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Exploring Smart- Quill Technology: Chirography Remembrance in addition to Impression Corroboration

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Abstract: ***There are a variety of pens on the market, but none of them do anything other than write.The extraordinary development of a pen that can do more than just write is the focus of this paper. The Smart Quill is a pen-based computer. Even though this pen takes the place of the keyboard in the workplace, handwritten note-takers will find it extremely useful. The current method of computation has begun to favor small computers. Because of this, companies that make computers now use tools that are similar to computers. The handheld computers can only be reduced to a certain point before they become unusable. Screens require stable indicator control to read text smoothly, and keyboards have become so tiny that you need fingers the size of needles to operate them.***
Index Terms: Smart Quill, Transcription, Digital Inkwell.

I. INTRODUCTION

We are going to talk about a pen in this paper that can take the words you write with it and turn them into computer text. "It would be neat to put all of a handheld-PDA type computer in a pen" is an idea. It is said to have been the biggest change in handwriting since the pen was invented. To record what they write, users do not need to use a special pad. This pen can be used to write on any platform, including a tablet, screen, or even the air. Although the Smart Quill has an ink-sealed unit so that users can see what they write, it is not entirely space-age. No matter what device is used, Smart Quill's sensors use the earth's solemnity system to track movement.

"It's the pen for the new millennium," she declares. Williams brought her prototype to the British Telecommunications Research Lab, where she was hired right away and given money and support for her project from the institution. Nigel Ballard, a prominent mobile computer industry consultant, gave her the go-ahead to do so. The world-class research labs run by BT (formerly British Telecom) in Martlesham, eastern England, created the prototype, which is called Smart Quill. It is said to have influenced handwriting in the most significant way since the invention of the pen.

Users of the prototype pen do not need to write on a special pad in order to record what they write, unlike other electronic pens currently on the market.

The user could write on air, paper, a tablet, a screen, or any other surface. The Smart Quill, on the other hand, is more than just a spaceship; Additionally, it includes an ink cartridge so that users can view their writing. Smart Quill has sensors that use the earth's gravity system to record movement, regardless of the platform. The pen is used to record the data that the user enters. You can also upload your knowledge to your PC using the "digital inkwell," and the files you might want to view on the pen are also downloaded to Smart Quill.

The pen has a screen on the barrel and is slightly larger than a standard fountain pen. By pressing a button, users can enter data into these applications. His or her own handwriting can be used to enter the information. Client can involve any stage for composing like paper, screen, tablet or even air.

The information that is stored in the pen can also be read on a tiny three-line screen. The pen can be tilted to scroll down the screen. After the pen is connected to an electronic docking station, text messages are sent to a desktop computer, printer, modem, or mobile phone for electronic file transfer.

II. LITERATURE SURVEY

Along with British telecommunications, Lyndsay Williams of Cambridge University invented the smart quill.The sensors in the smart quill use gravity to record movement regardless of the platform.

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Jim Margraff was the inventor of Leapfrog FLY pen top computer and Leap PAD learning system, a trademark under the Leapfrog Company that was popular for its interactive children books which showed the capacity to link audio to paper at the touch of a pen Clay tablets that were engraved with straws and considered to be the forerunner of the pen were the first form of primitive paper. The way straws were cut diagonally could leave a mark on the clay's wet, soft surface. After this was dried, the lines that had been engraved on the clay would be imprinted (Collins, 2011; (2010) Al-Jenaibi). The development of writing accessories is regarded as a direct contributor to the evolution of the pen. This evolution started with the use of papyrus, then parchment, and finally the paper that is currently used.

III. WORKING OF SMART QUILL

The Smart Quill is smaller than a standard fountain pen. The Smart Quill works without a screen and allows users to enter data into these applications by pressing a button and writing down what they want to enter. The technology's ability to read handwriting not only on paper but also on any flat surface, horizontal or vertical, is really clever.

The information that is stored in the pen can also be read on a tiny three-line screen; Using the pen, users can slightly tilt the screen to scroll down. The user teaches the pen to recognize a particular style of writing. The pen can recognize messy writing as long as it is consistent. The pen's hard drive contains the handwritten notes.

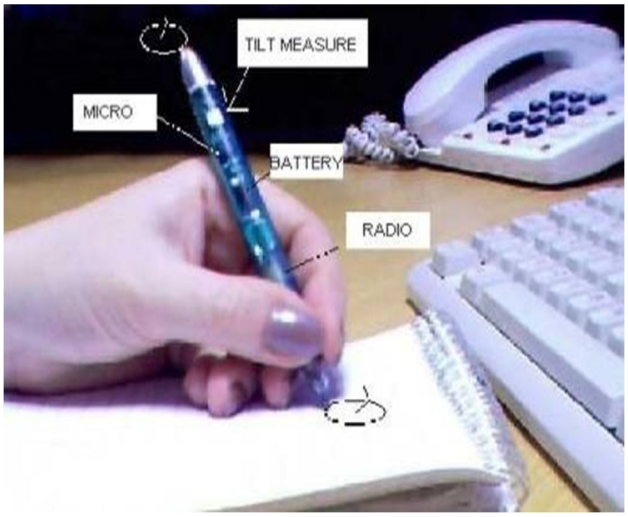


Figure 1: Smart Quill

To function, the SmartQuill does not require a screen. The technology's ability to read handwriting on any flat surface, horizontal or vertical, is the really clever part.

To read the information stored in the pen, there is also a small screen with three lines. Users can scroll down the screen by tilting the pen slightly. The user teaches the pen to recognize a particular style of writing. The pen can recognize messy writing as long as it is consistent.

IV. FEATURES AND TECHNOLOGY USED

A. Display Scrolls By Tilting Screen

By tilting the pen, user can choose applications and scroll through without using scroll buttons. Below is an image of Smart Quill tilting Screen designed by Lindsey Williams for BT Labs. The pen would align text if it was held in left or right hand so the text was the correct way up for left or right handed people. This was done by using Micro Electromechanical Systems (MEMS) tilt sensors to measure tilt angle to earth. The Smart Quill microcontroller read the angle and then mapped the large screen display onto the small 4 line display. Smart Quill could also scroll through pages of display by tilting it in the hand and power off if no hand movement was detected or pen was flat on a desk. The demonstration unit below shows display inverting as Smart Quill was inverted in the hand

Smart Quill makes use of a 14-inch LCD display manufactured by Kopin Corp. It uses circuitry that is constructed on a silicon wafer, which is then taken out and mounted on glass.The displays are integrated into miniature monitors with their own backlight, optics, packaging, and ICS

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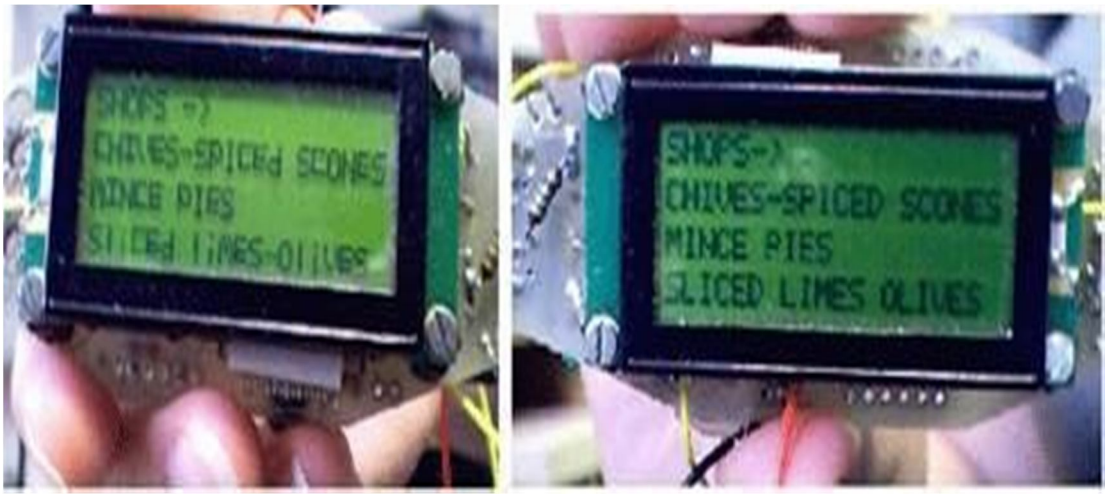


Figure 2: Display Screen

B. Handwriting Recognition and Signature Verification

The pen's microprocessor houses this software, which is used to recognize the user's handwriting. The pen is used in conjunction with a typical personal computer, onto which users install specialized software for handwriting recognition.

The handwriting recognition software translates movements in to text on screen. Handwriting recognition software constitutes two major phases:

1) Handwriting Transcription

The recorded acceleration signals are then transcribed back into their original form during this phase. In order to retrace the pen tip movement on paper, this aspect is resolved using the straightforward double integration method in this instance.

2) Handwriting Recognition

The recognition of characters and signatures is the second important aspect. The pen's hardware, which includes accelerometers and a contact detector, has proven to be a very effective combination for this application.

C. Display Scrolls by Tilting Screen

By tilting the pen, the user can select applications and navigate them without using the scroll keys. This is a rendering of the Smart Quill screen that tilts, made by Lindsey Williams for BT Labs. The text would be oriented so that left- or right-handed people could read it in the proper alignment regardless of whether the pen was held in the left or right hand. Micro Electromechanical Systems (MEMS) tilt sensors were employed to calculate the tilt angle with respect to the ground. After determining the angle, the Smart Quill micro controller translated the huge screen display onto the compact four-line display.

Moreover, the Smart Quill could be tilted in the hand to scroll through the pages of the display and turn off if there was no hand movement.



Figure 3: Display Scrolls by Tilting Screen

D. Communication with Other Devices

The current prototype connects to a PC via a cable and electronic docking station known as an "inkwell," whereas earlier Smart Quill models developed by BT laboratories communicated with the PC via a radio transmitter. When the computer is plugged into a docking station, the data that has been stored in the memory is transferred to the computer. A small cabinet known as an electronic docking station is used to connect a laptop or notebook computer to a desktop computer. typically have ports that can be linked to components like a keyboard, monitor, or printer as well as a connector for externally connected devices like hard drives or scanners. To send data electronically, it can also be connected to a printer, modem, or mobile phone. A National Instruments capture card with a frequency of 1000 Hz and a low pass filter of Fc=1/3*Fe is used to digitize the pen's output accelerometer signals. Future models could use a wireless messaging system to receive messages from pagers and e-mails. This enables two-way wireless communication with other computing devices.

V. APPLICATIONS

Not all of Smart Quill is space-age. Because it has an ink cartridge, users can see what they write on paper. Therefore, one straightforward use for Smart Quill is to write notes on paper. The data that was recorded with the pen is then transferred to the computer.

Smart Quill supports speech recognition and voice recording. ADPCM speech compression makes voice recording possible, and Smart Quill also lets third parties add on applications. Smart Quill can be used with one hand because it is completely portable and smaller.

It is used to receive messages from email and pagers. This is made possible by recent technology in Smart Quill, the wireless messaging system that lets devices talk to each other in both directions.

For a variety of purposes, the data that is stored in the pen can be input into other devices like printers, modems, desktop computers, and mobile phones.

It also provides handheld computer applications such as digital diary, contacts, calculators etc.

VI. DISADVANTAGES

It appears to be not only undesirable but also unnecessary in Smart Quill. Because the pen is a common input device, combining its input and output capabilities may cause user confusion (such as when to look at it, how to hold it while looking at the screen, and can I really write something at the same time). According to BT, the screen's small size necessitates constant cursor control and also causes writing and screen control to interfere.

VII. CONCLUSION

The goal of this paper is to give people a pen that can do much more than just write with it. We have gone over the workings of Smart Quill in detail. For people who take notes on paper, this is a big help. The various features and their usefulness are discussed in this paper. Likewise, in this paper we have examined the different benefits and impediments of this unprecedented pen. The specifics of how the invention the inventor had in her dreams are described in this paper.

Two things are supported by SmartQuill: small size and ease of use In the future, SmartQuill will make certain that the pen has all of the power needed for computation.

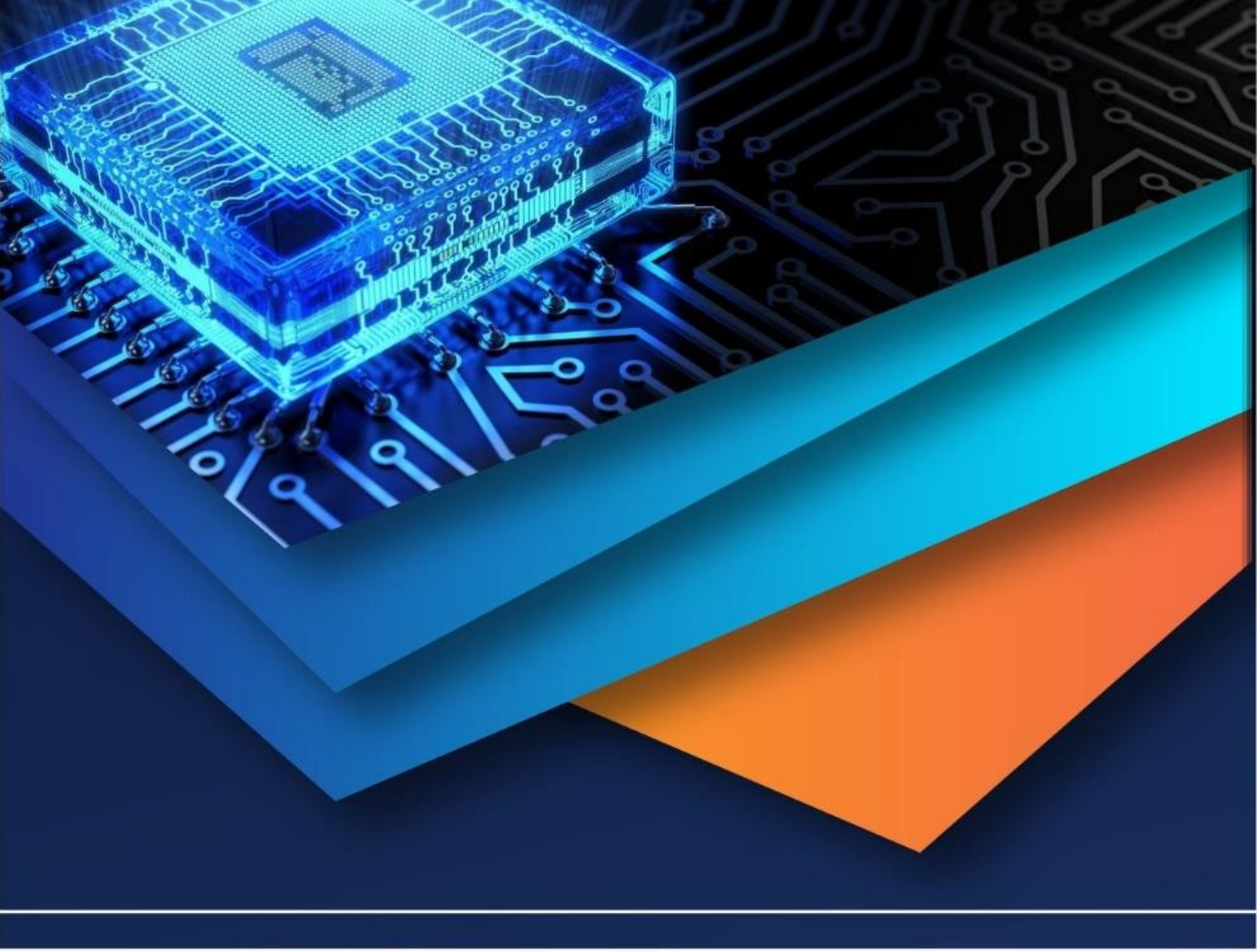
Before they become unusable, handheld computers can only be reduced to a certain point. To read simple text on screens, you need to constantly use a cursor, and keyboards have become so small that you need fingers the size of needles to use them. The introduction of SmartQuill is the most efficient solution to this problem.

The smart quill is a great tool for those who write in traditional languages. It lets you type and has a bunch of applications. We might not be able to distinguish between the computer itself and the tools we use to interact with it in the future

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