

DESIGN AND DEVELOPMENT OF SYSTEM FOR AUTO-FACSIMILEING

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ABSTRACT

To ensure the efficient facsimileing work in examination wing at various education institution. In most of the Educational Institution, the common problem identified in the examination wing is to facsimileing the Principle signature, College address in bulk numbers on various document like hall tickets, University answer booklets and etc, which is very important and calculative. Currently this process has been done manually, which causes reverse facsimile, misplacement of facsimile and more time required to complete. In order to overcome this issue, we presenting this project which includes structure of xy plotter for fixing position of the head and controlled by a joystick. The head contains the mechanism for stamping the facsimile

Key words: Arduino Uno, Stepper motor, DC motor, Joystick.

I. INTRODUCTION:

At present, we are in digitalized world. Everything comes under the Machine oriented because of the evaluation of technology. For the past years, the

technology invention is increase day by day. Various sectors like education institute, schools, government office etc., become a digitalized. There is a one problem arises in examination wing. To ensure the efficient facsimileing work in examination wing at various education institution. In most of the Educational Institution, the common problem identified in the examination wing is to facsimileing the Principle signature, College address in bulk numbers on various document like hall tickets, University answer booklets and etc, which is very important and calculative. Currently this process has been done. Manually, which causes reverse facsimile, misplacement of facsimile and more time required to complete. In order to overcome this issue, we presenting this project which includes structure of xy plotter for fixing position of the head and controlled by a joystick. The head contains the mechanism for stamping the facsimile.

II. PROBLEM IDENTIFIED:

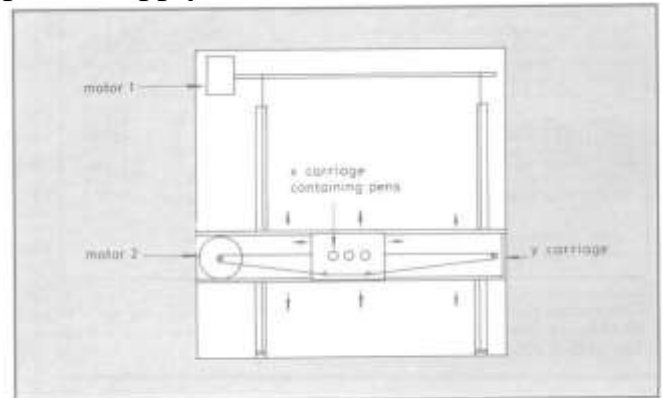
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Principle signature, College address in bulk numbers on various documents like hall tickets, University answer booklets and etc, which is very important and calculative. Currently this process has been done manually, which causes reverse facsimile, misplacement of facsimile and more time required to complete.

III. PROPOSED SYSTEM:

In order to overcome this issue, we presenting this project which includes structure of xy plotter for fixing position of the head and controlled by a joystick. The head contains the mechanism for stamping the facsimile. A plotter is a control device which is controlling the movement of one or more stamp over a piece of paper. The objective of this project where to design and build a simple xy plotter capable of printing the principle signature and college address under the usage of Arduino Uno microcontroller. The plotter had to be capable of plotting on paper up to A4 with sufficient accuracy for educational demonstration. The plotter was built on a baseboard of 500×500mm veneered clipboard. It consists basically of two carriage they are x carriage and y carriage. The y carriage moves up and down made from aluminum channel and is driven by the motor fixed to the board. The x carriage which contains the stamp moves from side to side along the y carriage, driven by a second motor which is fixed to the y carriage. Both carriage may therefore moves independently allowing the stamp to be moved anywhere on the paper in any direction. Arduino IDE software has to allow for this when controlling the plotter. The

motors, 12v(DC) stepper, were interfaced to the output port. A separate 12v smoothed power supply was used.



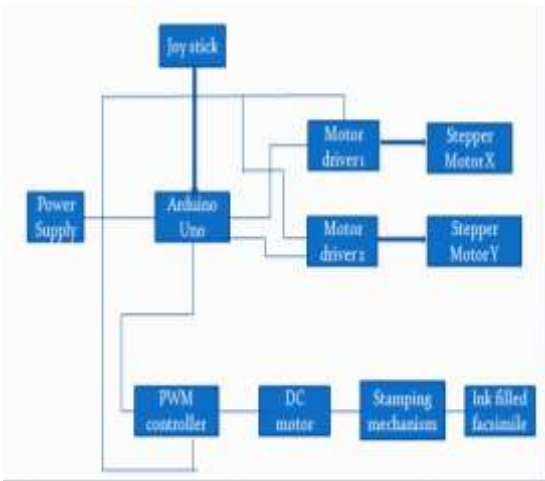
The total cost of building the plotter was approximately £35, the main expense being the two-stepper motor at £12 each. Stepper motor are necessary, however, to obtain the sufficient. However, the expenses of stepper motor were worthwhile. Joy stick are used to control the stepper motor. The joy stick is a thumb operated devices, that when put to creative use, offers a convenient way of getting operator input. The two potentiometers indicate which direction the potentiometer is being pushes.

IV. BLOCK DIAGRAM:

The architecture of system for auto facsimileing uses its main component as Arduino Uno which interface all other components.

The main units of the block diagram are,

- PWM controller
- Stepper Motor
- Joy stick
- Motor Driver
- DC Motor



1. PWM CONTROLLER:

It is used to control the speed of the DC motor. It contains the MOSFET, its act as a switch. Supply is given to the MOSFET through the Arduino board.

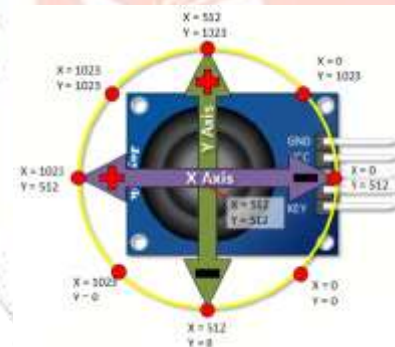
PWM	D1	D2	Effect
H	0	0	Motor Brake
H	0	1	Motor Rotates in One Direction
H	1	0	Motor Rotates in Opposite Direction
H	1	1	Motor Brake
L	0	0	Motor Brake
L	0	1	Motor Freewheel
L	1	0	Motor Freewheel
L	1	1	Motor Brake

2. STEPPER MOTOR:

A **stepper motor** or **step motor** or **stepping motor** is a brushless DC electric motor that divides a full rotation into a number of equal steps. The motor's position can then be commanded to move and hold at one of these steps without any position sensor for feedback (an open-loop controller), as long as the motor is carefully sized to the application in respect to torque and speed. The motors response to digital input pulses provides open-loop control, making the motor simpler and less costly to control.

2. JOY STICK:

The joy stick is a thumb operated devices, that when put to creative use, offers a convenient way of getting operator input. The two potentiometers indicate which direction the potentiometer is being pushes. In order to put this thumb control to use, you are going to want to understand which direction x and which direction is Y. You will also need to decipher the direction it is being pushed in either the X or the Y direction. In this tutorial we are using analog inputs to measure the joystick position. The analog inputs provided indications that range between 0 and 1023. The graphic below shows the x and y direction and also gives an indication of how the output will respond when the joystick is pushed in various direction.



5. MOTOR DRIVER:



A stepper motor driver carrier is a breakout board for easy-to-use A4988 micro stepping bipolar stepper motor driver and is a drop-in replacement for the A4983 stepper motor driver carrier. The driver features adjustable

current limiting, overcurrent protection, and five different microstep resolutions. It operates from 8 – 35 V and can deliver up to 2 A per coil. The A4988 stepper motor driver carrier comes with one 1×16-pin breakaway 0.1" male header. The headers can be soldered in for use with solderless breadboards or 0.1" female connectors. You can also solder your motor leads and other connections directly to the board. The driver requires a logic supply voltage (3 – 5.5 V) to be connected across the VDD and GND pins and a motor supply voltage of (8 – 35 V) to be connected across VMOT and GND.

These supplies should have appropriate decoupling capacitors close to the board, and they should be capable of delivering the expected currents (peaks up to 4 A for the motor supply).

6. DC MOTOR:



A DC motor driver circuit consists of four MOSFETs forming an H-bridge. This type of motor driver can control the speed as well as the direction of rotation of the motor. However, both the functions can be performed using another type of motor driver consisting only one MOSFET and two relays. The signals D1 and D2 control the direction of rotation of the motor.

7. ARDUINO UNO

The Arduino is an open source platform introduced to make electronics prototyping easy by hiding the complexity of the embedded system through their Arduino IDEs and Arduino Boards. Arduino hides the

complexity of Micro controllers. Arduino has done every tedious task for you. Generally, the programming language for embedded systems/Pic is done using C/C++. In order to minimise the complexity, the Arduino provides you an Integrated Development Environment (IDE) in which you can use to write the programs for Embedded Systems.

V. CONCLUSION

The system has been constructed successfully with required hardware, The XY movement of the stamping head has been controlled by using a Joystick, and stamping process done by the DC motor by using a rotary mechanism.

Since the model of the system has been developed, and a lot more to go for fine tuning to increase the efficiency and accuracy of the system, paper counting and height adjustment can be included in the future scope.

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