Nursing Robot

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Abstract - *This paper highlights the role of robotics in healthcare .The paper also focuses on the areas of management in the hospital and control of the spread of the novel coronavirus disease 2019 (COVID-19). The main intension of such robots is to minimize person-to-person contact and also to ensure cleaning, sterilization and support in hospitals and similar facilities such as quarantine. This will be useful for reducing the life threat to doctors and medical staff taking an active role in the management of the COVID-19 pandemic. The purpose of the present research on robot is to highlight the importance of medical robotics in general, and then to connect its utilization with the intension of COVID-19 management so that the hospital staff can direct themselves to maximize the use of medical robots for various medical procedures. This is despite the popularity of telemedicine robots, which are also effective in similar situations? Our proposed system will help nurses and doctors to supply medicines as well as food to infected patients.*

***Key Words*: health Line follower, Perfect pick, Perfect place, Dijkstra's algorithm, three geared arm mechanism, acrylic robot chassis.**

1. INTRODUCTION

Proposed system is a Healthcare Assistive Robot. ATMega 2560 is used as a control processor which controls all the activities and the movements of the robot. The DC motor rotation is also controlled by a controller by sending proper messages to the driver circuits.

Line Following Robot Using ATmega 2560 identifies the variation in color using whiteline sensor and sends signal to motor driver correspondingly.

By referring these in these papers in our proposed system we used, the arena is an abstraction of a hospital where the robot picks the medicines using Robotic arm designed using two servo motors, one motor for horizontal movement and another for vertical movement. It traverses paths by grabbing control signals from ATmeg2560microcontroller in order to deposit it at the desired patient. In order to cover these paths, the Nursing Robot has to use intelligent line-following and path-planning algorithms to reach safely and quickly using shortest paths. After reaching the desired patient, the nursing robot carefully has to place the medicines at the required positions which may include placing the medicines at different heights from the ground. It has to deposit all required medicines at multiple covid Patients, navigating through various terrains.

The main purpose of proposed system is to help doctors and nurses at hospital. It uses the robotic arm for picking and placing medicines at desired location.

2. Proposed system:

The proposed system will consist of a microcontroller (ATmega2560), an white line sensor, a servo motors module, a, a motor driver module and a motor. The system schematic is shown in fig-2.0.
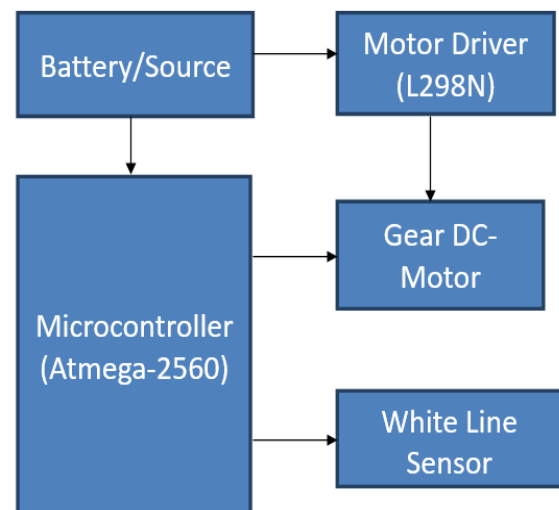

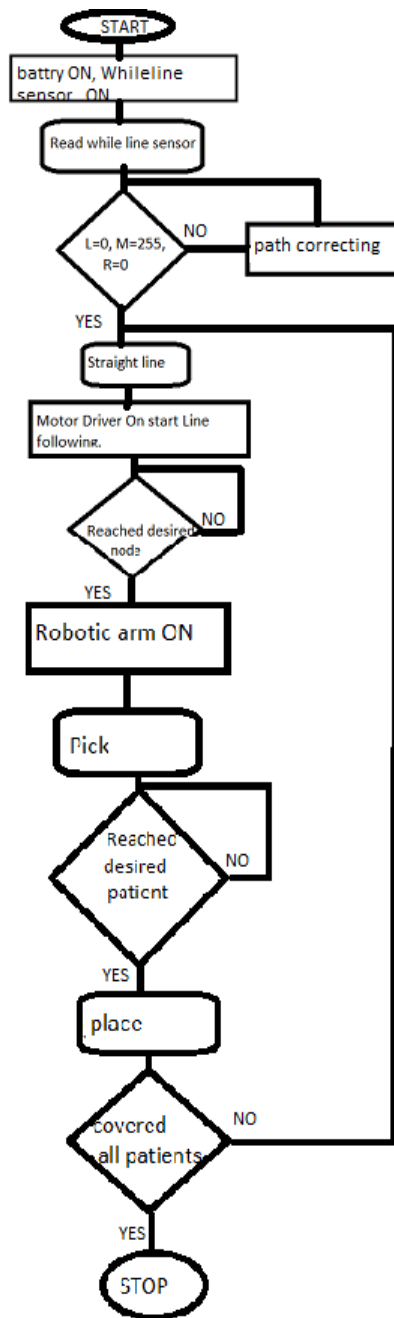**Fig -2.0**: System schematic diagram

3. Methodology

Figure shows the flow chart of the system. Once the system is activated, the white line sensor values are used to follow the line and it will be compared to the threshold limit. After reaching desired patient the system will Carefully place the medicines at the required positions which may include placing the medicines at different heights from the ground. It has to deposit all required medicines at multiple covid Patients, navigating through various terrains.

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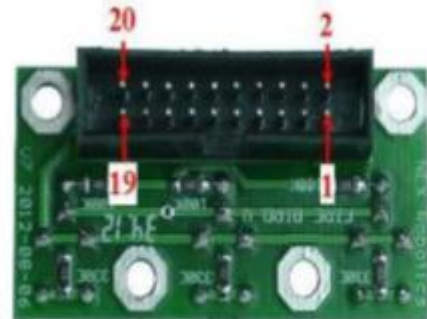## 4. Specifications

4.1 White line sensor Module:

Fig - 4.1: Camera Module

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4.2 L298NMotorDriver:

Fig -4.2: IR Temperature Sensor

L298N is the heavy-duty double motor driver. It can be used to drive to DC motor. Voltage range is 5 to 35 V DC. The main features are a heat sink and a shot circuit protection diode.

4.3 At mega 2560

Fig -4.3: ATMEGA 2560

The At mega 2560 is 8 bit AVR based microcontroller. The main features of these controller are 8 kb SRAM, 256kb flash memory, 4kb EEPROM, 32 general purpose register, 86 general purpose i/o lines, timer, counter, PWM and 16 channel 10 bit A/D converter. It is a microcontroller operating at 16 MHz.

5. Software tools:

1. V-rep: Simulation software

2. Visual studio: c code development

3. Atmel studio: Embedded c code Development for AT mega 2560 microcontroller.

4. CATIA: design of robot and robotic arm and chassis of bot.

5.1 Visual Studio IDE:

➢ It is an application that can be used for many aspects of software development.

➢ It is *integrated development environment* that you can use to edit, debug, and build code, and then publish an app. It is a program that has many features that can be used for many aspects of software development. It has many features like compilers, code completion tools, graphical designers, and many more to ease the software development process.

5.2 V-REP

(Virtual Robot Experimentation   Platform)

➢ It is a simulator which is based on a distributed control architecture

➢ V-REP is simulation software for various applications like factory simulation, automation systems, Remote monitoring, Hardware control, Robot related education etc. V-REP can be used as a stand-alone application or can easily be embedded into a main system can detect and recognize the visitor's face with great extent of accuracy. The system is be able to form a communication link between system and the owner to notify the owner about visitor's identity and health status immediately through IoT and cloud platform. It is possible to operate the door controlled by either the commands from owner or by the system based on visitor's identity and health status. The system provides easy database updating facility i.e. to add, delete or modify entries; to the owner or the authorized members.

6. CONCLUSIONS

The system is able to efficiently and accurately picking and placing of medicines at correct patients using suitable path planning algorithm. By studying concepts of Learning modules include Building a Bot, V-Rep Simulation, Micro-controller Programming and Path Planning we are able to develop the algorithm that correctly follows path for pick or medicines to proper patient, and helps doctors and nurses.

7. REFERENCES

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