

# Voice-based Food Ordering System

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## ABSTRACT

By this we propose an application for integration of hotel management systems by using web services technology. Digitized management of hotel process includes various processes of restaurant such as Order taking, Updating menus, Bill generation, Customer Relationship Management system (CRM) together. This project ensures the quality and speed of service. Implementing this system gives a economically efficient mechanism to provide the customers with a better environment to dine. We are implementing this system using android application for Tablet PC's.

**Keywords:** Food Ordering, Menu Updation, Bill Generation, Object Count, Real Time Monitoring.

## I. INTRODUCTION

Restaurants are one of the favorite premises. With no regard to the actual reasons for visiting restaurants, customer will make orders and wait for the ordered meals. However, it is common if customers complain for not feeling happy about the services offered. There are many reasons leading to the feeling of dissatisfaction including being entertained late in terms of order taking by the waiter and meals serving. The problem of being late entertained could be solved with help of the improvement in the technologies of communication. In accordance, this study initiates an united and networked system, with the focus is on its ability to solve the above described limitations in order taking.

This study terms the system as Digital Ordering

System for Restaurant Using Android (DOSRUA).In definition, DOSRUA is an combined system, developed to assist restaurant management groups by enabling customers to immediately make orders on themselves. This will reduce the number of minutes to wait for the meal serving.

This project deals with Digital food ordering system using android application for restaurant. This topic

comprises scope of the project, project characteristics, Operating environments, Assumption and dependencies, design and implementation constraints. Scope of the project includes features that can be implemented. Design part includes the method and way of designing the product. It also explains certain constraints on designing and implementation.

## II. METHODS AND MATERIAL

### A. Literature Survey

The existing system has been discussed below. The usual way of ordering in the restaurants depends on the menu cards of paper based. Waiters use paper to write the order of customers. The records are arranged on paper. As with anything paper based, it is so easy for things to get spoiled by Coffee stains etc, or paper being lost due to fire or accidents or just generally lost. There is waste of time, money, and paper. As traditional menu cards are paper based, any changes that need to be made in the menu card will lead to waste. As it will require reprinting of all the menu cards. Also, for small changes it is impossible to print all the menu cards again and again. There is no power to dynamically make any changes in the menu card. To access a specific record from the stack of papers is not efficient. 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 misunderstanding while the waiter is writing your order on paper, and it might be chance that you are served with a wrong dish. There has been improvement in the management of restaurants. Each waiter is assigned a group of tables, after taking orders for a table the waiters enter the orders (a list of dishes and drinks ordered by the diner or group of diners) into the system at the PC. The waiter usually knows of any dishes that are unavailable before taking an order. The system must confirm the availability of dishes. Should an item is not available the system must allow the waiter to change or even delete a customer's order. Dishes to be prepared are directed to the kitchen, drinks orders to the bar. Starters and main course orders are usually taken together. Drinks and desert orders may be taken separately. Kitchen Operator sees the dish orders on their screen, prepare them in an appropriate sequence and confirm preparation to the system when complete, similarly with the bar. When a waiter gets the completion indications on his station he collects the items and takes them to the table. The waiter can also check on the status of dish and drink orders. At the end of the meal the waiter will have the system print a bill, and he will enter the particulars of payment for it. The management can give discounts. The system keeps track of the numbers of customers served by each waiter and the amount of money taken by each waiter. The management can view these statistics [2]. The next advancement was "QORDER": the portable ordering system for Android devices. Here the waiter no need to wait for a long time at the table with his notepad, but rather with the QOrder hand held device. He enters order information on the touch screen and then directs it to the kitchen in real time for processing. Simultaneously, your POS system accepts the sales information for later billing. QOrder uses WIFI to easily reach to your most remote corner spot in your establishment. Once the guests wish to leave, the waiter prints the receipt out on his belt printer and processes payment with the handheld unit much like he would on the POS system [3].

But there are still many areas which are not closely watched at. Like, making dynamic alterations in the menu card, to get rid away from the heap of paper based records, to assure the customer that he'll be served with what he has ordered, to get the customer feedback on record.

Some of the existing system's are mentioned below:

✓ PixelPoint

PAR PixelPoint Company uses this software for handling the restaurant. This system consists of the company's software and hardware. This network system is compatible to TCP/IP, permitting information sending through both wireless and conventional networks [4].

✓ LRS Restaurant Server Pager Starter Kit

This system increases the food-ordering service quality in restaurants and minimizes the waiting time of clients. The on-site paging system is used at UHF frequency or the frequency range of 467 MHz for sending the order data [5].

✓ Billpro Pocket® and Billpro POS for Restaurant

This system receives a client's order and prepare a list by means of the designed client's template in the kitchen. The food ordering device is transportable. The waiter takes the client's order and directs it to the client's template in the cook room[6].

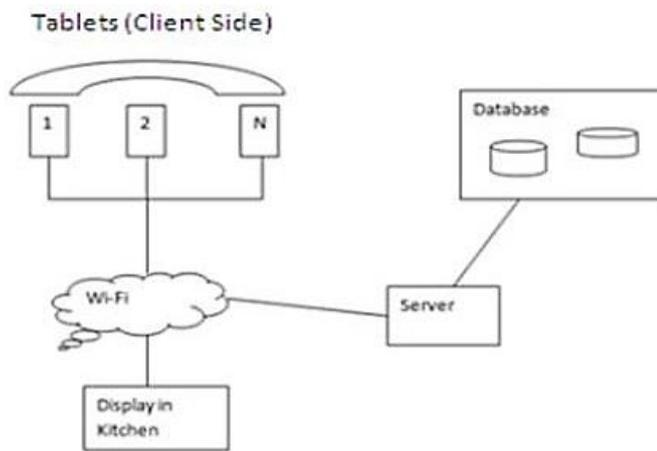
✓ Implementation of Network-based Smart Order

System The Smart Order System in Restaurants (SOSIR) has been modified to take order from the client's table through RS-232 signal, which is sent to the cashier counter. The cashier counter system is connected to a database. When the clients' orders are sent the cashier counter system will screen and prioritize the orders before sending the information to the kitchen for the chef to cook [1].

**B. Proposed System**

In the proposed system, Android application is used to increase the efficiency of the food ordering methods by the reduction of human errors and to provide the first class services to the customers coming to the restaurants. The customer sees the categorized menu shown in tablet PCs on the table. Menu is updated by the chefs with the available quantity. The customers can give the orders through the tablet PCs which are wirelessly connected to our system. When the kitchen staff sends a notification that the food has been prepared, the waiters can serve the food at the respective table. When the need arises for the modifications in the food menu, the manager will be entitled to modify the menu. Then the

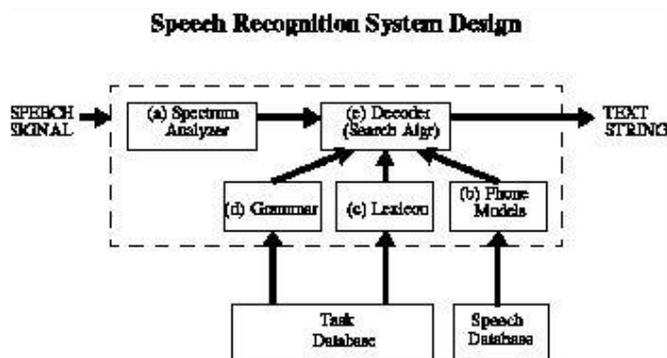
menu will be updated in the database. The changed menu then gets displayed on the waiter's android device.



**Figure 1.** System Architecture Diagram

### 1. Voice interpretation Subsystem

In this subsystem, the customers can interact with the hotel management application through voice commands which in turn interprets the command by decoding the analog signal using spectrum analyzer then the voice command will be transformed into a text string which will be utilized for further process.



### 2. Ordering Subsystem

In this subsystem, the orders from the customers are taken. In this, the menu items are updated by the master chef on a daily basis before the opening of hotel to the customers. After this the finalized list of food items gets displayed to the customers through Android based tablet PCs. Then the application after the conversion of voice into text process the data to verify the order. When the items are available the gets placed after the confirmation.

### 3. Order Processing Subsystem

In this subsystem, the application sends the order details to the kitchen to prepare the foods. Once the items are

prepared then the chef can intimate the waiters and the manager to ensure the timely serving of foods. Partial items are also served in a time bound manner. During their dining, customers can call the waiters using the application for any contingent services. Separate options are given for cleaning, normal water, hot water, etc.,

### 4. Bill generation and feedback collection Subsystem

In this subsystem, after the completion of dining the customers can request the bill through the application. Then the bill is queued in the counter and the complete bill details are displayed in the user's end device. Feedback collection form also get displayed in the end device to collect the feedback from the customers about their experience. Finally, the dining process is closed for the customer after the payment of the bill.

## III. RESULTS AND DISCUSSION

### Performance Analysis

In the proposed system, customer interaction to the Android application has been achieved through voice interpretation. After the placing of orders, the details are transferred to be displayed at the kitchen for processing the orders. When the dishes are cooked both the customers and the waiters are intimated. Finally the bill has been generated at the completion of dining by the customers. At the end, Feedback collection form has been displayed at customers end to get their feedback on the overall experience.

However, use of Voice commands to order disturbs the ambience of the restaurant's environment.

## IV. CONCLUSION

In this system, we propose the architecture for utilizing the android application for taking orders from the Customers using separate hand held devices for every table in a restaurant. Thus the improvisation of the Food ordering, order processing, bill generation, feedback collection are done with the aide of Android platform.

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