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# Automatic Pen writer for 2D Drafting

Mr. Kamble S. B<sup>1</sup>, Mr. Kawate S. G<sup>2</sup>, Mr. Kale S.D<sup>3</sup>, Mr. Kadu V. R<sup>4</sup>, Prof. L.B. Abhang<sup>5</sup>

<sup>1, 2, 3, 4</sup>B.E. student, Department of Mechanical Engineering, PREC, Loni, SPPU, Pune

<sup>5</sup>Associate Professor, Department of Mechanical Engineering, PREC, Loni, SPPU, Pune

**Abstract:** A new technology of pen is introduced by us in this paper an automatic pen which has an alleged psychic ability allowing a person to produce written words without actual writing. The automatic pen setup uses a CNC software to produce words. Automatic writing machine is a robotic hand which is used to write the characters, words from document. Pen is used to write the document stored in hard-disk. This automatic pen writer concept overcomes all the drawbacks faced due to all the traditional elements like pen, hard-disk, battery etc. all in an innovative manner. Automatic pen writer is designed for two main purpose, first is search the document in the hard-disk and start writing that document

**Keywords:** Stepper motor, Mg 90metal gear servo

## I. INTRODUCTION

Automatic pen is operated on stepper motor, battery, mg metal gear servo and Arduino. This pen accepts the Universal Serial Bus (USB) which supports the user to transfer the files from computer to the Arduino setup. This pen resembles to a regular ball-point pen and can be used as such. This pen can be used on normal papers as well as on fabric, wood, etc. This pen uses PLC for performing operations. This PLC is used over a large area in CNC Machine and other industrial aspects, exercising authority over spindle positive inversion, tool changer and other auxiliary moves. When any consumer wants to upload their data or drawing the pens, is loading or unloading in its USB cradle. This USB automatically judge the presence of pen, open the required software application on computer. Most of the pens save the handwritten notes as an image file even though some pens use a proprietary file format.

### A. Objectives

- 1) To minimise human efforts.
- 2) To improve human accuracy in drafting.
- 3) Promote the use of greener wind alternative
- 4) To improve speed of designing
- 5) It is used as blind student

## II. CONSTRUCTION AND WORKING

### A. Component

- 1) Stepper motor
  - 2) Arduino Uno R3
  - 3) Mg 90 metal gear servo motor
  - 4) Battery
  - 5) Threaded shaft with coupling
  - 6) shaft
  - 7) driver
  - 8) holder
- a) *Stepper Motor*- A stepper motor as step motor or stepping motor is a brushless DC motor that divides a full rotation into a number of steps. The motors position can then be commanded to move and hold at one of these steps without any position sensor for feedback, as long as the motor is carefully sized to application in respect to torque and speed.



Fig. 2.1.1: stepper motor

- b) *Arduino*-This Arduino is microcontroller board based on a removable, dual-inline-package (DIP) ATmega328 AVR microcontroller. It has 6 digital input/output pins



Fig.2.1.2 Arduino Uno R3

- c) *Mg 90 Metal Gear Servo Motor*- Servo implies an error sensing feedback control which is utilise to correct performance of system



Fig 2.1.2 Servo motor

- d) *Battery* - Battery is connected to rectified circuit to store fluctuating current.  
 e) *Threaded shaft with coupling*- The function of the component to move the plate with help of stepper motor  
 f) *Shaft*- To support the moving plate

**B. Working**

The automatic writing machine is a pen which is type of simple robot. Its sole function is to guide a pen along the set of vector lines, curves, and paths that you asked it to follow.

- 1) It is capable of drawing graphics, writing text or signing documents.
- 2) It can draw essentially anything that can be composed from a set of lines.
- 3) In practice it is much like using a traditional printer except that you need to take care that your documents are made of paths rather than pixels.

### III. SPECIFICATION OF COMPONENTS

#### A. Base Plate

Length=400mm

Width=80mm

Thickness=7mm

#### B. Moving plate

Length=400mm

Width=80mm

Thickness=7mm

Design Layout

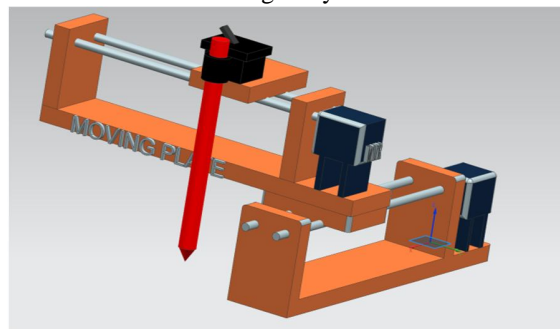


Fig 4.0.1 Assembly

#### 1) Advantages

- a) More accurate than hand drawn design.
- b) More efficient than human hands.
- c) Low cost as compared to modern printers.
- d) High speed of operation.
- e) Compact in size.

#### 2) Disadvantages

- a) It is costlier than normal fountain pen.
- b) Developing the software is a difficult task.
- c) It has less speed as compared to the printer.
- d) Only documents can be stored in the form of files .

#### 3) Application

- a) As a handwriting machine for various purposes like 2-D drafting, writing etc.
- b) Digital artists, using automatic writing machine plot their artwork.
- c) As a versatile fabrication tool.

As a signature machine for checks

### IV. CONCLUSION

The important aspect of this project is that hand written digital files can be converted into text format. This project will allow everyone to interact with each other like never before. Any one can get information about anything from anywhere within a few moments. This automatic pen consumes a low power and works with high precision due to accuracy controlling of stepper motor

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