Dual Axix Controlled Robot For Writing

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Abstract- *The system presents an approach to design rapid and fluid movements of a universal robot to perform robot writing mimicking the doctor prescription writing when signing and the trajectory. Reading a doctor's handwritten prescription is a challenge that most patients and some pharmacists face; an issue that, in some cases, lead to negative consequences due to wrong deciphering of the prescription. Part of the reason why doctor's prescriptions are so difficult to decipher is that doctors make use of Latin abbreviations and medical terminology that most people don't understand. To perform the task, on-line human signing standards are created first. Robot writing task is performed using these standards after that and robot signatures are acquired as a result. Finally, recommendations of robot motion improvement are given.*

I. INTRODUCTION

This system presents the design process of a dual robot system for use in the rehabilitation of people with stroke. The proposed dual robot system will provide responsive coordinated active assistance of upper arm and forearm to facilitate the patient's reaching movements. Many systems designed by engineers for medical use lack formal involvement of potential users of the system at the inception of the proposed device. Involvement of people with stroke and health care professionals during the design process increases the like lihoodthatthe system will be successfully adopted when complete. To facilitate this, a Rehabilitation Technologies User Group (RTUG) was set up in Leeds to inform all stages of the system's development. Stakeholder input was managed by decomposing the system into two sub systems based on the user input required in their evaluation. The work presented demonstrates the benefits of end-user involvement in the design process, particularly, in an area where successful human–system interaction is critical. Section 2 gives background about stroke and robot assisted rehabilitation, a summary of the prototype single robot system developed at the University of Leeds and the process of user involvement. Section 3 presents the process used to develop the intelligent Pneumatic Arm Movement (iPAM) system. Section 4 describes preliminary system-level validation of Ipam against the key stakeholder requirements.

II. EXISTING SYSTEM

The process starts with the downloading of the writing text parameters which are the results of the previous human or robot writing processes, or a new composition of the writing symbols presented in the database. Control of the robot writing process is realised by a program unit developed using Python language via control PC connected with UR5 control unit by Ethernet. Robot displacements command (described above in section 3.1) are sent to UR5 control unit which generates and sent control commands to UR5 robot drives. Obtaining of numerical data of the results of robot writing is performed using Wacom Intous Pro M tablet which is connected with control PC. Program wacomGUI2 installed on control PC allows management and writing of the obtained data in correspondent csv files.

2.1Drawbacks in existing system

Written form of data to be fetched won't work in case of priscription.

Difficult to collect all form of data to data base.

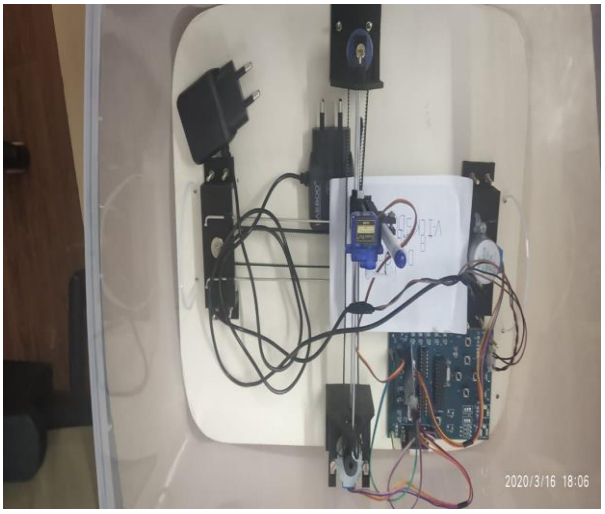
III. PROPOSED SYSTEM

The writing robot makes the written prescription chit about the patients with the help of wireless communication. The movement -Code file created by the help of Inkscape software then the processing software is used to send the G-Code file to the microcontroller. Then the CNC shield drive sends the controlling signals to the stepper motors and servo motor. Now the XY axis which operates as follows by the instructions given to the controller unit. The corresponding code is send the data to controller block is interfaced with motor driver unit along the DAC provides the pulse width signal to motor unit where it is been processed and final output is written and displayed on the paper from the output unit.

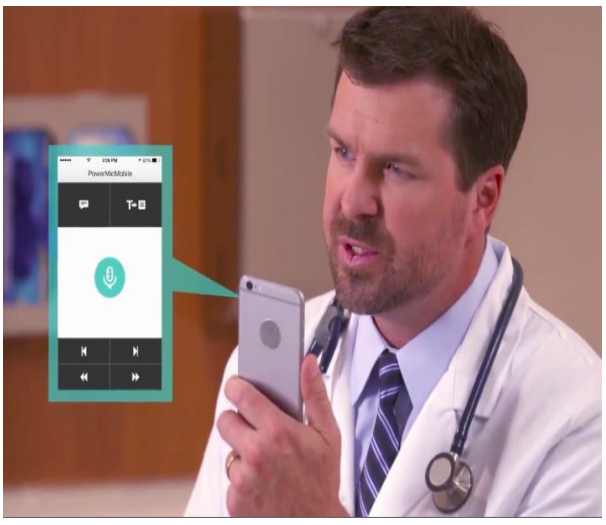
3.1. Working of Proposed Method

The writing robot makes the written prescription chit about the patients with the help of wireless communication. Voice input is accessed through bluetooth module. G-code is

generated through inkscape software .When the processor receives the signal from the bluetooth, the code get processed. Based on this code ,output is obtained using dual axis controlled motors

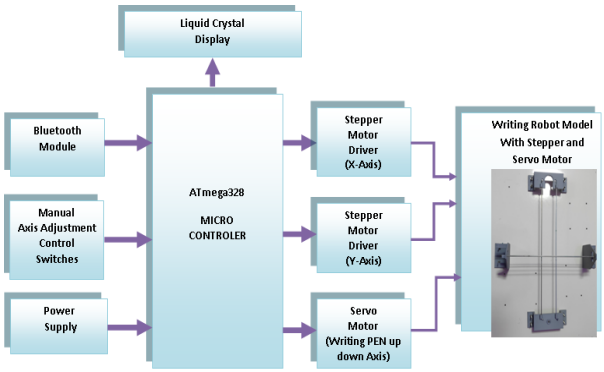


3.2 Transmitting section



3.3 Receiving Section

3.3.1 Block Diagram



IV. HARDWARE USED

ATMega328 MICRO CONTROLLER
Bluetooth Module
Liquid Crystal Display
Stepper Motor Driver
Stepper Motors and Servo Motor
Gear and Belt Setups

V. SOFTWARE USED

EMBEDDED C
Android Application
AVR IDE

VI. ADVANTAGES

Accuracy
Optimized character axis
Less delay
Low cost

VII. APPLICATION

Used in medical fields as doctors prescription and Handicapped writing .Fast writing of textual data with great accuracy Industrial data

VIII. CONCLUSION

This writing robot work with the voice data as input and performs efficiently using its dual axix control. In future it

may developed efficiency for multiple language with great accuracy.

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