Touchscreen Based Character Interpretation Plotter Character Plotter

[1]Manish Patil, [2]Siddhant Chaskar, [3]Vivek Mahalpure

[1,2,3]Department of Electronics and Telecommunication, RMDSSOE,
Email: [1]manishpatil161994@gmail.com, [2]sid6580@gmail.com, [3]vivekmahalpure@gmail.com

Abstract—Touchscreen Based Character Interpretation Plotter is a device that propounds the fastest scheme to effectively produce very large and complex drawings. The Touchscreen Based Character Interpretation Plotter is basicallysimple two axis deer stratagem stir a pen draw out anything . This been implemented in the current work wherein the X-Y plotter plots the input given from the touchscreen on the drawing board using ATMEGA 16 microcontroller on a any paper or material. The X-Y plotter has a two axis control and a distinctive clockwork to heighten and lower the pen. Each axis is powered using a single stepper motor. Pen control is achieved using a servo. This instrumentation allows the plotter to perform tasks at a faster pace and with increased accuracy.

Keywords- resistive touch; capacitive touch; symbol; signs; design; copy; print; drawing; x-y axis; robotic arm; drawing bot.

I. INTRODUCTION

Robotics is the field of computer science and engineering solicitous with making robots, devices that can move and reenact to sensory input. Robotics is department of artificial intellect. Robots are now extensively used in factories to accomplish high-precision jobs. They are also used in peculiar situations that would be hazardous for humans – such as, cleansing toxic wastes or deactivation bombs. Although big improvement have been made in the field of robotics during the last decadeIn 1942 the science fiction writer Isaac Asimov created his Three Laws of Robotics.The term 'robotics' was quoined by Isaac Asimov in his science figment short story called 'Liar'[1]. The plotter has a aperture in its base where the pen goes through it. It is designated to print on paper .Each axis is governed using a individual stepper motor and band. Pen control is achieved using a servo. Pen plotters print by moving a pen or other tools across the surface of a portion of paper. This signifies that plotters are vector graphics devices, rather than raster graphics as with other printers. Pen plotters can draw complicated line artifice, containing text, but mechanical motion is slow. They are often unable of effectively composing a firm tract of shade, but can develop a region by drafting many close, normal lines. Plotters immolates the fastest way to effectively generate very huge drawings or shades of high-resolution vector-based graphics when data processor memory was very costly and CPU power was very definite, and other types of printers had restricted graphic production capabilities. Pen plotters have really become old fashioned, and have been replaced by huge data format inkjet printers and LED toner supported printers. Such devices may still interpret vector languages primarily designed for plotter applications, since in many uses, they offer a more efficient alternative to raster data.

II. DESIGN METHODOLOGY

The components of the touchscreen based character interpretation plotter include the following:

2.1. Atmega 16 Microcontroller

The device is made using Atmel's high density non-volatile core technology. The ATmega16 is assisted with a full suite of program and system elaboration tools, containing C compilers, macro assemblers, program debugger or simulators, In-Circuit Emulators, and valuation set. The features of Atmega16 include16 Kbytes of In-System Self-programmable Flash program memory, Optional Boot Code Section with Independent Lock Bits, Programmable Serial USART, Master/SPI Serial Interface, On-chip Analog Comparator[2]. It operates at frequency of 16MHz with power supply of 4.5 to 5.5 v[3].

2.2. Motor Driver

In order to supply the exact amperage to the motor using the low current signal from microcontroller, motor administrator is used. A motor administrator is a stratagem or assembly of devices that helps to govern the performance of a stepper motor. A motor administrator might include a manual or automatic means for starting and stoppage of motor, choosing forward or reverse rotation, governing the speed, restricting the torque, and guarding against overcharge and faults.

The flow chart and block diagram of the Touchscreen Based Character Interpretation plotter are shown in Fig.1, Fig.2 and Fig.3
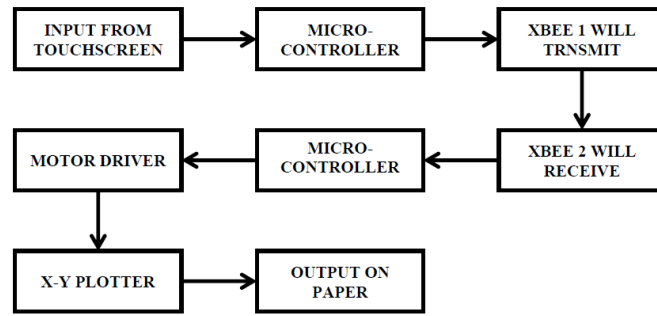
Special Issue on International Journal of Electrical, Electronics and Computer Systems, ISSN (Print): 2347-2820 V-4 I-2
For 3rd National Conference on Advancements in Communication, Computing and Electronics Technology [ACCET-2016]
held at M. E. S. College of Engineering, Pune 11–12, February 2016

101

Fig.1. Flow chart of the X-Y plotter

2.3. Stepper Motor

Astepper motor is a brushless DC motor that distributes a full rotation into many uniform steps. The motor's place can then be dictated to move and sustain at one of these steps without any feedback sensor , as long as the motor is carefully sized to the application in consideration to torque and speed. DC brushed motors revolve continuously when DC voltage is applied to their terminals. The stepper motor is understood by its property to transform a trail of input pulses into a exactly defined addition in the shaft proposition. Each pulse move the shaft through a firm angle. Stepper motors thoroughly have multiple "dented" electromagnets ordered around a middle gear-designed part of iron. The electromagnets are activated by an exterior driver circuit or a microcontroller. To compel the motor shaft to turn, first, one electromagnet is given power, which magnetically draws the gear's teeth. When the gear's teeth are alined to the first electromagnet, they are marginally setoff from the next electromagnet. This indicates that when the next electromagnet is turned on and the first is turned off, the gear revolve a little to line up with the next one. From there the procedure is recited. Each of those rotations is called a "step", with whole number of steps making a full rotation. In that way, the motor can be turned by a accurate angle.

2.4. Power supply

The duty of regulated power supply is to provide a constant voltage to a circuit that must work within stated power supply boundaries. This is used to provide the power to the microcontroller and the driver circuits.

2.5. Working procedure

Touchscreen based Character interpretation plotter is project about to provide or produce character from Touchscreen and can be drawn against paper or other materials. Here Touchscreen will be used as input device, where we have to give some random character by moving stylus on resistive touch screen. Then co-ordinates will be displayed on LCD . This will indicate us that our input section is working properly without any error . Then this co-ordinates will be transmitted wirelessly to another system by ZigBee where we can receive it through ZigBee. Then it will provide this co-

ordinates of each point to motor driver. This will be plotted against paper or any material. Stepper motor is used to move plotter in x and y directions as well as some hardware assembly
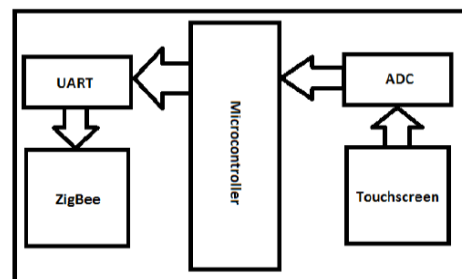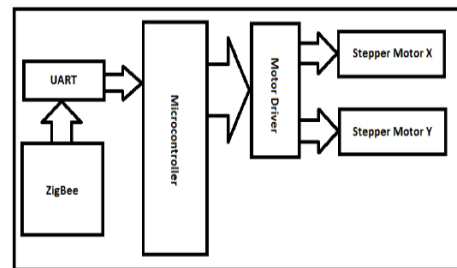

Fig.2. Block diagram of Transmitter Side

Fig.2. Block diagram of Receiver Side

III. APPLICATIONS

1. PCB creation: Electronic Circuit layout can be plotted on to a cupric-clad board which can be engraved ordinarily.

2. PCB hole drilling :The drill can be used in place of pen, then user can exactly pierce holes in circuit boards. This technique will highly abbreviate printed circuit board production.

3. Plotting of graphs, charts and documents.

IV. CONCLUSION

The plotter establishes its relevancies in the many fields. It is a beneficial invention in the field of graphics. Letters and images can be drawn by taking the inputs from the PC. Further, supplemental improvisation can be done by associating the graphical user interface for making the plotter more user serviceable and developing

Special Issue on International Journal of Electrical, Electronics and Computer Systems, ISSN (Print): 2347-2820 V-4 I-2
For 3rd National Conference on Advancements in Communication, Computing and Electronics Technology [ACCET-2016]
held at M. E. S. College of Engineering, Pune 11–12, February 2016
102

a web interface so that plotter could be directed in small places by the Web browser.

REFERENCES

[1] S K Saha, "Introduction to robotics", 2008, Tata McGraw Hill Education Private Limited.

[2] Atmel corporation :http://www.atmel.com/images/2466s.pdf.

[3] Dr.Bindu A Thomas, Stafford Michahial, Shreeraksha P, Vijayashree B, Suresh M, "Industry based automatic Robotic arm", in IJEIT, Vol 2, 2013.

[4] MosheShoham: Textbook of Robotics: I Basic Concepts. Anchor Brendon Ltd.

[5] Richard D. Klafter: Robotic Engineering. Prentice-Hall of India.

[6] Charles.A.Schuler, William L.McNamee: Industrial Electronics and Robotic. McGraw-Hill Book Company.

[7] J.Borenstein, "Real-time obstacle avoidance for fast mobile robots", IEEE Trans. Syst. Man Cybern., vol.19, pp.1179-1187, 1989.

[8] J. Iijima, S. Asaka and S.Yuta, Yuta, "Searching Unknown Environment by a Mobile Robot Using Range Sensor–An Algorithm and Experiment–", Proc. IEEE/RSJ IROS 89, vol.1, pp.46-53, 1989.

[9] R K Mittal, I J Nagrath, "Robotics and control", 2008, Tata Mcgraw Hill Education Private Limited.

❖ ❖ ❖

Special Issue on International Journal of Electrical, Electronics and Computer Systems, ISSN (Print): 2347-2820 V-4 I-2
For 3rd National Conference on Advancements in Communication, Computing and Electronics Technology [ACCET-2016]
held at M. E. S. College of Engineering, Pune 11–12, February 2016
103