AUTOMATED GUIDED VEHICLE

Diya Mallick, Tanshi Mathur, Bharat Joshi & Ajay Kumar K
Mr. Bhanwar Veer Singh
Poornima institute of engineering and technology

Abstract:

Life will be extreme and testing hitherto without speculation anything bearing innovation. For different mechanical applications, our day by day life is turning out to be more intelligent and convenient step by step. In this development, a flexible robot take solicitation and then serves sustenance or drink to the person at restaurant, housing, office or family. The paper portrays an automated server method of a microcontroller 8051 based robot which works successfully in an eatery and office condition inside a specific territory. A model structure of a wheel based moveable robotic server has been appeared right now.

The model server robot has been structured and actualized to get request demand by means of android applications, at that point to gather nourishment/drinks(max600gram) from kitchen kid, at that point to go to the specified goal (the individual who can send requests solicitation) and then again to return to source point finishing the request for mentioned drinks.

Keywords

Waiter robot, step counting, Location sensing. Microcontroller.

1. INTRODUCTION

A robot is basically intended to turn into a piece of normal individuals to live for an expanding degree. To help human beings with repetitive undertakings or troublesome, their errands may extend from excitements. The robot will intently cooperate with a human gathering in regular conditions, in these sorts of use. This implies that it will be a fundamental to make models, instinctive and characteristic correspondence among robots and people. These days, robotic waiter is making immense fascination in eateries, lodgings and workplaces. In robotic method-based waiter, there are various imaginative advancements created by specialists, to make simple requesting administrations like receiving portable robot, gathering eating choices, remote call framework, waiter-robot, self-administration requesting framework for eatery and robotized menu-recommender.

At the present time, mechanical technique based server is organized further is executed for an office. The server robot is expected to get the solicitation request by methods for android applications, assemble sustenance/drinks and food items from kitchen , travel to objective (the person who send demand sales) and come back to handover of referenced sustenance. The structured robot is developed by accessible nearby gadgets. Just as, the going strategy from source to goal has been actualized right now.

2. FOUNDATION

The human who serves as a waiter regularly makes issues in cafe, inns and workplaces. They commit errors in most widely recognized with client's requests. More often than not, waiters neglect to roll out an improvement or include an exact thing and furthermore neglect to submit the client's request to the kitchen. Furthermore, the clients likewise need to trust that the waiters will give their requests. The waiter is the person who recalls the nourishment thing and the client will undoubtedly rely upon the waiter where there are such a significant number of potential outcomes of mistake events. Now and then, they additionally make wrong billing being done.

A robot waiter can take care of these issues shrewdly. There are various exercises and requests about done on a robot, server robot, MLSS robot and organization robot in his assessment prescribed that the customers can also take their refreshment by crushing the gets, where using the dull line following framework the robot shows up at the customer's table. From time to time, they furthermore make wrong bills. A robot server can deal with these issues keenly. There are various exercises and requests about done on robot, server robot, MLSS robot and organization robot in his assessment suggested that the customers can take refreshment by pressing the gets, where using the dim line following framework the robot shows up at the customer's table. The robot headed towards the table after the dull line and takes solicitation of the customer.

Likewise following the dull line, the robot comes back to source objective. In the keypad the summary of sustenance things nearby the prize has been given so the customer can mastermind from them viably without calling or holding on for someone. The LCD

screen shows the set solicitation on the screen. In the wake of taking the customer demand, the robot will move towards the particular table territory by the going with dull line. Resulting to serving the customers refreshment then the robot returns towards the source position. The headway and structure of a server robot, where the customer gave the solicitation by using electronic menu bar and the Bluetooth module moved data to the kitchen from the customers table at a baud pace of 9600 bps. The robot server by using line following technique shows up at the predestined table.

In the endeavor four IR sensors were used where the two sensors presented on the sides for checking the table, the other two sensors in within are used for line following where the robot has been continually connected with web. The social occasion point using the correspondence orchestrate sent solicitation to the kitchen from the table. By then the robot server moved the refreshment to the customer's table from the kitchen starting late proposed in their paper that the customers can mastermind through application tackles an Android tablet. The database interfaces with this application and download the consistent in the bistro's menu. Right now, customer can without a doubt scrutinize the menu bar and solicitation it. By crushing a catch, the customer can call the server. The server comes, for insisting the solicitation and check the bill. In the kitchen 's shows this menu can be appeared. Right when this refreshment thing is readied, by then the kitchen staff can stamp them as done. This refreshment thing is clear in the representative and moreover in the server application with the objective that they can without quite a bit of a stretch pass on them to the customer. It improves the viability and lessens the rest of the job that needs to be done of the servers by making a watchful bistro. The system tackled an android tablet. The use of android, download consistent menu bar overview and access database. Exactly when the bistro has been analyzed by the sensors, the robot can provide a voice guidance to go to the predefined region in the diner. There are different sorts of voice bearings can be instructed to the robot. The robot moves by using the voice bearings or by working together with other programming. It has been used for movement sustenance to a table since the robot has been using a plate. The robot has a touch screen which is a help menu application and which contains the different applications for customers.

As the recently referenced all works, bases on the serving task in the restaurant, here right currently has been endeavored to make a model of mechanical server which can serve customers ensuing to having the solicitation given by the customer sitting on the table by simply pressing a catch. The robot organized right now from the source point to the objective table by step checking of wheels change where the journeying detachment has been assessed and stacked in the robot. The structures and executions of

the robot server have been done using existed mechanical assemblies locally. These robot waiters can work in various zones for example eateries, medical clinics, office condition and so on.

3. ROBOTICS BASED WAITER

Most by far of the server robot had arranged by using line following methodology. However, at the present time, step incorporating has used in Arduino. To serve tea or coffee according to the customer's demand through remote correspondence, a motorized system is arranged by using a moment microcontroller unit "Arduino mega". The Robot waiter structured with fundamental 6 units that are Main controlling unit (microcontroller) , Motor Driver unit ,Apps: demand tolerating and Processing unit , Bluetooth: Robot to customer correspondence unit , Load cell unit and Robot position and journeying unit.

The working floor group for the automated based waiter is showed up in the figure 1. Here the room-1 and room-2 is the objective 1 and 2 independently. At first, when the robot gets a heading from room-1 or room-2 through android applications, the robot will follow some system. The robot demands sustenance to the kitchen child and trusts that the sustenance will stack on its load cell. In the wake of accepting nourishment, robot goes to the goal following pre-customized information (comparing room) put away in its memory. At that point the robot demands the individual to get his/her nourishment. After hand over the nourishment, it returns to the goal.

4. PROCESS

The waiter robot will serve tea/espresso as indicated by the client's structure through remote correspondence. The rule controller is Arduino MEGA. In the wake of interfacing the robot server to the DC supply, it will keep it together for customer's structure. Exactly when a customer picks a request for the robot by using android applications, that rapidly the Bluetooth module will distinguish that course and through that heading to the Arduino MEGA. Arduino MEGA has a microcontroller chip whose chip will be stacked by the program and it will find a way to follow the stacked program. When Arduino MEGA have the code (like as "An" or "B" anything that could be from "A" to "F") it will send data to the LCD appear for indicating the refreshment's name (like as "Coffee", "Tea", "Water") close by demonstrating the region of the wellspring of the request. At the same time an alert will ring. Figure 3.
The strategy stream graph of "Robot server". The stack cell sensor will interface with the propelled

port of Arduino MEGA and reliably give the analysis to the microcontroller. The robot will hold up before to get a load. Right when the robot will get a load from the kitchen staffs then microcontroller will drive four DC gear motor with the help of the motor driver shield. The program will make reference to before that where is the room territory or table region. Disregarding the way that the region will be notice in the program the robot will move successfully towards the particular territory by evaluating step. This errand ought to use rotational encoder for checking robot wheel change and this encoder will be related with the propelled pin of Arduino mega. Exactly when the robot will show up at the particular region, by then it will make an alert and moreover show "Take your refreshment" on the LCD appear. Right when the customer will get their refreshment, by then the robot will come back to the starting stage or kitchen. The strategy stream graph of "Robot server". The stack cell sensor will interface with the propelled port of Arduino MEGA and reliably give the analysis to the microcontroller. The robot will hold up before to get a load. Right when the robot will get a load from the kitchen staffs then microcontroller will drive four DC gear motor with the help of the motor driver shield. The program will make reference to before that where is the room territory or table region. The server comes, for insisting the solicitation and check the bill. In the kitchen 's shows this menu can be appeared. Right when this refreshment thing is readied, by then the kitchen staff can stamp them as done.

This refreshment thing is clear in the representative and moreover in the server application with the objective that they can without quite a bit of a stretch pass on them to the customer. It improves the viability and lessens the rest of the job that needs to be done of the servers by making a watchful bistro. The system tackled an android tablet. The use of android, download consistent menu bar overview and access database. Exactly when the bistro has been analyzed by the sensors, the robot can provide a voice guidance to go to the predefined region in the diner.

There are different sorts of voice bearings can be instructed to the robot. The robot moves by using the voice bearings or by working together with other programming.

It has been used for movement sustenance to a table since the robot has been using a plate. The robot has a touch screen which is a help menu application and which contains the different applications for customers.

5. FLOWCHART
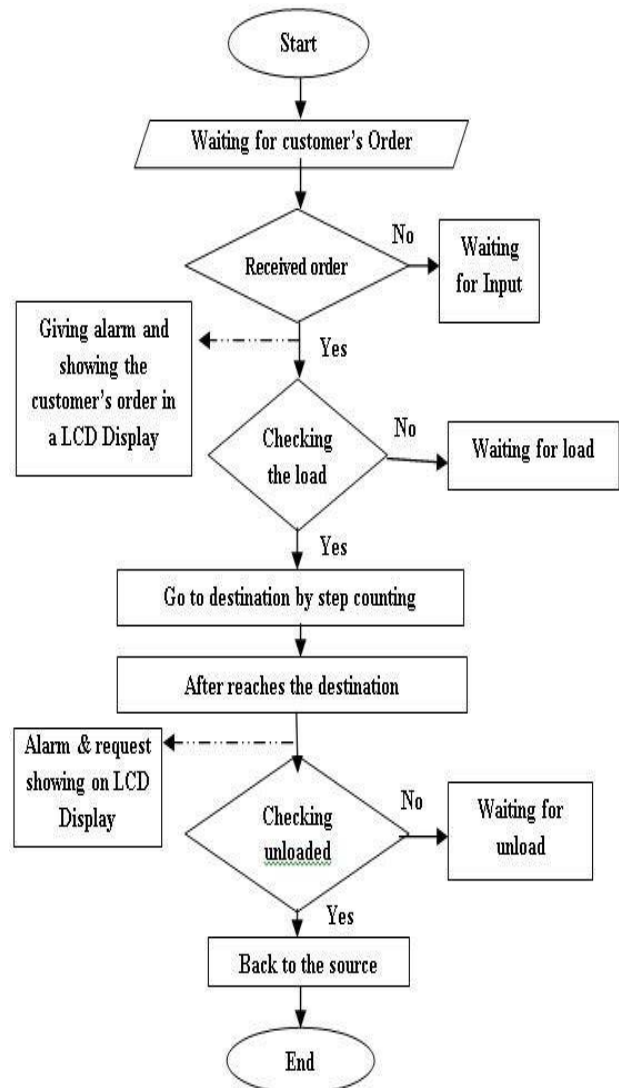
6. CONSOLIDATEDTECHNOLOGIES
The principle segments used to plan the robot waiter are portrayed underneath:

1) **Arduino**: Arduino is open-source devices prototyping sage, easy to-use programming and gear. It's proposed for organizers, masters, specialists and anyone excited about making canny things or circumstances. Arduino has a 54-propelled data/yield pins. At the present time, takes the commitment from the motor encoder sensor and work the motor by its wheel turmoil counting. It furthermore takes commitment from the pile cell to distinguish the robot is stacked or purged. At this moment, of cutting-edge pins are relied upon to relate an

additional device. Accordingly, for this endeavor the "Arduino MEGA 2560 board has been a proper one.

2) **Motor Encoder**: Right now, "encoder" is used to count the robot wheel change. As an issue of first significance it needs to measure the particular room zone in an office or a table arranged in a diner. Consequent to evaluating that zone, this purposeful worth needs to get referenced in Arduino program. Right when the robot appreciates that purposeful worth, it will go towards the particular zone immaculately.

3) **Load Cell**: A heap cell is a type of transducer which changes over power into a quantifiable electrical yield. Right now, sensor is utilized to detect the heap as the reason to know when the robot is stacked and when it is not.

4) **Android Applications:** This robot will work by an android application to work this robot from a remote separation. Subsequently, it should make an android application in light of the fact that the play store of google has not benefited this sort of applications. Here, right now application has been made for two rooms.

7. IMPLEMENTATION OF ROBOTIC WAITER

To execute the robot server, going from kitchen to objective (demand referenced individual) is a significant issue to inspect. Here we have plan two groups for two rooms. Each pack game plan is for explicit advancement by a course and unequivocal number of turns of left deal wheel. As a kitchen staff put the orchestrated drink on the robot it distinguished the store and went to the particular region by counting its wheel change. At moment that the robot arrived to the particular region, it made an alert and designated "Take your refreshment" on a LCD show. The robot server will stay away for the indefinite future to the starting stage or kitchen before the customer takes their refreshment. In this way, when a customer will take their refreshment from the robot it came back to the starting stage or kitchen following a comparative strategy of checking of wheels agitation. Exactly when the robot server has been related with a DC power source it clutched get a customer's heading. After a customer picks their refreshment by using android applications the request went to the robot. Rapidly the robot gave an alert and exhibited the drink name close by the customer's territory on the LCD appear.

8. DISCUSSION

Exactly when the robot server has been related with a DC power source it clutched get a customer's

heading. After a customer picks their refreshment by using android applications the request went to the robot. Rapidly the robot gave an alert and exhibited the refreshment name close by the customer's zone on the LCD appear. Hence, the stature of the robot was kept outstandingly short. The fundamental structure of server robot can be the future extension of this endeavor. The goofs of individual as servers can be overpowered by the mechanical ones. The automated server can be engaging, sharp and astute. The construed cost of the model server robot is 8000BDT in a manner of speaking.

The concentrated on focal points of arranged robot are referenced underneath.

• No convincing motivation to use riotous alert/calling ring.

• Identification of refreshment astutely.

• Give the accompanying information about room territory and measurements.

• Working at places throughout each and every day with no compensation.

• It can perform tasks snappier than individuals and extensively more dependably and unequivocally.

A couple of restrictions of the arrangement are-

• Limited partition among source and objective

• Sometimes step checking doesn't work precisely due to advance of wheel scouring as demonstrated by weight of load(food).

• Wheel scouring is an impediment when the robot moves.

The robots are used in made countries for accomplishing hazardous businesses, for example, twist mining, rescue people and such occupations which have a hazard towards human lives. It is basically hard to buy these robots for making countries like Bangladesh because of the expense. Nevertheless, a couple of affiliations and universities in Bangladesh are opening R&D region to design and complete them in a monetarily adroit way and in a little extension which suggests an assurance in the headway of development. In the field of mechanical autonomy to adjust up to the pushed world, more center should be given to get the benefits of apply autonomy. The things can't keep up the overall standard as a result of the obstacles of R&D parts. This arrangement can be connected in size and besides in weight lifting limit. There is huge degree in plan of the advancement from source to objective. Here fixed code has been stacked in microcontroller

which may make arrangement in extending number of objectives

9. CONCLUSION

The robots can make our life simple and with the progression of innovation robots can be a piece of our regular day to day existence. Analysts and Engineers of creating nations like Bangladesh are striving to pull up the expectation for everyday comforts of the nation. Robots can be considered wherever to be as in specialized advancement, including self-taught experts to teach analysts. Shockingly, those advancements and explores could scarcely influence our philanthropic improvements and public activity because of the absence of capacity and chance of commercialization. This paper concentrated on structuring a waiter robot and actualized this benevolent robot utilizing straightforward innovations with gear's accessible in neighborhood showcase having minimal effort. This robot has been intended to work adequately in eatery, office and emergency clinic conditions. Some future work incorporates the utilization GPS module to call the robot. Another way would be offering direction to the robot by utilizing a shrewd android application, where the client will give their order by composing in the applications.

References

[i] Briand, L. C., Daly, J., and Wüst, J., "A unified framework for coupling measurement in objectoriented systems", *IEEE Transactions on Software Engineering*, 25, 1, January 1999, pp. 91-121.

[ii] Maletic, J. I., Collard, M. L., and Marcus, A., "Source Code Files as Structured Documents", in *Proceedings 10th IEEE International Workshop on Program Comprehension (IWPC'02)*, Paris, France, June 27-29 2002, pp. 289-292.

[iii] Marcus, A., *Semantic Driven Program Analysis*, Kent State University, Kent, OH, USA, Doctoral Thesis, 2003.

[iv] Marcus, A. and Maletic, J. I., "Recovering Documentation-to-Source-Code Traceability Links using Latent Semantic Indexing", in *Proceedings 25th IEEE/ACM International Conference on Software Engineering (ICSE'03)*, Portland, OR, May 3-10 2003, pp. 125-137.

[v] Salton, G., *Automatic Text Processing: The Transformation, Analysis and Retrieval of Information by Computer*, Addison-Wesley, 1989.