

# DIGITAL WAITER AND ROBOTIC DELIVERY SYSTEM

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**Abstract-**In the today's era, technologies are increasing daily with new features in the respective sections. Wireless products depending on various upcoming platforms are in great demand in large industries worldwide. The Model of the robot is very difficult to understand with its growing wireless platforms and its features. In Hotel Management Institutions. These automatic robots are of great use to reduce the manual human efforts of the waiters. We have been working on the same model which helps the customers with their orders reducing the human errors. The orders of the customers are confirmed from the Smart E-Menu (Electronic menu) ordering system which is available on the Webpage of the restaurant through the LCD (Liquid Crystal Display) screen. The robots will serve the food to the respective table numbers with the help of line following sensor. The robot is based on various platforms as Wi-Fi, Cloud, Arduino, with various features as Touch screen, LCD display, and Line follower system. This system overcomes all odds which is efficient to use and is one time investment gadget.

**Keywords** - Arduino, Cloud platform, E-Menu ordering system, Line follower, Wireless.

## I INTRODUCTION

In this 21<sup>st</sup> century, the use of robots as intelligent automatic waiters in restaurants is on an increasing demand in the service industry. Restaurant owners have begun to look forward for the robots due to shortage of waiters for the aid in serving the food to the customers. We have designed a digital robot that runs in a casual dining outlet. It has a higher payload and is able to travel to each customer table. The travelling map towards a target will be made efficient by the line follower. The robot will pick the specified order of respective table according to its scanned QR code (Quick Response code), then will finalize the order clicking on the submit button in the webpage which goes and displays on the screen available in front of the chef. When the robot receives the notification of the prepared food of particular table then the robot will serve the respective table with the help of line follower. In this way our digital waiter will work. This will not only reduce the manual effort but also will reduce the chaos that will happen in the restaurant at its peak hours. Now-a-days, the use of robots as waiters in restaurants is on an increasing demand. Robots are not new now, and this is the time to accept new technology that will serve public in social areas also. We choose

restaurant, because this is the place where public not only come to chill with friends or family but also to attend official meetings as well. The smart system will give wonderful experience in restaurants.

## Global Surgical Robotics Market (\$ million)



Figure no: (1) The above graph tells us about the rate of increasing robotic production markets globally.

The main objective of smart ordering system is to make the complete restaurant automated. In future work we can call the robots for room service also. For that we will amend our application with options of rooms.

## II LITERATURE REVIEW

The literature review proposes about the overview of the robots worldwide. These papers tell us about the process of the working robots in the restaurants. The circuit diagrams are explained with the trending softwares in many of the research papers, and the use of smart menu card system due to cloud platform like applications.

[1] Ashutosh Bhargave, Niranjana Jadhav, Apurva Joshi, Prachi Oke, Prof. Mr. S. R. Lahane.

The digital ordering system for the restaurants with the help of android apps is studied through this paper. Computer applications is applied for the application and coding of the apps.

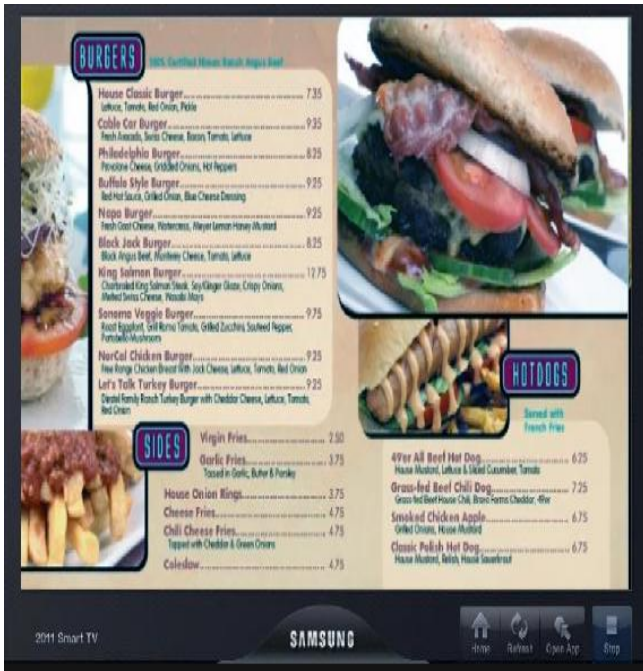


Figure no: (2) This paper tells us about the smart menu card system on android apps with the help of Computer applications.

[2] Mayur D. Jakhete, Piyush C. Mankar.

The e-menu system in the restaurants is briefed in this paper. The menu card is well displayed on the LCD screen.

[3] Prerna G. et. al

The ordering system is available with the AI technology which helps in the ordering of various items of Italian, Chinese, Mexican, Panjabi dishes. Through the menu card which is made available on a website.



Figure no: (3) The above picture helps us to understand the automation of the robot that follows the line follower path to serve the proper table no. issued for the order.

[4] Shiny J. S. et. al.

This helps us in studying the design of the automated vehicles, prototyping and the automation. It helps in manufacturing of the robotic machines.

[5] In the research paper written by “Kumba Sennaar” has mentioned about the Artificial intelligence technology which has a great demand in today’s life. He had also researched about the food services available in the restaurants for various purposes.

With the help of all these research papers we understood about the ordering of the food from the menu card available on the screen. The prototyping of the designed machines are made using the software tools. These research papers gives the deep study about the limitations, future scope, conclusions and applications of the intelligent robotic ordering and delivery systems.

### III SYSTEM DIAGRAM

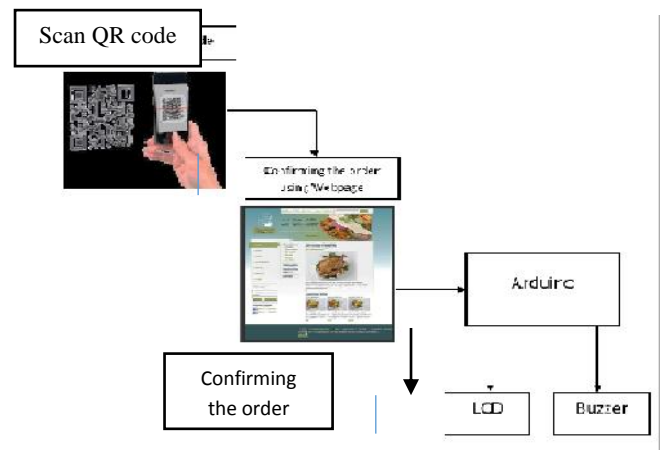


Figure no: (4) System Diagram

### IV PROCESS

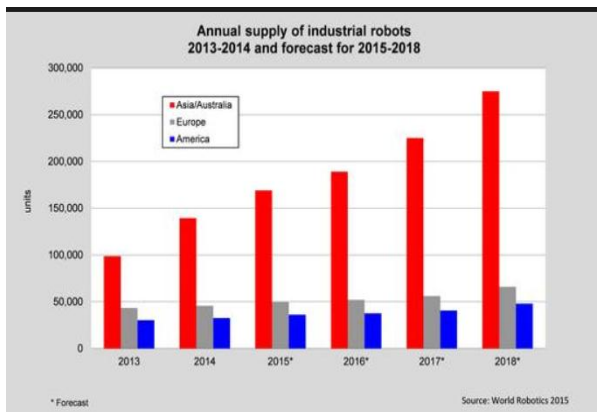
- When the customer enters the restaurant they occupy the table as per their convenience.
- After being comfortable on the table the customer needs to scan the QR Code which is available on the corner of the table which helps in obtaining a unique code.
- The menu card of the restaurant appears on the mobile screen in the form of a webpage from which the customer orders the food.
- After confirming the order he/she places the order which is then displayed on the LCD screen in the kitchen in front of the chef.
- The chef accepts the order and displays the time required for the preparation of food on the screen due to which the customer understands how much time will be needed to complete his order.
- After preparation of the food the chef places the dish on the serving platform.

- The robot collects the food from the platform and starts walking on line follower path towards a table. The food is successfully served to the customer making him satisfied.

### V CONCLUSION

- In this way to reduce errors made by the humans we need to replace them with automatic machines. This will increase the production giving rise to personalized, safer, more efficient use of the gadgets.

- [4]<https://www.electronicshub.org/arduino-line-follower-robot/>
- [5][www.brighthubengineering.com/robotics/26215](http://www.brighthubengineering.com/robotics/26215)
- [6][www.futureforall.org/robotics/robotics.htm](http://www.futureforall.org/robotics/robotics.htm)
- [7][www.emerj.com/.../ai-in-restaurants-food-services](http://www.emerj.com/.../ai-in-restaurants-food-services)
- [8][www.businessinsider.com/mcdonalds-kfc-panera](http://www.businessinsider.com/mcdonalds-kfc-panera)



*Fig no: (5) Graph shows increasing of the robotic supply in Asia, Europe, America.*

### V FUTURE SCOPE

- Robots can be used to cut circular part through a robotic arm.
- Robotic engineers are designing the next generation of robots to look, feel, act more as a human, to make it easier for us to warm up to a cold machine.
- Robotic pets with artificial intelligence.
- Wearable bionic suits are being developed for the military to allow the soldiers to carry heavier loads and to conserve energy.
- A chat bot can be implemented on the robot which can also converse with the customers live and understand their needs.
- Robotic arms can be added to serve the customers.
- It can also be modified to serve in ware houses.
- In future work we can call the robots for room service also. For that we will amend our application with options of room service also.

### VI REFERENCES

- [1] Sowndarya H K1, Abhinaya R, Prathiba B S , “Survey on intelligent food menu ordering systems”, Volume: 04 Issue: 04 | Apr -2017
- [2] Keith Loria | April 25, 2018, Robots Find a Home in the Restaurant Industry
- [3] AI in Restaurants and Food Services “Kumba Sennaar” Last updated on January 31, 2019.