

Pursuing Robot for Assisting Senior Citizen and Physically Challenged

Sunil Kumar B S¹, Asst.Professor
Electronics and Communication Engineering Department
Nagarjuna College of Engineering and Technology
Bengaluru, India

Vandana K², Student
Electronics and Communication Engineering
Nagarjuna College of Engineering and Technology
Bengaluru, India

T M Vidyashree³, Student
Electronics and Communication Engineering
Nagarjuna College of Engineering and Technology
Bengaluru, India

Akshay M⁴, Student
Electronics and Communication Engineering
Nagarjuna College of Engineering and Technology
Bengaluru, India

Rajamani V⁵, Student
Electronics and Communication Engineering
Nagarjuna College of Engineering and Technology
Bengaluru, India

Abstract:- Robots are electro-mechanical device, follows a set directions to raise positive tasks. Robot is made to observe senior citizen/physically challenged via pc vision, carrying his belongings. Robot appears for the barcode in the video body to understand the specific individual to lift there assets. Using image processing the system will keep a track of the particular person and the coordinates are noted These coordinates are in big difference with the middle of the graphic and based totally definitely totally on the characteristic of the person, suggestions are given to the robot, to go left, suitable or forward. This Robot makes use of picture processing with Open CV library and python programming. In this project the robots are take care the people with physical imparity. This project will help physically challenged and senior citizens travelling alone, so the robot will help them to assist their needs . The processor board used for the robotic is Raspberry pi for photograph processing and Arduino is used to the utilization of motors. An ultrasonic sensor is used to calculate the distance between the robotic and the senior citizens.

Keywords:- Robot, Computer Vision, Barcode, Image processing, OpenCV, python, Raspberry pi, Arduino, Ultrasonic sensor.

I. INTRODUCTION

The Robotics constructions and elements are an developing large range of researched these days, the robotic features have come to be good sized due to the fact of their houses such as their effectivity and availability. The robots are made self reliant via the usage of a range of sensors such that it takes its private selections and does depend on senior citizens. After the line following robotic which has entered the industries, now it's time to accept as true with preceding the line, that is the robotic want to go somewhere and no longer simply to observe a detailed path, the robotic have to go with the human being autonomously.

Robots are not able to work itself they need human guidance. Robots may be wired or wireless both should require power supply and controlling devices and also it as some advantages and disadvantages. This will be possible only when robots will have their eyes and the machine employs laptop imaginative and prescient algorithm. In pc imaginative and prescient primarily based on shade detection and function matching a variety of robots are manufactured on the other hand this has the drawbacks due to some associated type of shades and altering environment in a real-time environment. The unique variety of human following robots is specifically chiefly based totally on laser vary finders and distance sensors in which particular man or woman following is a problem. In our project, the robot is made to follow the physically challenged and senior citizen to carry there belongings. we already know that the robot doesn't have eyes hence we are using raspberry pi and camera .camera works has eyes where raspberry pi board will control and capture the image processing. Robot follows the person and carry their belongings to some limits .Robot will follow the person within certain distance .If the person cross the certain distance the robot doesn't move. Through this project, we put forth that specially based totally on barcode detection human following is possible. On the t-shirt of a person, the barcode is pasted, and this barcode is detected and determined with the aid of potential of the robot.

II. RELATED WORK

This paper small print the improvement of a socially assistive domestic robotic partner for aged human beings with slight cognitive impairment (MCI) residing on my own at home. Required assistive functionalities of such a robotic companion are, huge and span from reminding functions, cognitive stimulation workouts with the aid of cell video-phony with spouse and children or care givers to the detection and evaluation of imperative stipulations like falls, coronary coronary heart attack, etc. and even act like a pet. Such a robotic confederate can also be regarded as a

issuer robotic that is particularly designed for non-public use at home. For a robot that performs autonomously, the communication between the person and the robot is the most important factor. A significant awareness has been observed regarding the usage of such a technology. This research has a trivial involvement in the development of such robots. A robot that functions fully autonomously should not only complete the jobs that are desired of them but also somehow establish a connection between themselves and the person operating them. A lot of research has been done of these kinds of robot and a lot of work still needs to be done. In order for a robot to communicate and interact with the person, it should also be capable of following that particular person.

Today picture processing are used in a range of techniques, this paper gives the implementation of photo processing operations on Raspberry Pi. The Raspberry Pi is a easy embedded computing device and being a low charge a single-board laptop computer used to limit the complexity of buildings in proper time applications. This platform is more often than not based totally on python. Raspberry pi consist of Camera slot Interface (CSI) to interface the raspberry pi camera. Here, the Dark and Low difference pictures captured via the utilization of the Raspberry Pi digicam module are more high quality in order to find out

the specific place of image. This discover out about examines the have an effect on of perceived social competencies of a robotic on user’s way of thinking towards and acceptance of the robotic. An interface robotic with simulated conversational capabilities used to be used in a Wizard of Oz check with two conditions: a higher socially communicative (the robotic made use of a giant set of social abilities in interaction) and a plenty much less socially communicative interface.

III. METHODOLOGY

The most vital issue to function this machine on the floor routinely requires picture processing on the device for detection and following the specific person. At first the code will seem to be at the parallel traces in an image, work out and then the role of the detected location was once as soon as decided out. Now this feature of the detected identification will be in distinction with thresholds to pass by the robotic left, relevant or forward. Now to bypass the robotic motor drivers the neighborhood designed, to have rapid response strikes of motion from the robotic we chosen wheels to work with the DC motors. This virtually helped when boundaries are detected with the ultrasonic sensor then as the manipulate of motors is with controller it stops the robotic barring geared up for commands.

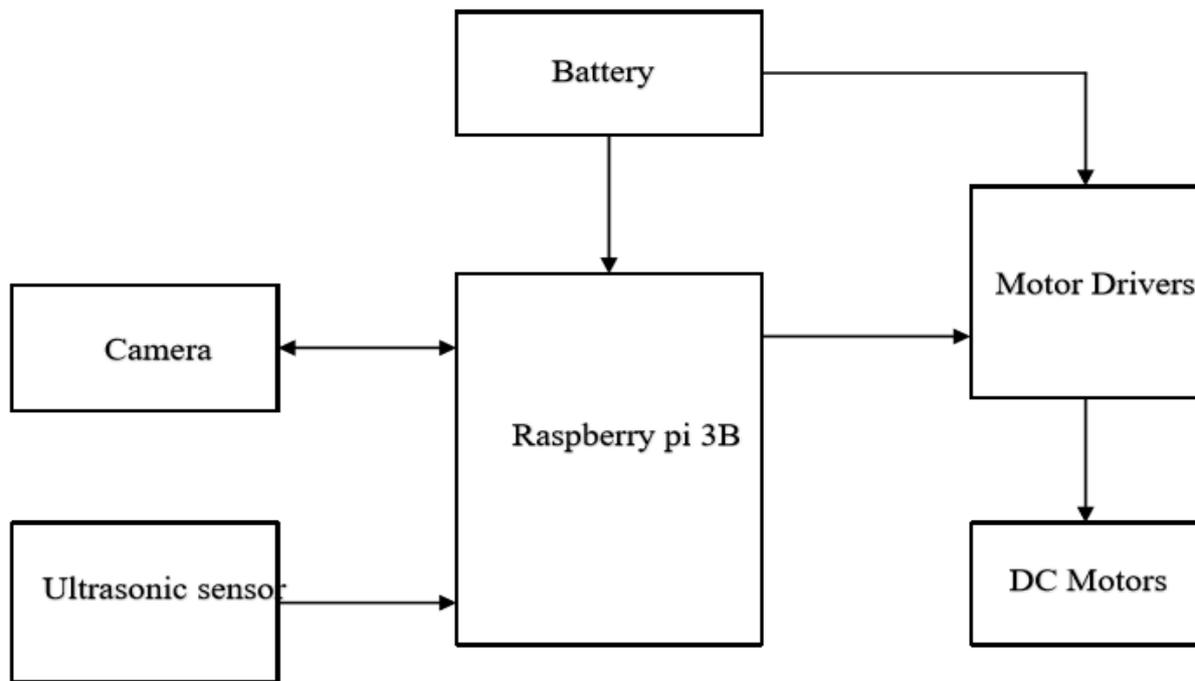


Fig 1:- System Architecture

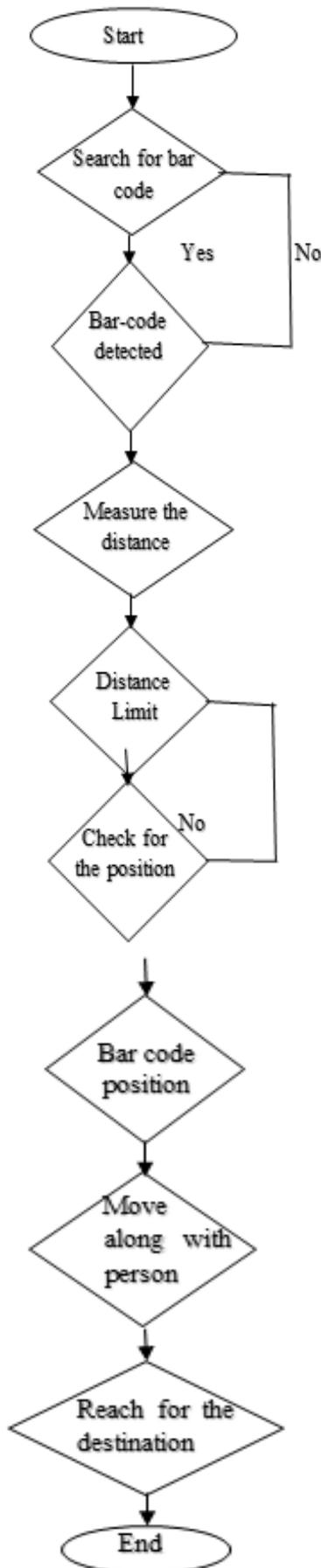


Fig 2:- Data flow diagram

IV. WORKING

In this assignment we are the use of a aspects like Raspberry pi, Ultrasonic sensor,Pi camera,Motor driver,Motors. Ultrasonic sensor is used to calculate and measures the distance between robotic and man or woman.Pi digital camera is used to seize the photo. After scanning the image, according to the code image will process and assist to the drivers. Processor will sends a message to the motor driver.

V. CONCLUSION

This mission represents an self sustaining robotic which is used to lift the bags and observe the human. The computer delivered in this paper appears for a barcode in the video physique and when found, it is bounded into a rectangle and the core coordinates of rectangle are positioned out. These coordinates are in difference with the core of the picture and particularly primarily based clearly on the horizontal attribute of barcode the recommendations are given to the robot, to omit via left, relevant or forward. This robotic can be used at airports, malls, railway stations or for private use. This robotic helps historic and handicapped human beings to extend their luggage.

REFERENCES

- [1]. Jyothsana Jacob K. and Sunitha S. Pillai. "Robotic Helper Designed To Assist Senior Citizens Living Alone",International Journal of Advanced Research in Computer Science and Electronics Engineering (IJARCSEE) Volume 2, Issue 11, November 2013,ISSN: 2277 – 9043.
- [2]. Muhammad Sarmad Hassan, Mafaz Wali Khan, Ali Fahim Khan. "Design and Development of Human Following Robot" Student Research Paper Conference Vol-2, No-15, July 2015.
- [3]. K.S.Shilpashree, Lokesha.H, Hadimani Shivkumar "Implementation of Image Processing on Raspberry Pi", International Journal of Advanced Research in Computer and Communication Engineering, Vol. 4, Issue 5, May 2015.
- [4]. M. Heerink, B. Krose, V. Evers, and B. Wielinga, —The influence of a robot's social abilities on acceptance by elderly usersl, Proceedings of the 15th IEEE international symposium on robot and human interactive communication RO-MAN 06, University of Hertfordshire, Hatfield, UK, pp. 521–526, September 2006.