Voice Based Digit Writer For Physically Challenged

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Abstract
A new concept of pen is coming now that is Automatic Pen Writer with Voice recognition. Voice Controlled Robot (VCR) is a mobile robot. The robot's action can be controlled by the user through mobile phone by giving specific person's voice commands. The robot will receive the voice commands from the person through the microphones and then the robot will execute the actual work. This project is specially made for physically challenged students who can not to write the exams like others. In this project the voice message will be recorded using the application in the mobile phone, and then the voice that is recorded will be sent to Arduino board by the help of Bluetooth. Through which the instructions will be sent to the robot. The robot writer will function based on the received Voice command.

Keywords*: Automatic pen writer, Voice recognition, Bluetooth, Arduino board. Etc*

INTRODUCTION

Robot controlled by voice using mobile phone is very useful for physically challenged persons. It is also very useful in industries and at places where human life is endangered. Specific voice commands given to VCR will control its motions. Generally 5- voice commands "Run", "Stop", "Left", "Right" and "Back" issued by a particular user are used by the speech recognition software running on a PC. It is capable of identifying all these commands. After processing the speech, the necessary motion instructions are given to the mobile platform via a RF link. It gives exact concept of controlling a robot by voice. VCR is capable of understanding and synthesizing human's speech for communication. A voice recognition unit built around a high speed processor that ensures various function of the system is performed by voice command. The speech recognition software used in VCR is speaker dependant. The special feature of the software is the ability of the software to train itself for the voice commands for a particular user. The graphical user interface running along with the software provides a very convenient method for the users to train. It also provides many other facilities in operating the robot. In the present project we have developed a robot writer using AT mega 2560 board.
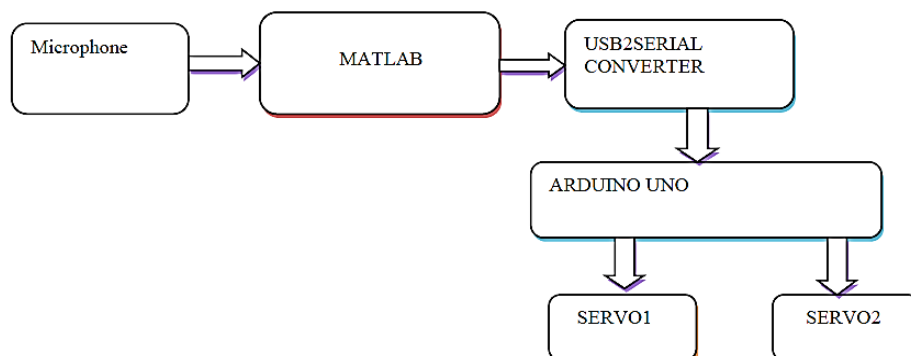

Figure 1: *Block diagram of Proposed Model*

METHODOLOGY
Proposed Design
The system is divided into three parts: Transmission block, controlling block and receiving block

Basic Design Blocks
The system is divided into three basic design blocks namely;
1. Transmission block
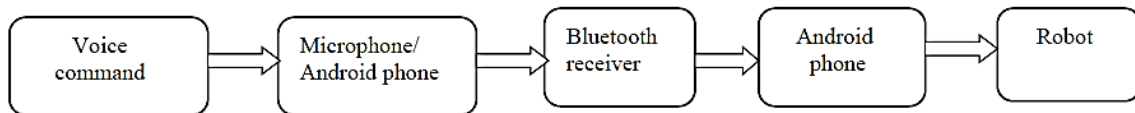2. Controlling block
3. Receiving block

Figure 2: System architecture

HARDWARE USED
- ARDUINO UNO
- SERVO MOTOR
- PL2303

ARDUINO UNO
Here we use Arduino uno board as microcontroller. It comes with integrated development environment (IDE). Therefore it allows user write programs. It has 14 digital input/output pins Out of these 14 pins 6 can be used as PWM outputs and 6 analog inputs. Ardunio works on 5V D.C and has clock speed of 16 MHz

Servo Motor
It is rotary actuator or liner so that allows for precise control of angular or linear position. It consists of a suitable motor coupled to a sensor for position feedback. It also requires a relatively sophisticated controller, often a dedicated module designed specifically for use with servomotors. Servo motor can rotate approximately 180 degrees (90 in each direction), and works just like the standard kinds
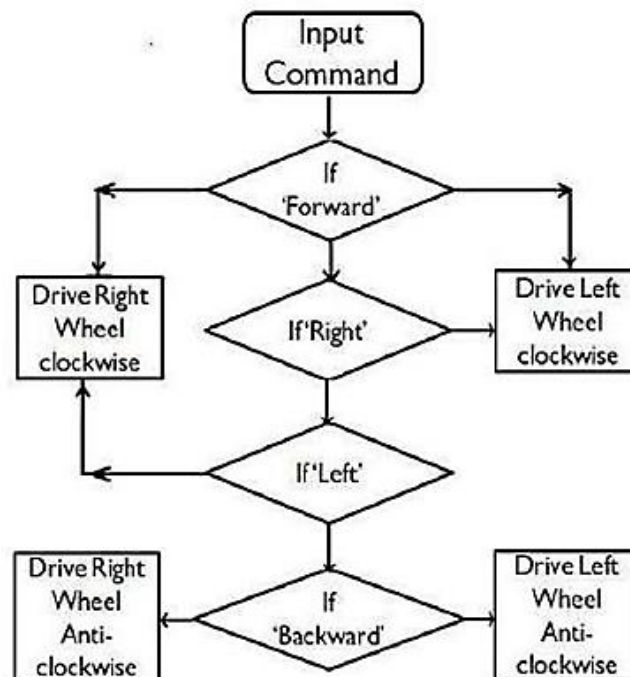

Figure3: flow chart

A Few of instructions recommended for operation are listed as:
STOP, FORWARD, BACKWARD, RIGHT, LEFT, SLOW, FAST, OK, UP, DOWN, CLOCK, ANTICLOCK, CLOSE, OPEN

These are the functions by which a robot is controlled by the specific person's commands. By using the above 14 commands a robot can do any work ,which a normal person can never do.
To work with this system we have to design some application of android. The application consists of android phone with Bluetooth receiver. In the model, an android application for voice recognition is developed. This application converts the voice command to text and sends it to the robot via Bluetooth. The robot receives the voice and compares it with the programmed commands in the microcontroller and executes the directed action

APPLICATIONS
1. It helps physically disabled persons by writing their work using the arm structure in the robot.
2. It guides the blind persons to reach a particular writing work by using the voice feature.
3. Because of the presence of the Real-time Clock (DS1307), time-based control of the robot is possible

ADVANTAGES
1. Speech Recognition works best if the microphone is close to the user e.g. in a phone, or if the user is wearing a microphone
2. Voice commands are transmitted and received through wireless serial communication with the help of Bluetooth technology
3. The Function of robot is fully controlled by the voice of from mobile
4. This system can be useful to execute other jobs for the person who is physically challenged to writing.

LIMITATIONS
1. If there is noise or some other sound in the room (e.g. the television or a kettle boiling), the number of errors will increase In Speech recognition system, there is a possibility of unauthorized usage.
2. Since this doesn't depends upon which person is speaking
3. No password protection
4. The Bluetooth connection gets dropped frequently

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