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ROBOT FOR PRESCRIPTION WRITING

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ABSTRACT - *The purpose of this paper is to design a universal robot to perform doctor prescription writing. Now a days, understanding doctors prescription is a big issue for both the patients and the pharmacists. Many people got affected by taking wrong medications because of the lack of understanding the prescription.*

In order to overcome this we have designed and developed a dual axis controlled robot for medical prescription writing.

Keywords – Prescription Writing, dual axis controlled, robot.

1. INTRODUCTION

Medical prescription are the instructions which is given to the pharmacist for indicating what are the medicines that the patient should have to take but due to the handwriting of the doctors ,some patients and pharmacists face many problems, they can't understand the name of the written medicine. Due to this several life's that could have been saved have been lost. In order to overcome this in our project we have came out with an robot prescription writing. Robot is a machine that designed to work automatically and it performs one or more tasks with speed. In our project we have an Bluetooth sensor which takes the data that is being given by the doctor. With the help of the bluetooth receiver it receives the data and the robot starts writing. With the help of the stepper motors the x and y axis can be controlled so that the text can be in order, and a server motor is being used in order to in order to rotate the pen.

2. RELATED WORKS

Mr.Moises Diaz, Mr.jose j. Quintana, Mr.kanstansin Miatliuk, Mr.adam Wolniakowski and Mr.Miguel A.Ferrer [2] proposed to design rapid and fluid movements of an universal robot to perform robot writing and mimicking both the humans kinematics and when signing the trajectory.

Mimicking human handwriting is a challenge for robots. To perform the task, on-line human signing standards after that and robot signatures area analyzed and compared, and the degree of signatures correlation is defined. Finally, recommendations of robot motion improvement are given.

Mr.Rayan Haidar, Mr. Roger Achkar, Mr. khodor Ghayad, Mr.Rana Al Hajj and Mr.Sawsan Saleh [1] demonstrated how artificial neural networks ANN is used to develop a system that a can recognise handwritten english medical prescriptions using the deep convolution recurrent neural network to train this supervised system, input images are segmented and processed.

This paper explains how neutral network technology used to detect prescriptions and translate into digital text.

Mr.Paul Voigtlaender, Mr.Patrick Doetsch, Mr.Hermann Ney [5] released an efficient implementation that greatly reduces the training time by processing the input in a diagonal wise fashion. They have used this implementation to explore deeper and wider architectures than previously used for handwriting recognition and have showed especially the depth plays an important role .There output state of the art results on two databases with a deep multidimensional network.

Mrs.Monika A. Shejwal, Mrs.Sangita D. Bharkad [13] they have presented the model based on the image processing algorithms that are used for the segmentation and extraction of characters from curved text lines from the document images. Then the algorithm performs the curved text segmentation using the x and the base line. The words in the document image are then identified and the bounding boxes are plotted with the words around. The properties of connected components are used for segmentation words. Thus, this algorithm has achieved a good accuracy for extraction of the characters from curved text lines.

Mr.Moises Diaz, Mr.Miguel A. Ferrerand Mr.Jose J.Quintana [8] have proposed a set of function based features for dynamic signature verification. They were inspired on the human stance and the variations in the angles of the arm joints. When signing. They propose to convert the trajectory altitude from an online signature into the required sequence of an robot poses to reproduce such signature. Then, the new robotic sequence are corrected in an online automatic signature verifier.

Mr.Bastien Moysset, Mr.Christopher Kermorvant, Mr.Christian Wolf [3] have demonstrated that text line detection and localisation is a major step for full page

document analysis, but still it suffers from heterogeneity of real life documents. They present a new approach for full page text recognition. Localisation of text line is normally based on the regression with the Fully CNN and Multidimensional Long Short-Term Memory as contextual layers. To increase the efficiency of the localisation method, the position of the left side (not the right side) of the text lines are predicted.

3. HARDWARE REQUIREMNETS

A. ARDUINO MICROCONTROLLER

Arduino Uno board is a good choice for students and educators. With the Arduino board, one can microcontroller, write programs and create interface circuits to read switches and other sensors, and to control lights and motors with very little effort. It is a microcontroller board based on the ATmega328P. It consists of 14 digital pins, 6 analog input pins, 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything that is needed to support the microcontroller. Here the Arduino uno is used to interface the program.

B. ADAPTER

An adapter will enable connection of a power plug, it is used in one region to a AC power socket and it is used in another by offering connections for the contact arrangements, while not changing the voltage. An AC adapter is also known as recharger, is a small power supply that changes household electric current to low voltage DC suitable for consumer electronics**.** Some modify power signal attributes, while others adapt the physical form of one electrical connector to another. For computers and other items, serial port adapter enables connections between 25and 9 contact connectors, but does not affect electrical power and signalling related things. Here the adapter is used to supply the power to the kit. It is used to convert 220V into 50V.

C. 5*1 KEYPAD

A keypad is a set of buttons that are in a block or pad form to perform a specific task. It contains five keys that are arranged in matrix form. The pulses from the microcontroller are used to switching keys in a keypad. To make the keypad work properly, pull-down resistors have to be placed on the microcontroller's input pins, in order to define logic state when no button is pressed.

By joining zeros and ones at the output pins, it will be known which button is pressed. It requires only one power supply for switching. The keypad can be used for a multi input switching. In our project the keypads has overall 5 keys in which two keys are used for the movement of the pen and the remaining two keys are used to move the writing pad in the X and Y direction.

D. STEPPER MOTOR

This usage of the stepper motor is to drive a 28BYJ stepper. The stepper can be stopped when the stop button is being pushed. It can also be changed to control the stepper in order to rotate it in counterclockwise or clockwise .Here the stepper motor is used to move the writing pad from left to right.

E. SERVO MOTOR

The servo motor is a Tiny and lightweight motor with high output power. Servo motor can rotate approximately 180 degrees, and works just like the standard kind but smaller. One can use any servo code, library to control these servos. Here the servo motor is used to move the pen up and down direction.

F. HC-05-BLUETOOTH TO SERIAL PORT MODULE

Bluetooth module is used for the serial port, it is designed only for the transparent wireless serial connection setup. Serial port Bluetooth module is fully qualified Bluetooth. Modulation with complete 2.4GHz radio transceiver and baseband. Here the bluetooth is used to transfer the data given by the receiver to the transmitter.

Figure 1.1 HC-05-Bluetooth Module

4. OUR APPROACH

1. TRANSMITTER SECTION

In the Transmitter section, user gives the data to the receiver with the help of the bluetooth that is present in the mobile app (bluetooth voice) as we see in figure 1.2.In transmitter section it contains a Bluetooth device named HC-05 that helps to connect to the receiver Bluetooth For transmitting the data, First the user have to store the required data in Bluetooth voice app.Then the receiver receives the data from the transmitter section. Thus it recognizes the data and sends

it to the receiver section. Then the receiver starts doing its work.

Figure 1.2 Transmitter section

2. RECEIVER SECTION

In the receiver section it receives the data from the transmitter and then with the help of ATmega328P the audio is converted into text. The manual axis adjustment is used to adjust the direction. The power supply helps to transmit power to the kit. The Stepper motor is used to drive through the x & y direction and the Servo motor is used for writing the pen in up-down axis. Then the writing robot starts writing data which has been received from the transmitter.

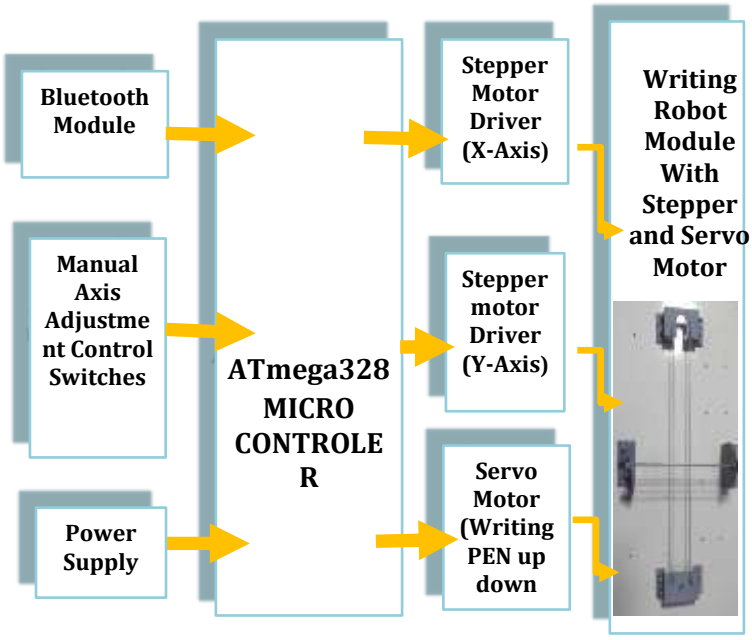

Figure 1.3 Receiver section

3. WORKING

Our project proposes a robot that is used for prescription writing. It designs a rapid fluid movement of an universal robot to perform dual axis control robot for writing medical prescription. The Figure 1.4 shows that the robot is connecting to 5V power supply. Then it connects with the Bluetooth device. Thus the user gives the data and then the Bluetooth transmitter gives the data to the Arduino (ATmega328P), then it starts interfacing with the program in kit. The both ULN2003 then drive the stepper motors that are connected with the dual axis that is the X and Y axis. The stepper and servo motor is moving with help of gear and belt setups. And the stepper motor starts working to rotate the writing pad. Once the data is received the server motor helps the pen to write the text (in order to convert the audio into text).Hence the text is written.

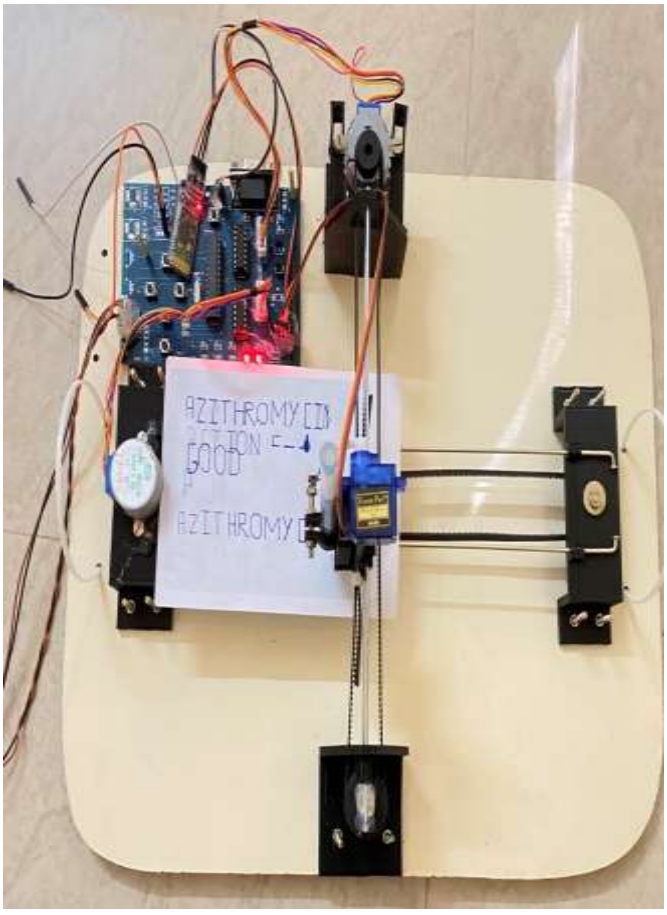

Figure1.4 Output

ADVANTAGES

- Accuracy
- Optimized character axis

- ➢ Less delay
- ➢ Low cost

APPLICATIONS

- ➢ Medical
- ➢ Handicapped writing
- ➢ Industrial data

5. CONCLUSION

In this paper, our approach is to discover a robot that can write a medical prescription what doctor says in mobile app, so that the patients and the pharmacists can understand what is written in the prescription. now the patients can take the correct medicine and the pharmacist can give the right medicine.

FUTURE SCOPE

In our project the writing speed is slow since we use the servo motor. So, In order to increase the speed we can use the DSP(Digital Signal Processing) in future if needed. Even it can be used for handicapped people during their examination. The people who can't write can use this instead of depending on some other people.

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