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Automation of Pizza Delivery System Using Firebird V

[1] Sampada Patki [2]Shivam Deshpande [3] Shubham Mahajan [4]Shreyas Pande [5]Prof.S.V.Pattalwar
[1][2] [3][4][5] CSE, Prof.Ram Meghe Institute of Technology & Research, Amravati, India
[1]Sampada.patki2512@gmail.com, [2]shivam.v.deshpande@gmail.com, [3]mahajanshubham89@gmail.com, [4]shreyasnpande@gmail.com, [5]hod_comp@mitra.ac.in

Abstract:- **Firebird V Pizza delivery system is robot automated pizza delivery system which enables to reduce the human errors and efforts and reduce the time complexities achieving the maximum possible accuracy at the same time. Firebird V with ATmega 2560 as a micro- processor is used as a hardware in achieving the objectives. We have used embedded C as a programming tool to help the robot perform the required task.**

***Keywords*— Line following robot, RF module, LCD, Firebird V, Programming, Robot, AT mega 2560 Microcontroller.**

I. INTRODUCTION

Every time we order Pizza, a delivery boy in his dapper uniform stands at our doorstep within half an hour with the ordered fresh Pizza in his hands. We are trying to apply the same concept but with the robots rather than humans. Automation of Pizza delivery helps to deliver a pizza at the required location in less time than required by humans, saving the human efforts.

Almost all of us agree with the fact that robots can be faster and more accurate than human can possibly ever be. Hence to optimize the delivery system, Firebird V robot is used to replace the delivery boy. FireBird V provides an excellent environment for the experimentation, algorithm development and testing. Its modular architecture allows us to control it using multiple processors such as 8051 and AT mega.

Precision position encoders make it possible to have accurate position control. This will help us in achieving accurate locations for Pizza delivery. It is powered by high performance, efficient and rechargeable NiMH batteries. The 2.4 GHz ZigBee module provides a state of the art secure and multi-channel wireless communication up to the range of one kilometer.

Firebird V robot has many applications in various fields like Artificial Intelligence, Control systems, Autonomous navigation, Mobile sensor network, Collaborative robotics, Real-Time systems, Automotive technologies.

A robotic arm is used with Firebird V. It is a robotic manipulator, which is programmable with similar functions to a human arm. Humans can pick things up without thinking about the steps involved. In order for a robot or a robotic arm to pick up or move something, someone has to instruct it to perform several actions in particular order, from moving the arm, to rotating the 'wrist' to opening and closing the 'hand' or 'fingers.' .So, we can ultimately control each joint through computer interface. One of its very prominent features is the arm which is very user friendly because of the computer interface which even a layman will be able to operate.

II. RELATED WORK

As published in International Journal of Advanced Research in Computer Science and Software Engineering, Volume 4, Issue 3, March 2014 ISSN: 2277 128X, Firebird V has been put to use in following areas such as Sensor detection, Locomotion (line following), Obstacle avoidance, GSM communication, Artificial Intelligence, Multi-Agents System, Control systems, Autonomous navigation, Mobile sensor network, Collaborative robotics, Real-Time systems and Automotive technologies.

Jointly organized by Ministry Of Human Resource & Development Govt.Of India and IIT Bombay A number of applications have been developed using the platform and presented at E-Yantra, a robot development competition ,.

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As given in the Fire Bird V ATMEGA2560 Hardware Manual 2010-12-21.pdf, we can see that, India Considering each sector, there are numerous applications of Firebird V robot and the robotic arm. Using the Firebird V for the pizza delivery system and replacing humans in the process, we are trying to improve and increase its credibility as a robot and improve the process on the whole. By using Firebird V we will be expanding the horizons of Pizza Delivery by making it automated. The robot will follow the white line for the movements and we will be using the robotic arm to pick up and place the pizza

L.Manivannan, M.S.Priyadharshini in their Paper on Agricultural_robotDepartment of Electronics &Instrumentation Engineering, Adhiyamaan College of Engineering, Hosur, Tamilnadu, Volume 5, Special Issue 1, March 2016 discussed that Firebird V has been used on the national level in agricultural sector for various agricultural operations like sowing, harvesting, etc using the robotic arm and image processing. The gripper arrangement with arm, the camera and the IR sensors has been used for various purposes like planting, monitoring the growth of plants and to detect insects and animals present in the field respectively.

Also Ketaki Zunjarrao and Rupali Saple discussed in their paper on International Journal for Innovative Research in Science & Technology| Volume 1 | Issue 11 | April 2015| about Firebird V being used as Robotic Waiter, which follows the black line and uses the robotic arm to serve the refreshments. Robotic waiter itself has application in various fields like research lab, hospitals, office or even at home for helping in fetching various things or deliver messages, project videos all by moving and navigating on its own.

III. METHODOLOGY

Fire Bird V provides us with an excellent environment for experimentation, algorithm development and testing. Its modular architecture allows us to control it using multiple processors such as 8051, ATmega 2560, ATmega 8,etc. Modular sensor pods can be mounted on platform as dictated by intended applications. Firebird V will follow white line to locate the customers place. It will deliver the Pizza to those, whose address as an input was given to it.

Fire bird V will detect the white line on which it is moving using the white line sensors. It will detect the obstacles using proximity sensors and infrared sensors depending upon the range of obstacle,

A robotic arm is used with Firebird V. The robotic arm will be used to pick the pizzas.

The programming for the movements of the Firebird robot will be done in the embedded C. The programming for interfacing will help the robot to move efficiently along the
White line and perform other operations like turning right or left in the desired angle, picking up the pizza, which is done by the robotic arm and delivering the pizza to the preferred location. The sensors play a vital role in determining the line on which it has to move or the obstacles in the path using proximity sensors, etc.

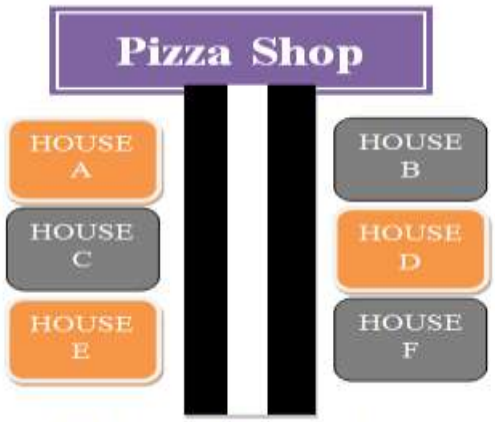

Fig. Block Diagram Of Automation Of Pizza Delivery

IV. CONCLUSION

Automation of pizza delivery system will thus apparently overcome the drawbacks of human efforts in delivering a pizza. The reduced human efforts, time saving, more accuracy are evidently the salient features of automation of pizza delivery system.

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