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Restaurant E-Menu System

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Abstract: *Automation is the technology concerned with application of mechanical, electronics & computer based systems to operate & control production. Due to advancement in technology we have seen atomization of many things. We have seen an atomized vending machine which will serve a hot or soft drinks, chocolates &many things. There is automation of tickets on railway station. So into day's world due increased demand and competition we need to serve the people as user friendly as fast as possible. In restaurants menu cards are available on each table. We can refer it & place our order to waiter. But we never noticed disadvantages of this conventional method. You need to wait for the waiter to attend to you. Even it becomes difficult for the restaurant manager to keep the changing prices on menu card. At the same time adding the new menu to the same card becomes tedious job for anyone who is responsible for this job since changing menu card within less time may result in cost rise. To overcome these problems, this system installed on every table for ordering the menu. These units will work as slave units & will be connected to central unit which can be kept at managers table.*

Keywords *Smartphone; automated; Wi-Fi; E-menu; android application; intelligent; ordering*

I. Introduction

The advancement of Information and Communication Technology has led to an increasing number of industries to use electronic media and corresponding application for information exchange. In the restaurant sector, Modern wireless device such as Personal Digital Assistant (PDA) has been adopted into restaurant system to replace the conventional way of taking orders using pen and paper. However, the PDA-based food ordering

system has known limitations such as the requirement of training of attendants, the need of having attendants to operate, the inefficiency during peak hours and small screen size and the Multitouchable restaurant Management System has limitations such as touch screens used are of mostly capacitive type or resistive type which are costly. Hence by introducing an application loaded in an android Smartphone or tablet containing the menu details these limitations can be overcome.

Android is a software stack for mobile devices that includes an operating system, middleware and key applications. Android boasts a healthy array of connectivity options, including Wi-Fi, Bluetooth, and wireless data over a cellular connection (for example, GPRS, EDGE (Enhanced Data rates for GSM Evolution), and 3G). Android provides access to a wide range of useful libraries and tools that can be used to build rich applications. In addition, Android includes a full set of tools that have been built from the ground up alongside the platform providing developers with high productivity and deep insight into their applications.

The project mainly aims in designing completely automated menu in restaurants with the help of Android mobile phone using Wi-Fi module and a LCD to provide a user-friendly environment. There is no need of a person to take the order from the table. The menu will be displayed automatically on the customer mobile application using wireless Wi-Fi connectivity and we can directly order the menu with the help of press on the menu.

II. Literature Review

The journey of getting up to the peak of joy and facilities that we are presently experiencing, started with initial footstep of a wireless technology. The introduction of basic proposed systems and consequents developments are been mentioned here:

Prema.G, Vijitha.S & Harinisrinivas proposed Smart menu ordering system **[1]**. In this paper an idea of touchscreen based ordering system for restaurants was proposed. The touch screen based menu card is placed on every table at the customer side. The customer needs to select the menu item displayed on GLCD. The order is then received by receiver section (Kitchen), and by using conveyor belt, the ordered item will be delivered to the customer. After the whole order is placed, bill is displayed in the billing section.

Mayur D Jakhete & Piyush C Mankar presented an approach to develop Smart restaurant with E-Menu card **[2]**. The project mainly aims in designing completely automated menu in restaurants with the help of android mobile phone using Wi-Fi module and LCD to provide user friendly environment. There is no need of a person to take the order from the table. The menu will be displayed automatically on customer mobile application using Wi-Fi connectivity and we can directly order the menu with the help of press on the menu.

Aman Jain, Snehal Chauhan, Anish Hirekar & Suraj Sarange developed an Automated Restaurant management system **[3]**. This paper provides a low cost, convenient and easy to use system for automatic order placement system for restaurants. Each table of restaurants has a menu display unit which is powered by Microcontroller. User can navigate through menu using keypad provided upon finalizing the order. The order placed shall be transmitted to the central server (PC) which will have a ZIGBEE module connected to it for data reception.

Prof A.K Lodhi & Praveen Baburao Kamble proposed a system Automatic Restaurant order system using ZIGBEE **[4]**. The aim is to build an automated order system using ZIGBEE. It provide each table with a microcontroller based order placement unit, it will have keyboard to browse through menu. The menu items, its cost and information shall be displayed on the LCD connected to microcontroller. User can navigate through menu using keypad. The data for menu can be written on an EEPROM connected to each such microcontroller based unit, so that portable data updating is possible by changing the EEPROM.

Sadiq Basha, G. Shanti& A. Madhumitha developed a Wireless menu ordering system for restaurant **[5]**. The system implements the following functions: waiter takes order from the customer into his tablet, the customer can visualize the order and bill, administrator has the authority to change the menu and has authority to view it daily, weekly, monthly report on profit and lastly the kitchen staff can prepare and serve the order. The purpose of this project is to introduce a wireless ZIGBEE based ordering system for restaurants.

Sweeda Naroha, Ujwala Shetty, Rohith, Swati Rao, Wilson Mathias purposed a system Automatic order management system for restaurant **[6]**. The system presenting is not an app and thus no need to install or update anything on phone hence reduces memory utilization. PDA's consume lot too much space on the table and also updating and maintaining it is also time consuming and expensive. This can be overcome in this paper. This system also reduce the usage of Wi-Fi as authorized users can only access it, thus building a good business strategy. It also satisfies the customer, as customer gets knowledge about the exact price and the exact picture of the dish he has selected, as the page designed is attractive and easy to use.

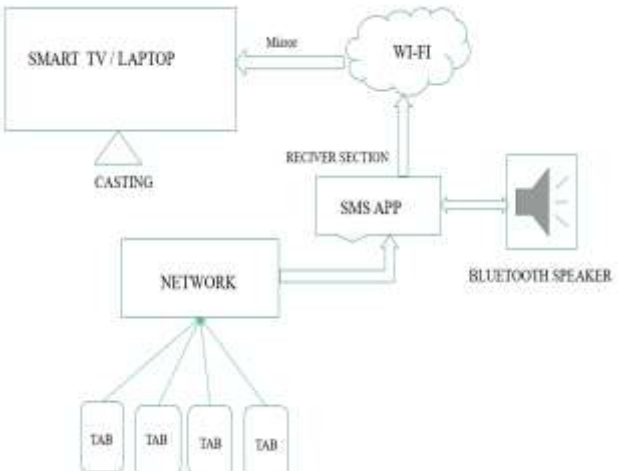
III. Proposed Work

We propose this integration of touch technology in restaurants based on android technology. It is a wireless food ordering system using android devices. Android devices, in the past few years, have reached the pinnacle of popularity and have revolutionized the use of mobile technology in the automation of routine task in wireless environment.

A. System Block Diagram

The system block diagram of Touch and Order in restaurants is shown in figure. The android application on tablets at the tables. The tablets will be provided to customers, at their tables, allowing them to directly view the menu card and order immediately from their respective tablets. The tablets are the property of the establishment and are kept at each table.

This system, however, is confined within the restaurant vicinity only.



B. System Overview

Wi-Fi module:

Wi-Fi module is a low cost standalone wireless transceiver that can be used for end-point IOT developments.
Wi-Fi communication can transmit and receive radio waves.
They transmit at frequency of 2.4GHZ or 5GHz. The higher frequency allows the signal to carry more data.

Android Mobile:

There is use android mobile which has version of lollipop or next version of android.
This mobile has fully touch screen and easy to use.
This mobile has mobile application which can place orders.

Smart TV:

Smart TV is used so that the person/chef in the kitchen can view order given in the kitchen.
Smart TV will show the order with table no. And there is a buzzer which buzz as a new order arrive in the display.

PC Interfacing:

PC Interfacing is done using mirror Casting.

Buzzer:

A Buzzer is an audio signalling device which may be mechanical or electromechanical.
In this project the use of buzzer is to buzz as soon as the new order displays on the LCD screen.
This buzzer will buzz when the order from the customer's end is confirmed.

Server:

A server is a computer program or a device that provide functionally for other programs or devices called "clients".

IV. Methodology

Each table in the restaurant will be accompanied with an android tablet or a smartphone. The device will be loaded with android app containing food menu details of that restaurant. The customer has to enter the table number and then select the menu. By using categorized dish item in database, he/she can add any number of item to his/her order list by adding it to his/her cart which displays the number of items added. When clicked on an item name another page containing the image of the dish with price will be displayed. Customer can view his\her cart by clicking on the cart option and modify the quantity and delete the dish before ordering. As he/she orders, amount gets updated and total amount is displayed in ordered list. Once he/she places the order, the cook inside the kitchen comes to know about the ordered dish via interface display placed in the kitchen, which continuously monitors the database. The billing option will also be there in the customer's display. After each payment, the ordered data like dish name and quantity are stored in the database. This is further used to keep track of how many dishes are served at the end of the day. The ordered information is displayed on the display in the kitchen through wireless wi-fi.

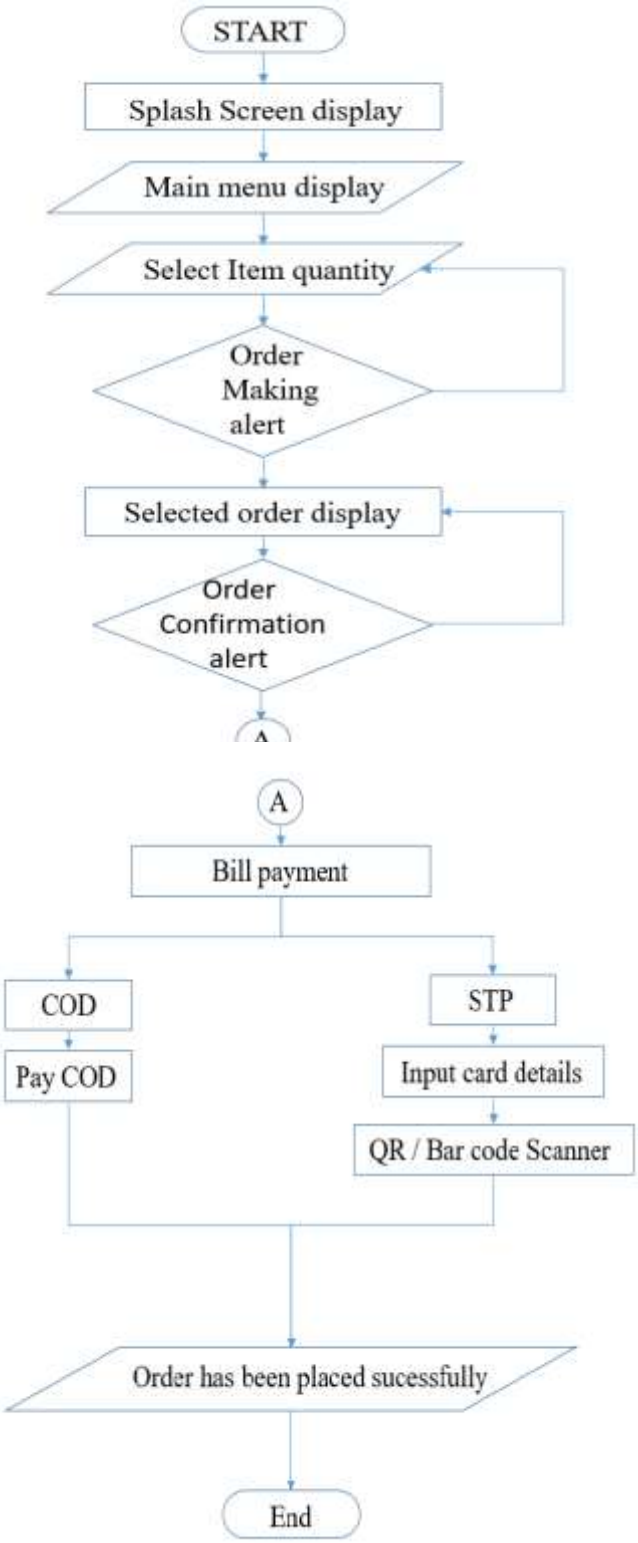
SOFTWARE REQUIREMENT:

Android Studio (Latest Version)

HARDWARE REQUIREMENT:

- Desktop / Laptop with minimum 4GB RAM & 500GB
- HDD
- Android Smartphone / Tab with upgraded latest android
- OS version.
- 1 USB 2.0 Cable for interfacing
- A working internet connection

Flowchart for understanding the system operation:



Advantages

Low power consumption.
No need of a person to take order from the table.
Long life.
Highly sensitive

Easy to install because of wireless interface.
Usage of Android touch screen smart phone in performing the task.
Wi-Fi wireless transmission
Useful for even illiterates and dumb people.
Can be used with any language.
Easy to install because of wireless interface.
Fast response.
Efficient and low cost design.
Low power consumption.

Limitations
Status and feedback of order is not obtained.
Limited distance (Generally confined to a hall).
System may not work properly if tablet/Smartphone suffer a defect
Also may become a drawback if end users are not able to use the tablet/Smartphone devices.

C. Future Scope

We can add graphical LCD (also called as GLCD) under this touch screen. However the system become more bulky and delicate to handle.
WE can add printer to this system so users can immediately get printout of the bill. If the user want to get printout then he/she can select the option to get the printout.

Expected Outcome

Menu choice is presented in LCD display, which contains text as well as images illustrating the choice for better understanding.
System takes order from customer as per his/her choice.
The system calculates the final bill based on the quantity of the item multiplied by their unit price topped up by the applicable tax if any.

V. Conclusion

Integrating features of allthe software component used have been developed in it. Presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit and the project has been successfully implemented. Smart Restaurant is developed in order to provide easy interaction between customers and wireless technology. Thus the project is successfully designed and tested.

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