

Canteen Automation with Trolley

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Abstract-In this era, technology has evolved itself to a great height. Every task is achieved through technology. In such an era there is a revolution in food ordering and delivering. Till now online ordering or order by a phone call, e-menu, etc. are developed. In this project we are going to show a new technique for ordering and delivering food in restaurant itself. Here the order is placed by a LCD placed on the customer's table i.e. e-menu and the order is observed in the kitchen by the chef on a pc. Then the order is delivered to the customer through a automatic trolley. The account of order is maintained at the chef on a pc through software. This all process is carried out by a wireless module CC2500. Sending and receiving of order from table to kitchen is carried out through this module.

I. INTRODUCTION

Communication techniques have made drastic change all over the world. The commercial benefits due to this have raised the level of business. Technology used in such a way can raise the standard of restaurant business. In this project there is interaction between the customer, the chef and the trolley through a wireless module. This project is developed by using basic technology i.e. programming for the chef's pc software is done by visual basics. A visual basic is the simplest language used here to design the window on the chef's pc. as microprocessor is used, embedded programming is used for interfacing the microprocessor and the motor drivers. Following are some of the techniques which are developed in food ordering system.

A. Paper Based Menu Card

The existing system is paper based. This system is used mostly in restaurants. In this, menu cards offered to customers in restaurant are made of Paper, hard board. Waiters use notepad to write the order of customers. When waiter arrives, he notes down order of customer in his notepad.

As with anything paper based, it is so easy for things to get damaged by water due to mishandling, or paper being lost due to fire or accidents or just generally lost. There is wastage of time, money, and paper. Simply saying that menu card once printed can't be changed. From the customer's point of view, this system is time consuming. As, one has to wait until the waiter comes to take the order, one has to call waiter number of times till he notices it, there can be misinterpretation while the waiter is writing your order on paper, and it might be possible that you are served with a wrong dish.[1]

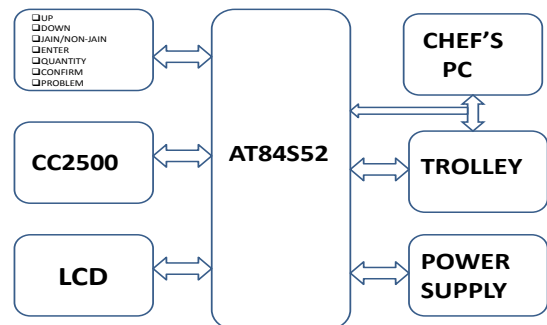
B. Self Service Food Ordering KIOSK Technology

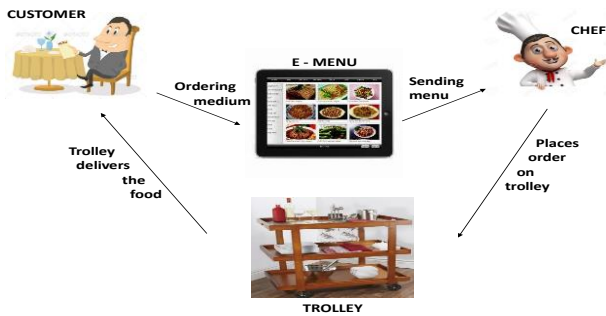
It displays all menus including food items available and the payment mode. Whenever, customer visits the restaurant he/she would navigate through the menu present on KIOSK display and select the food item available from list then pays the bill with available payment options. The order will be automatically routed to kitchen with physical connection. When the order is completed, order number is announced and displayed on screen then customer have to pick their food item from respective counter. But in perspective of hospitality, this system is not proves itself worth. Imagine a customer visits restaurant with his family for dinner and have to pick his food from counter not even able to have a talk with his family. Person will have to wait for his order number to be announced and not able to concentrate in conversation. This is the biggest disadvantage of this system. Another thing is that during rush hour, customers will be queued for placing their orders. This doesn't seem comfortable even though it decreases order processing time. [2]

C. Q ORDER

Other Advancement in menu ordering in hospitality industry is QORDER which is a portable ordering system. It is a portable handheld device that runs the complete QMP POS software on android device. It requires a WIFI to connect the remote corner. This system also involves waiter as in case of paper based menu card system. In this, the waiter no longer approaches the table with his notepad instead with the portable device known as QORDER, and then takes the order from customer. He then sends the order to kitchen for further processing. Once the customer finishes, the waiter prints the bill.

This technique is somewhat advanced because the portable QORDER device uses wireless technology to communicate with kitchen. However, the problem arises during rush hour





when large number of people visits restaurant at the same time, the work load on waiter along with QORDER device increases. Customers may have to wait for an arrival of waiter so that they can place their orders. Also if during the meal customer needs something then he have to call waiter. This ordering system is totally depends on manpower approaching customers to take order. Due to limited number of portable devices and manpower this system leads to failure. An error while taking order can still occur and the customer ends up with unsatisfactory experience. Also important thing to be noted in this system is that the customer doesn't get fully customized order. [4]

D. Computerized Ordering System.

This ordering system is somewhat same as KIOSK ordering system in aspect of order placing but differs in aspect of serving. Here food is served by our self only. But order is placed on the LCD display which is connected to chef and managers pc via wireless module. Here we have made a working setup of two tables each having a LCD and keypad. The LCD acts as a replacement for a menu-card. It has several sub-menus that can be accessed by using the keypad. Here the user can scroll through different recipes, can specify quantity of a particular dish. After deciding the quantity the user will press enter button. This entire procedure eliminates the need of waiters milling about for the order.

In a self-service canteen, a person can place his order without having to go to the desk and has to only get up when his dish is prepared and an acknowledgement is sent by the chef.

III. ADVANTAGES.

- 1) Reducing man power.
- 2) Account of dishes are automatically managed.
- 3) A proper environment is maintained which offers a comfort zone to the customer.
- 4) Helps to keep an account of raw material.

IV. DISADVANTAGES.

- 1) Need continuous power supply.
- 2) While designing the path for trolley, design it in a manner that it should not intersect with other trolley path.

V. CONCLUSION.

As the man power is reduced the cost involved in that can be diverted in any other purpose. The environment is maintained were a proper conversation between a group of people is audible, no uttering sound of waiter and utensils.

As the dish is served on his table the button on the lower right is pressed which will acknowledge the reception of the dish. [3]

II. DETAILED WORK

Our projects are a developed version and also combination of some of the schemes explained above. There are three main different section of this project:

- A. *The table.*
 - B. *The chef's pc.*
 - C. *The trolley.*
- A. *The table-*At the table side there is a LCD placed on which the menu is placed. There are some keys present below that LCD which help you place order. There is a microprocessor which is used to process the signal for transmitting purpose. The signal is then transmitted to the chef's pc through the wireless module. In case of any changes or cancellation of order there is a key present on the board named as "PROBLEM" through which the chef will come to know that there is some correction in the order.
 - B. *The chef's pc-*The pc is placed near chef. This pc comprise of a software window which keeps an account of incoming orders of customer. It is a kind of database which helps chef to recognize the order coming from that particular table. This software this developed with the help of visual basic (VB). Billing for a particular table is also managed through this software. The pc is also connected with the wireless module CC2500.
 - C. *The trolley-*The trolley is a line following robot. A path is set from the kitchen to the customer's table where the order is to be placed. This trolley consists of a microprocessor, a switch which will guide the trolley on which table the order is to be placed. The chef places the order on the trolley on manually sets the switch of table. To reach the destination the trolley uses direction sensor and obstacle sensor in case of any obstacle present in the path.

The block diagram is shown above, in which the main parts of hardware are highlighted. Also the flow of operation is described with the help of above figure.

The efficiency is good. Proper billing format which helps in keeping an account. Business expansion using this technology saves both time and money.

VI. FUTURE SCOPE.

Evolution in robotic technology can replace the line following robot. Billing system can be developed by placing the card swiping machine itself on the table.

VII. REFERENCES

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