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# An Advanced Cafeteria System Using Robots

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**ABSTRACT:** This project describes the design and development of a waiter robot which is considered as a possible solution to restaurant automation. The robotics technology is replacing manual work at a fast pace throughout the world. In classical café, restaurants and hotels, the customers face a lot of problems due to congestion at peak hours, unavailability of waiters and due to manual order processing. These shortcomings can be handled by using a restaurant automation system where waiter Robots are used for ordering food and beverages. The desired order is also transmitted on wireless network to the kitchen via menu bar. The menu bar is based on the LCD, keypad and the Bluetooth module. The customer places the order using communication network. The waiter robot then transfer food from the kitchen to the customer.

**KEYWORDS:**—Robots, sensor, food

## I. INTRODUCTION

Restaurant is a vicinity the place humans come, take a seat and devour foods that are cooked and served via the chef and the waiters respectively. In ordinary restaurant system, orders are taken by using a waiter and they convey the meals when it is ready. After consuming the food, clients will pay the bill. This gadget depends on massive numbers of manpower to deal with purchaser reservation, inquiry about them, ordering food, putting order on table, reminding dishes of customer. Currently, there are a lot of methods of serving the customers. For instance, waiter serving system, robotic serving system, self-carrying gadget (fast food), pen-and-paper self-ordering system, etc. These structures are made in order to get enchantment from clients and to minimize the want of hiring greater personnel in their workplace. When there is a conveyer belt that can elevate food, it will strictly minimize the want of hiring extra employees. Therefore, there is proposing system. The proposed device reduces the man electricity and makes the complete method in the restaurant to be accomplished routinely beginning from welcoming the consumer to price of bill. The show gadget consists of three principal blocks. First block offers with ordering method thru which the purchaser can order the meals object except the want of the cell app. The purchaser desk is supplied with the app and LCD show the usage of which the consumer can kind the object code and can see the ordered meals object alongside with price respectively. The 2d block is to serve the ordered meals to the customer. It is executed via the use of the meals serving conveyer belt. It will regulate the actual time trouble of time extend and turning in of wrong meals item. It consists of the dc tools motor which strikes in accordance to the sensor output. The conveyer belt consists of proximity sensor to depend the wheel rotation and IR sensor for impediment detection. The 0.33 block is for charge of consignment amount. The value of the ordered meals object will be displayed to the patron at the time of ordering itself and if the purchaser completed ordering, the whole quantity of the ordered meals object will be calculated and the whole invoice quantity will be displayed to the customer. The different approach in this paper consists of the frequent show of reachable meals object with their code so that the consumer can be conscious of the menu. There will be a assisting method handy at every consumer desk which is used by means of the patron to order the meals item. In this approach the preparation for the complete system will be performed at the time of ordering the meals item. This machine replaces the traditional approach in restaurant and it reduces the human want and makes the procedure easy and efficient. This device is additionally supposed for the enchantment of the purchaser. By seeing this sciencethe quantity of patron will be elevated and so the earnings will be increased. The predominant goal of this paper is

To order the meals object besides the want of the server

To serve the ordered meals object to the patron robotically barring any human need

To calculate the invoice quantity and to show the quantity to the consumer.

## II. PROPOSED SYSTEM

Due to lack of human meals servers in meals restaurants, clients face troubles with human serves and pandemic situation.

The robots as waiters in the restaurants can be decrease the above issues and we can improve the eating places and technology

### BLOCK DIAGRAM

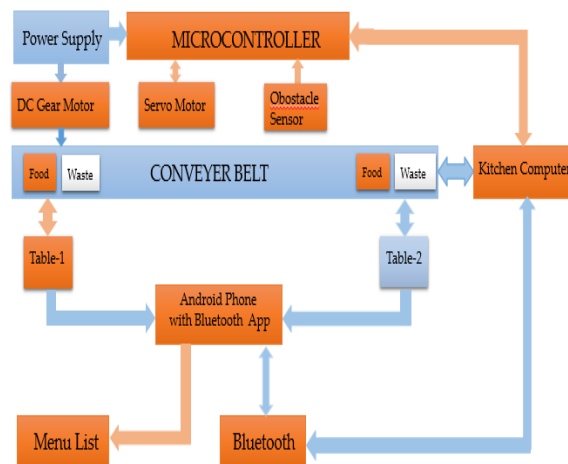
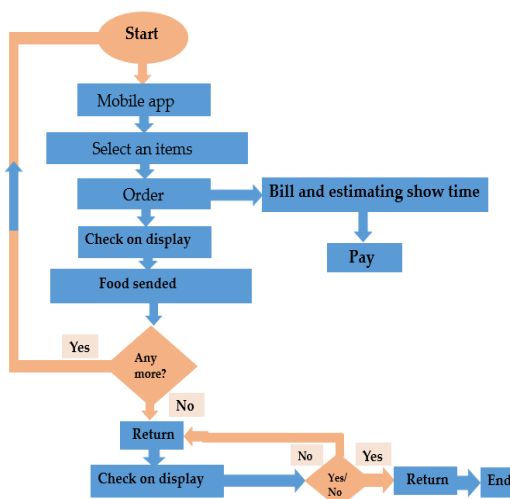


Fig 1: Block Diagram of Robo Kitchen

Power supply is given to the power at microcontroller and DC gear motor. Microcontroller Control Servo motor and Kitchen Computer. The obstacle sensor used here and shares the signal with the microcontroller. Main Focus of the Project is Conveyor Belt, and it is rotated by DC gear motors. There will be two slots in the conveyor belt, one slot will be served on the adjacent food and the other will be kept in the West Plate. There will be kitchen and table connections with the conveyor belt. There will be a display and mobile app on the table, the customer will order submit through the Bluetooth apps. The Bluetooth app offers all types of menu lists and food prices and submissions will show up in the kitchen monitor and it will be cooked. Bluetooth modules have been used to accomplish this process, which is related to the App and Kitchen monitor. According to the table, the conveyor belt will serve it on the indented table. After the meal the customers will place plates in the West slot and press the button, the conveyor belt will bake and take it to the kitchen.

### III. FLOW CHART



Data can be ship from the Mobile App or Android APP. Customer pick objects from app menu. Next step is ordering, there is two area one is test Bill and estimating time and Pay bill, any other one is test on display. Food choose and sent from kitchen. Arduino system the records and take a look at data. If any extra order pickup out YES and begin processing once more and if choose NO return waste and exhibit on the show YES or NO. If NO return once more and if YES return waste and system End.

### IV. WORKING PRINCIPLE

There is no wire is required to ship data. The connecting wire is use for energy supply. One Arduino are used in the venture for controlling purpose. For facts is transmitting and receiving used a Bluetooth module it connects Arduino cellular App and share data, Arduino decode the facts and proven into the LCD display. The LCD display screen is related as an output machine for notification. In below table 1, we can understand the evaluation score is different when using logistic regression compared to while using SVC.

The item code, name of the food item and cost of it will be displayed in the common LCD kept at the restaurant. By seeing that, the customer needs to type the item code by using the apps keypad for example if they type 1 using the keypad then idly will be displayed on the LCD. Then the quantity is given by means of + and - button. If + is pressed the quantity will be increase and if - is pressed, the quantity will be decrease. The cost of each ordered food will be simultaneously printed on the LCD display. Once the first item has been ordered then the customer can precede the same step for the next item. The customer can order any number of items at the time. This type of food ordering will replace the conventional method of using pen and paper. It provides accurate means of ordering system where there will be no error of changing the item and the customer no need to wait for the server. The customer will also be aware of the cost of item while ordering the item.

#### PROCEDURE

When the customer occupies their table the LCD will show greetings to the customer and it will tell to press 5 to read the instruction.

So, the customer has to press 5 if they want to read the instruction if the customer is familiar with the Instruction then they can move to the next step.



The instruction is as follows:

Press 1 to start ordering.

Type the item code of the food that they wish to order by seeing the menu list menu displayed on the common LCD.

Press 1 or 2 to increment and decrement the quantity.

Once the ordering is finished press submit to print the total amount. The common LCD display will be present at the restaurant to display the food item that are present in the kitchen. The LCD display will contain the details of item code, name of the food item and its cost.

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