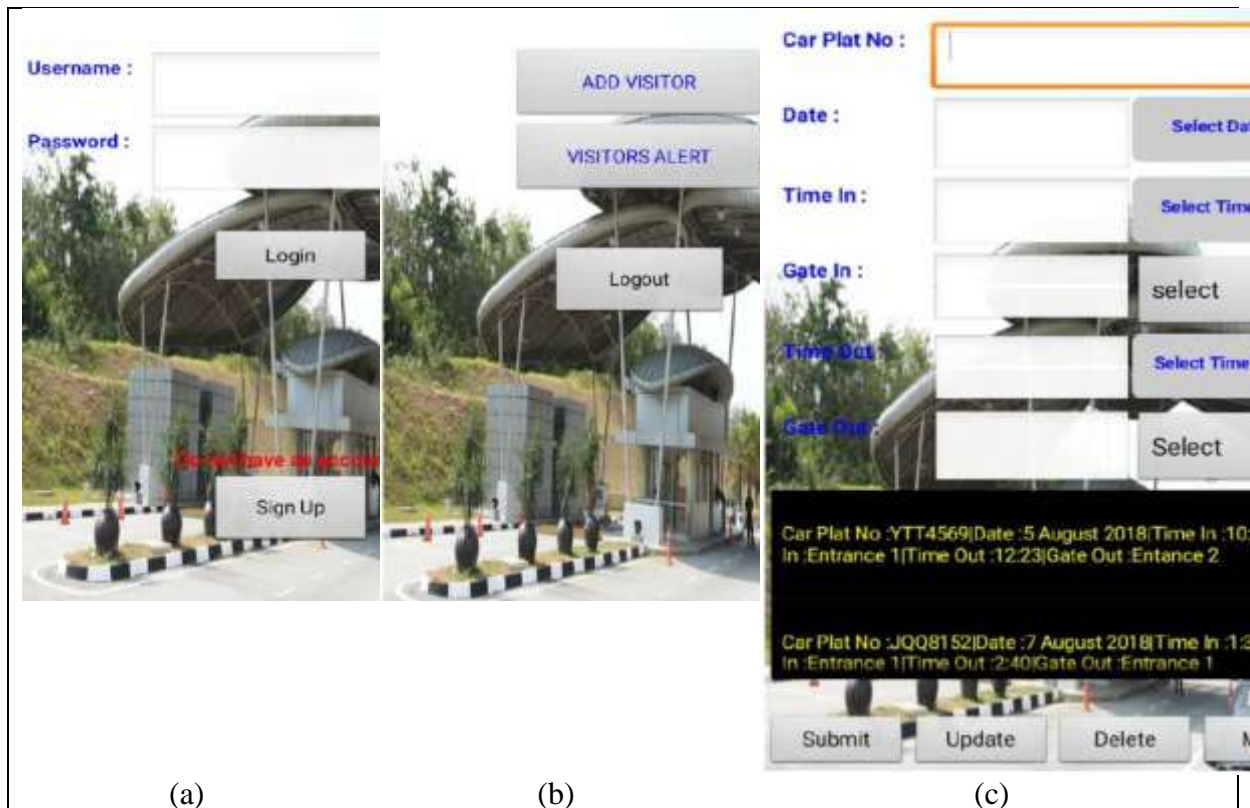


Figure 3: Mobile Application Interfaces

4. PRACTICALITY & USEFULLNESS

The proposed solution offers a simple, practical and user-friendly system. The system promotes a green initiative as it is a paperless system where there is no more manual record, paper or visitor's log book, and dedicated space for physical log book storage. Moreover, the system also provides efficient visitor data management as the visitor's data and its history are easily retrieved. The visitor's waiting time at the entrance can be reduced as the security personnel will be informed on the incoming visitor easily.

5. CONCLUSION

By incorporating low-cost and off the shelf components with IoT concept, the system offers a solution which potential to be commercialized as it improves the entry procedure and increases the efficiency in visitors data acquisition with a fraction of cost and less technical skills. This work can be extended by adding more sensors and other components to improve the functionalities and features.