



JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)

An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Pre-Programmed Smart Human Companion Bot

M.Poojya sree¹, N.Bharadvaj², SK.Sameer³, CH.Vinith Mukesh⁴, B.Vasanth Rani⁵

poojya.madireddy@gmail.com¹, bharadvajnanepli7@gmail.com²,

sksameer.vsh@gmail.com³, cvinithmukesh@gmail.com⁴, badagalavasantha06@gmail.com⁵

DEPARTMENT OF INFORMATION TECHNOLOGY
VIGNAN'S INSTITUTE OF INFORMATION TECHNOLOGY

Abstract : Robotics is an enhanced field of blueprinting that includes the design, creation, and operation of robots. In day-to-day life, old people face the difficulty of memorizing their medicine timings. The proposed system presents a human companion bot that assists the patient as a voice reminder. This bot reminds the patient to take their medicines through pre-programmed parameterization. It promotes some functionalities such as face detection, face recognition, and movement-based voice reminder. In experiments with a real bot, we can show that the approach enables a patient to take their medicines intime. The proposed system is precise and well organized and also can be developed in discrete methods.

Keywords: Intimation Technology, Face recognition, Face Detection, Voice Reminder, Movement Control

1. INTRODUCTION

In today's generation technology is expanding fast and making lives easier and more convenient. These advanced technologies benefits and helps definite groups of people. All technologies that exist in today's world focus on to reduce human effort and increase the ease of daily activities. Pre-programmed bot have to be told ahead of time what to do, and then they simply execute that program. The proposed bot uses intimation technology and face recognition, which is specifically used for old people that helps them to guide and remind medicines and food whenever they needed. Old people forget their medication schedule and routine, which may lead to inappropriate usage of medicines at different timings so, owing to irregular medication can cause side effects and improper provision of nutrients and antibodies. Other applications work as personal assistants in everyday life to finish the work easily and also eliminate human loneliness. We introduce a new construction for such problems using tools and smart technology and present a non-existing algorithm for intimating the patient or user. In our approach bot tries to recognize the face to intimate the patient using voice reminder.

Robots can be characterized into various sorts given their current circumstance and instrument of communication, for example, portable and fixed robots of which portable robot can be additionally named sea-going, earthbound and airborne. The earthbound robots are much being used and their applications are tremendous in every single field,

they are of two types like haggled each having a different use.

The proposed framework comprises chiefly an automated unit. The automated unit is comprising of the raspberry pi alongside camera module, engine-driven L293D, DC engine 12V, Battery 12V, ultrasonic sensors, and servo engines.

2. LITERATURE SURVEY

At present many researchers focusing on smart technologies which are used for reducing manual work. This paper centers around intimation technology that help a patient to remind their medicines with respect to the particular time which is set by the user. The review then focuses in detail on robotics, server-based web application, database management, face recognition, and its applications. The Raspberry Pi works and controls the camera to capture it to turn 'ON' to scan the environment and perform an algorithm to scan the environment, and responds to the patient. This entire chapter evaluates pre-programmed smart technology.

3. PROBLEM STATEMENT

EXISTING SYSTEM

In the present world, innovation embraces and makes life a lot simpler and more pleasant for us. This arising advances advantages, backing, and help to specific gatherings of individuals like the old or individuals with incapacities. This planned robot is explicitly helpful for the gathering of individuals that necessary help with their everyday life. In this Corona virus time, the older or the incapacitated individuals can utilize an intelligent robot to satisfy their everyday requirements. In the current world, innovation embraces and makes life simpler and more pleasant.

Every one of these exploits advancing innovation. Barely any social affairs of people need more help and sponsorship than others like the old or debilitated people. For their purposes, advancement infers a mode to continue with a basic common human life. The proposed arranged robot is in a general sense planned for the social event of people those vital assistantships in their regular day-to-day existence to complete ordinary work.

PROPOSED SYSTEM

The user clicks the image of the face then the image is encoded into a string format. The user enters all the details of the patient and set the reminder. These entered data are registered through a web application and stored in the database. The data which is stored in the database is also stored in Raspberry pie through a server.

The human companion bot includes Raspberry pie, this acts as a microprocessor consisting of instructions and what operations to be performed. So, according to the data and input bot executes or performs the action. The bot internally runs its algorithm by checking the satisfying conditions and recognizing the face after detecting. After recognizing the face the bot checks whether it should perform the task or not. If the condition is satisfied then it reminds the medication through a voice reminder.

4. COMPONENTS USED FOR IMPLEMENTATION

The proposed system includes few programming equipment.

- 1) *Software Components:* Python with a massive library of functions which allows freedom to implement the various features of the project easily. Common Gateway Interface is called CGI. It is an interface specification for web servers to execute programs running on a server that creates web pages actively.
- 2) *Hardware Components:*
 - **Dc motors** are easier to use and provide high rotational speed. It directly converts electrical energy to mechanical energy.



Fig.1.DC Motor

- **Raspberry Pi** is a heart of the model. It acts as a microprocessor and executes each and every step of processing data. Raspberry pi plays a vital role in this proposed system.



Fig.2.Raspberry pi

- Raspberry Pi **camera module** works with all models of Raspberry Pi 1,2,3,4. It includes Pi camera python library. It also take pictures, record video and apply image effects. In this system camera module searches for person and scan the environment.



Fig.3.Camera Module

- **Servo motor** produces torque and velocity base on current and voltage. It is used to control the speed. It requires precision positioning.



Fig.4.Servo motor

- L293D is an regular **Motor Driver IC** which makes it possible for the DC motors to drive in any direction. A solitary L293D IC comprising of 16- pins is equipped for running two DC engines at the same time and furthermore the heading of these two engines can be controlled freely.

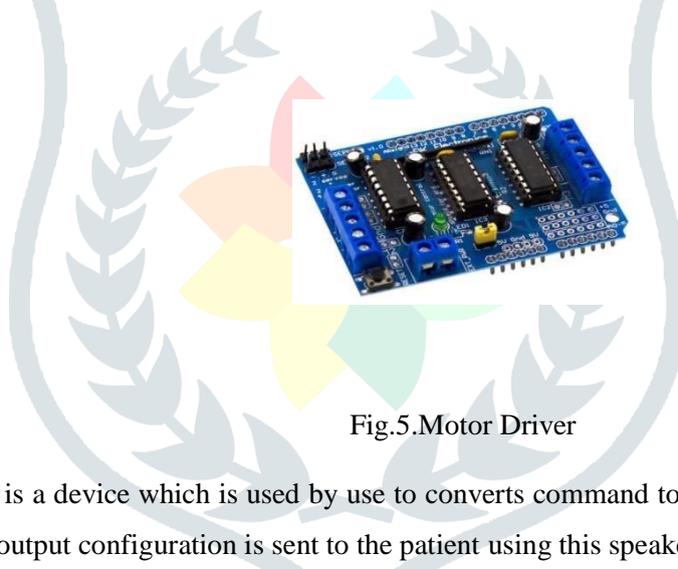


Fig.5.Motor Driver

- **Speaker** is a device which is used by use to converts command to speech. This speech which is in audio output configuration is sent to the patient using this speaker.



Fig.6.Speaker

- **Wheels** permit things to roll or moves all the more effectively in the ground. Many machines have wheel with choppers, known as pinionwheels.



Fig.7.Wheels

- **Ultra Sonic Sensor** have a transmitter(trigger) that can be utilized to communicate infrared sound waves and have a receiver that receives reflected sound waves(ECHO PIN) and it has power pins which are VCC and GND.

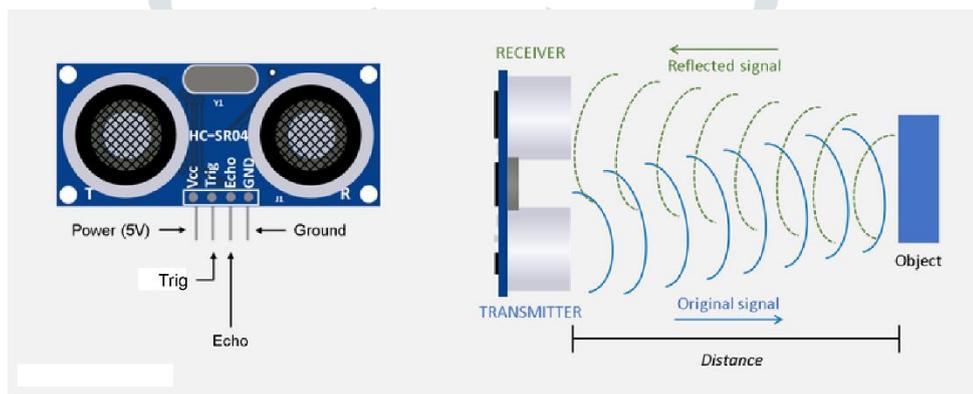


Fig.8.Ultra Sonic Sensor

SYSTEM ARCHITECTURE

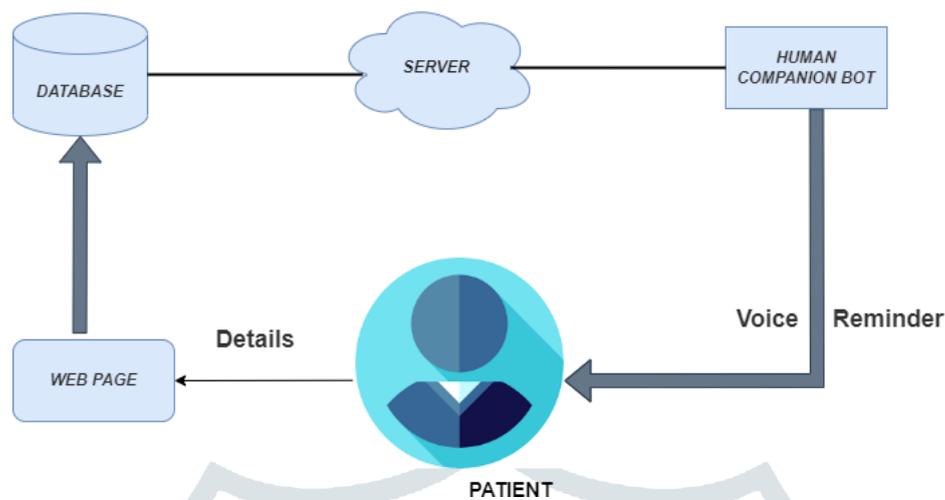


Fig.9.Architecture

In the above figure it portrays the blueprint interaction of bot. Initially the subtleties of the patient were given physically in the page. Subtleties like Name of the patient, his face, season of update and the sort of medications he/she use. Comparatively we can enlist quite a few patients in the webpage. Those registrations were put away in the information base. subtleties were recovered by the server. The subtleties were recovered on an inquiry demand and the subtleties are utilized by the friend robot. If there is update for a patient named A to take meds, the buddy bot makes the patient with an update aware of take his/her medication and sort of medication and diet for apatite he/she ought to take. The sidekick bot identifies your face and approaches you to give you an update about your prescriptions and food.

5. METHODOLOGY

The proposed system contains different modules which are used for database management, face recognition, encoding, decoding, face detection, and intimation. The web application is done using HTML, CSS, and JavaScript in the Django framework. This web application consists of image capturing to capture faces from the image and form to take details of the patient. The image of the person is clicked then the image is encoded into string format and saved in the input field. The form includes inputs like patient name, patient age, at which time should bot should remind the patient, and what must be reminded to the patient. The user enters all the details in the web application and gets registered. Then all these are reserved in a database.

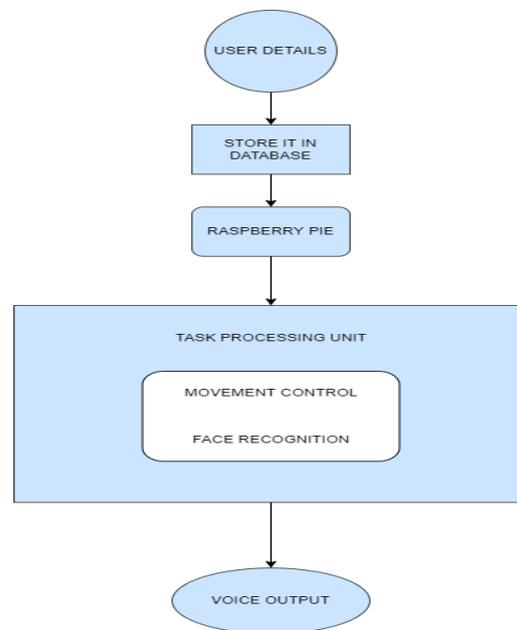


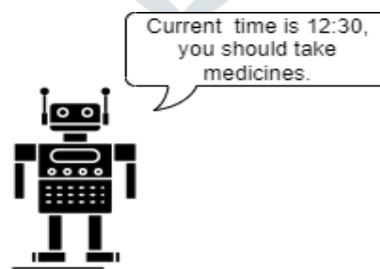
Fig.10. Working modules of Human Companion Bot

When the raspberry pie is on in the bot through the server the data is retrieved from the database. The bot connections are done using jumper wires and dc motors which convert direct current electrical energy into mechanical energy. According to the data, the bot performs its algorithm. The bot turns around and scans the environment with the help of wheels, DC motors, face recognition, and camera module. Face recognition module includes

dlib and cmake libraries to detect facial points of a person in an image. Through the camera module, it detects the face then it recognizes. If the face is recognized then the time is checked in the database and goes to the next step. If the current time matches with the time in a database then the voice reminder is raised by the bot.

6. RESULTS

The smart human companion bot performs action by reminding the user at the correct time by recognizing the face and verifying database so that, patient follows that and takes input from the bot.



7. FUTURE WORK

The proposed system can be developed using convolutional neural networks in the future. This can suggest to the patient which medicines should be taken by training the medicines data. The web application also can be developed by including signup and login validation. So that, the user does not need to register every time. Once the user is registered then no need of entering his/her details every time. Then the time and what should be reminded is enough for a voice reminder.

8. CONCLUSION

The Robot is exceptionally helpful for every single human being. It will be a decent ally to senior residents, youngsters, what's more, the individuals who experience the ill effects of forlornness. It performs a large number of capacities, for example, taking voice order as info and obtaining a result as voice, moving in view of a client order, live spilling to get status of a spot at which robot stands. The robot was likewise set up to screen and help with medications and inform the guardian of any occurrence with the old inside its current circumstance. A web application controls framework and robot advancement.

9. REFERENCES

- [1] Dhahabiyya Asharef, Design and Development of an Interactive Robot,IEEE 2022.
- [2] Placido Rogerio Pinheiro,Pedro Gabriel Caliope Dantas Pinheiro, Raimir Holanda Filho",Integration of the Mobile Robot and Internet of Things to Monitor Older People,IEEE2020.
- [3] Jishnu U.K.,Indu V.,K.J. Ananthakrishnan",Voice Controlled Personal Assistant Robot for Elderly People,IEEE 2020.
- [4] T Kobayashi, K Katsuragi, T Miyazaki",Social media intermediation robot for elderly people using external cloud-based services,IEEE 2017.
- [5] MY Hossain, S Zarif, MM Rahman",Design and Implementation of Assistive Robot for The Elderly and Impaired Person, IEEE 2021.
- [6] HM Shim, EH Lee, JH Shim, SM Lee",Implementation of an intelligent walking assistant robot for the elderly in outdoor environment,IEEE 2005.
- [7] M Venkatesan, Z Shaikh",Robocare for Elderly": A Personal Assistant Robot for Elderly People,IEEE 2021.
- [8] A Kumar, A Mishra, P Makula, K Karan",Smart robotic assistant,IEEE 2015.
- [9] J Mišeikis, P Caroni, P Duchamp",Lio-a personal robot assistant for human-robotinteraction and care applications, IEEE 2020.
- [10] P Harmo, T Taipalus, J Knuuttila",Needs and solutions-home automation and servicerobots for the elderly and disabled, IEEE 2005.