

SMART FOOD SERVING ROBOT IN RESTAURANT

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Abstract:-In today's world the use of robot is going on increasing. The robotics technology is replacing man work at a fast pace throughout the world. In a 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 limitation can be overcome by our design SMART FOOD SERVING ROBOT . It is used for ordering food and beverages. The LCD touch screen is placed on Robot where we can order the food. The customer places the order using electronic menu bar. This order is sent to the kitchen and reception using communication network. The waiter robot then transfers food from the kitchen to the customer. Robots are able to carry out every work more effectively and efficiently than a man can do.

I. INTRODUCTION

In today's restaurant Digital multi-touch menu cards and other forms of digital facility are replacing old fashioned services like-waiters can take order from customer and serve them. Intelligent Restaurant system delivers almost infinite flexibility in promoting meal and snack options. Intelligent Restaurant system uses technologies innovatively in a modern restaurant such as multi-touch LCD with Arduino mega, RF module, database & line following Robot to enhance quality of services and to enrich customer's dining experience. A line following robot is designed using sensor operated motors to keep track the line path predetermined for meal serving. PayPal is used for online payment. In this paper we demonstrate the idea of automatic menu serving robot. In this paper we have made a robot which provides proper service to customer in restaurant. If a person wants to give an order

then he can call the robot by simply pressing a switch on his table. The whole system makes use of RF technology. Robot automatically checks the status of the person. It reaches the correct destination and person passes his order to robot. The robot sends the order by wireless technology (RF technology) to counter where a receiver is placed, this receiver receives the signal from the robot (through RF technology) and the person at the counter checks the order, prepare it and put it on the robot and robot again provides proper service to respective person automatically. The robot can take the order from multiple people by reaching near their tables on their call. The robot can serve to a customer as well as take order from another customer at the same time.

II. SERVER ROBOTS IN NEPAL:

A Kathmandu restaurant, first digitalised robotic restaurant in Nepal, is operating with the help of five robot waiters. In Nepal there is a restaurant using robots as waiters to serve the food. A newly-launched restaurant in Kathmandu is running with robot waiters under the slogan "where the food meets technology". The Naulo Restaurant, where "naulo" means new in Nepali, operates with the help of five robots.

Fig.1 Robots used in Nepal

Three robots are named Ginger and two others are named Ferry. Robot Ginger is powered with swarm intelligence, speech recognition, natural language processing, auto-dock ability, among others. The robot also cracks jokes and answers basic IQ questions in both English and Nepali. Paaila Technology entered the hospitality sector after the operation of its first humanoid robot named Pari stationed in a branch of Nepal SBI Bank. Pari has been deployed in the digital branch of the bank known as inTouch branch, which functions as a source of information and guides customers.

The robot started work by greeting customers with "Good afternoon. Welcome to Nepal SBI InTouch". The Naulo Restaurant is a brainchild of the Nepalese robotics and AI company Paaila Technology which has spent 15 million Nepalese rupees (Rs 1 crore roughly) on research and development in the last few years to turn the dream into reality.

III. WORKING MODEL

The arena will be consisting of the black lines, LEDs and tables with switches. LEDs will be place on the path of robots. When the customer comes he will press the button on his table to get refreshment. As the button will be pressed (switch is on), the LED at the starting point and the LED at the junction from where robot will move to serve towards the table will glow. As the LED at starting point will glow the robot will initiate its program to follow black line. The robot will start following black line, when it will get a white light in the way it will stop and it will take the order from the customer and send it to counter. After the preparation of food it will come back and serve the food. After serving it will again follow the returning black line path and come to the starting position. The modal consists of the following segments:

A. LINE FOLLOWER

A line follower robot is used to follow the complete path within the restaurant. It has black line sensors on it. Whenever the robot starts it sense for black colour. When sensor sense black colour the robot will move forward on that line. Whenever the value of the sensor changes it is a time to take decision for robot to turn left or right.

B. OBSTACLE DETECTOR

An obstacle detector is an intelligent feature of the device, which can automatically sense obstacles on its path. It is designed by using IR sensor. The principle behind it is that whenever an obstacle comes in front of the IR sensor there will be a change in output of sensor and this change will be detected by microcontroller and hence the obstacle is detected and the microcontroller sends a signal to buzzer and the beep of the buzzer indicates the presence of the obstacle in the path.



Fig.2 Model Demo of Waiter Robot

C. WIRELESS TECHNOLOGY

The wireless technology (RF Technology) is used to give the indication of presence of the customer as well as the order received at the counter section is also done by making use of RF technology.

D. POSITION DETECTOR

The LDR is used to identify the correct location of the customer who wants to order the service. When the customer pressed the switch on his table a LED will glow in front of his table which is detected by the robot when it will come towards his table following his path. There is a counter at which the order taken by the robot is received. There may be several tables which are arranged in round. This is done to provide a simple path to the robot. Besides this there is a circular track which is of black colour for the movement of the robot. We can arrange our restaurant as shown in the figure, there can be any other arrangement. It consists of the counter, robot and the arrangement of the tables.

IV. ADVANTAGES

Effective and efficient work as we are using robots.

- i. Reduces customer waiting time.
- ii. One time investment in the system.
- iii. Work can be faster and may reduce the cost of laboring.
- iv. As customers place their own orders, waiter's staff numbers can be reduced.
- v. Applications are performed with precision and high repeatability.

V. CONCLUSION

As we see the robots are increasingly becoming the part of everyday life; the use of Serving Robot can be extend to various functional purposes. This system allows customers to order food by LCD module surface which is programmed by embedded c, which is wirelessly connected to the counter via RF module. A line following robot is used to carry meal from counter to customer. We have tried to implement the robot waiter from the existing appliances which could be use by elderly people or disabled people for house service. Such types of robot system can work in different areas of human societies like hospitals, libraries and restaurants with small change in programming areas.

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