Distribution Robot for Medical Applications

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Abstract: In this paper, we are designing a new enhanced and practical brilliant automated medical caretaker is intended to decrease the physical weight of attendants in emergency clinics. This robot is executed utilizing LABVIEW as creating stage, which makes the equipment and programming all the more simple and solid.

Keywords: LABVIEW,

I. INTRODUCTION

Patients in emergency clinics are antagonistically influenced by clinical treatment and assessment because of absence of satisfactory medicinal services and a terrible patient level contact with the specialist. The robot structured here helps the specialist in completing clinical gear and gives collaboration among patient and specialist. Emergency clinic nurture normally utilizes truck to convey her instrument to the patient. We have to move or drag the truck to the patient bed and over and over bring it in a day. This can be tiring for medical caretakers since they have to deal with other clinic patients.

II. OBJECTIVE

To construct a practical and proficient automated framework utilizing NI-MyRIO, modified to accommodate reconnaissance reason, in this manner going about as a substitute for nurture in clinic applications like every day checking, going to patients and dispensing prescriptions to them.

III. LITERATURE SURVEY:

[1] The fundamental objective of this work is to comprehend this issue by making a versatile robot for nursing staff that can control and handle clinical hardware while maintaining a strategic distance from snags. The imagined robot is fit for moving done in limited space and can forestall static or dynamic impediments. This robot can be 20 kg stacked and moves with a motor outfitted dc..

[2] A mechanical ARM with four (DOF) is ordinarily a type of robot (part) programmable with a similar reason as a human ARM. The mechanical ARM is expected for various errands, for example, material dealing with and moving that can help the business, with an opportunity of four degrees.

[3] This mechanical arm is worked so as to work the stage for remote lab hardware. To screen automated arm developments, web-camera must be interfaced in the remote lab. The automated arm is controlled right now perform principal developments. The image observing or sensors can be summed up for some demonstrations.

[4] A Robotic is commonly programmable to act in a similar way as a human arm and can be a by and large or progressively complex gadget or part of a mechanical assembly and has been intended to create a (6DoF) robot power. This paper offers opportunity to mechanize the inflexible body in 3D space. Joints that require either rotational, (for example, explained mechanical movement) or translational (direct) relocation are added to the connections of such a controller. Sequential and equal structures are generally planned.

Software Used:
LABVIEW: It represents Laboratory Virtual Instrument Engineering Workbench. The LabVIEW is a framework improvement stage for a language for visual programming from national instruments and an advancement domain

NI-MyRIO :
- MyRIO is a local instruments-based constant implanted assessment stage.
- It is utilized to create applications utilizing its chip and FPGA aboard.
- It requires LabVIEW.

IV. COMPONENTS USED

1. Servo Motor:
The servo motor works on the PWM concept, which implies that its rotation angle is regulated by the pulse length added to the Trigger. The servo engine consists basically of a DC-engine powered by a variable resistor (potentiometer) and some gears.
V. BLOCK DIAGRAM:

Working:
Since this robot is administering the medication to patients, the arm has a major role there. An effective code is used for arm movement. Therefore, the robot will travel quickly and automatically. Here the robot performs the pick-up process and positions items as shown in the figure for reference.

Initial positions of robotic arm:

There are three motors through which picking and dropping operations are performed. At initial condition all the motors are set to 0 degrees. Motor 1 for circulating towards the slots, motor 2 for back and forth movements and motor 3 for picking and dropping.

We provided different slots for picking up the packets. Each slot has different angle as follows:

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2. Battery:
We normally utilized in UPS or uninterruptible force supply, regular to PCs. Such batteries can likewise be utilized to improve open air condition as convenient vitality sources. These are likewise utilized in little vehicles and once in a while power the generators of oneself beginning kind.

3. IR Sensor:
An infrared sensor is an electronic gadget that discharges so as to detect a few parts of the environment. An IR sensor can quantify the warmth of an article just as distinguishes the movement. These kinds of sensors measure just infrared radiation, as opposed to discharging it that is known as an aloof IR sensor.
Advantages:
- Robot nurses can be trained faster.
- Maintenance cheaper.
- Can do very odd and repetitive jobs.
- Robot-assisted surgery provides better compared to humans.
- Access and vision of the instruments for the surgeon. As a result, surgeons need not be exhausted and stressed every time during the process.

Limitations:
- It can’t carry more weight.
- Have to charge battery once it is over.
- Employment issues.

Applications:
- Targeted monitoring.
- Access to healthcare.
- Social care and assistant.

VI. FINAL RESULTS

The generation of the human-like manipulation motions has been implemented and also tested successfully for the 4 degrees of freedom (DOF) arm of the humanoid robot. This proposed robot is specifically designed for picking the medical applications which will be the replacement of nurses. The generation of the human-like manipulation motions has been implemented and also tested successfully for the 4 degrees of freedom (DOF) arm of the humanoid robot.

VII. CONCLUSION:

This proposed robot was built for the transport of medical documents / instruments and to distribute the medicine. By selecting the correct motor and ultrasonic sensors allow the robot to maneuver better, avoiding obstacles. The robot movement is controlled by means of a differential drive.
Distribution Robot for Medical Applications

which controls the rotary angle, and can move the robot forward as well as backward. The robot will travel in a narrow space, such as between hospital beds.

REFERENCES
1. Hemesh Sawakar, Shantanu Shingate, Amit Kanojia, and Gaurav Haje. "Wireless Surveillance Robot Using Automatic & Manual Control," International Research Journal Of Engineering And Technology (IRJET) Volume: 04, Oct-2017.
2. Anas F. Ahmed, Ranaa A. Ahmed, Tamara Z. Fadhl. "Design And Implementation Surveillance Robot Using Atmega328 Microcontroller." Publication At: https://www.researchgate.net/publication/329894828
3. G. Anand ravisekara, A. Anoo Clinton, T. Mukesh Raj, L. Naveen. "IOT BASED SURVEILLANCE ROBOT." International Journal Of Engineering Research Technology (IJERT) Vol. 7 March-2018.
4. N. Pugazhenthi, K. Vinulakshmi, V. Preeth, K. Shrivani. "Design And Fabrication Of Robot For Surveillance Using Arduino." International Journal Of Innovative Technology And Exploring Engineering (IJITEE) Volume-8, August 2019.
5. M. Murali Krishna, P Praveen Kumar, Nikhil Chandra, K. Siddarth, and Anil Kumar. "SURVEILLANCE ROBOT USING NI-Myrio." International Journal Of Current Engineering And Scientific Research., Volume-5, 2018.
6. S. Higginbotham, "Remaking the world for robots [Opinion]," in IEEE Spectrum, vol. 56, no. 8, pp. 20-20, Aug. 2019.
7. 2016 Intl. Conference on Advances in Computing, Communications and Informatics (ICACCI), Sept. 21-24, 2016, Jaipur, India.
8. 2016 International Conference on Computer Communication and Informatics (ICCCI -2016), Jan. 07 – 09, 2016, Coimbatore, INDIA.
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