5 Pen PC Technology

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Abstract--5pen pc technology is a revolutionary new input device that is being developed to revolutionize the way we interact with computers. It uses a combination of five stylus pens and a wireless receiver to create a 3-dimensional input space. By moving the pens in various directions and combinations, users can input complex commands and quickly navigate their computers. The 5pen pc technology is designed to be intuitive and easy to use, allowing users to perform a variety of tasks with minimal effort. This technology has the potential to increase productivity, reduce costs, and provide a more natural and efficient way of interacting with computers. It also has the potential to revolutionize virtual reality and augmented reality applications, allowing for more immersive experiences.

Keywords: Pen-style Personal Networking Gadget Package, P-ISM, Pen, Computer, NEC Corporation, Wireless, Bluetooth, Communication, Virtual Keyboard, LED Projector, Digital Camera, CPU, Dual-Core Processor, Windows, Tri-Wireless Modes, 802.11B/G, Terabytes of Data Storage, Frequency Band, 2.4 GHz ISM.

I.   INTRODUCTION

The world is witnessing rapid advancements in Communication Technology, especially with the development of P-ISM ("Pen-style Personal Networking Gadget Package") by NEC Company. This innovative gadget package is essentially a computer that has been broken down into smaller parts, each the size of a pen. The projected screen and keyboard make it possible to use P-ISM on any surfaceThe device includes five attributes: a handwriting-enabled pen-style cell phone, a virtual keyboard, a miniature projector, a camera scanner, and a personal ID key with a cashless pass capability. Short array wireless technology connects all the components, and the cellular phone function provides internet access. This minimalist pen-style gadget is a significant step towards ubiquitous computing.

In 2003, Japanese tech company NEC developed a conceptual prototype of the "pen" computer, called the "P-ISM" or "Pen-style Personal Networking Gadget". [1],[11][15]
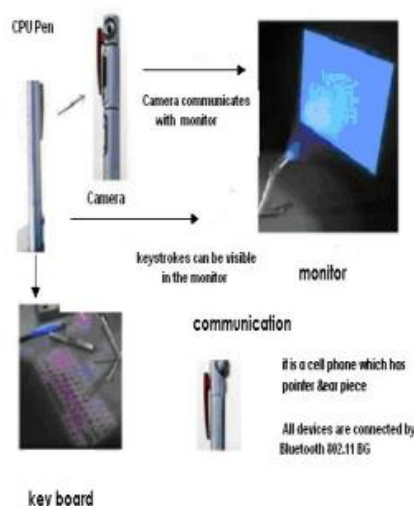

Figure: 1. Classification of 5Pen Technology

I.   LITERATURE SURVEY

This device was featured at the 2003 ITU Telecom World event in Geneva, Switzerland. The designer, Toru Ichihash, who is also the creator of the 5 Pen Technology, was inspired by the question, "What is the future of IT when it is small?" and decided that the pen was a logical choice. Ichihash also wanted to enable a "office everywhere" and make a product that could be physically handled. Although a conceptual pen computer prototype was created in 2003, consumer-grade versions of these gadgets are still not readily available. Five different pens are used in the design concept, each with a specific function: CPU, camera, virtual keyboard creator, visual output projector, and communicator (phoneA holding block that recharges the batteries and offers bulk storage can be used to keep all pens. The pens communicate wirelessly, possibly using Bluetooth technology.[13],[17],[19]

5Pen technology, like all other technologies, has a history that dates back to the invention of the digital computer, which is when computers first began to use the coherent idea of a defined attribute and a structural (segmented) view function. The input phase is a part of the digital computer's structure [2],[18],[26]

Phases of output, processing, memory, control unit, etc. In contrast to the analogue era, when systems were prone to error, since Since the emergence of digital computers as outlined by Von Neumann, the designed in this format/structure have seen a turnaround advancement.. In this time period, retrieving and transferring data were recognised to be challenging, and the adaptability of the systems designed was questioned. Sharing resources was actually more difficult during this time, which led to the enslavement of those without knowledge. [3], [4],[12],[16]

III.   Materials and Methods

A.   P-ISM:PEN-STYLE PERSONAL NETWORKING GADGET PACKAGE

The P-ISM, or Pen-Style Personal Networking Gadget Package, is a new discovery currently in the developing stage by NEC Corporation. It's a gadget package that includes five functions and is designed in a minimalist pen style. A pen-style cell phone with a handwriting data entry feature, a virtual keyboard, a tiny projector, and a photo scanner are some of these features. The primary means of networking various peripherals is short-range wireless technology, notably Bluetooth, which is how P-ISM devices are connected to one another. Moreover, the cellular phone feature allows the full P-ISM set to be connected to the internet. P-ISM allows for the digital capture of handwritten data and the Wireless transmission of that data to digital devices, making it a convenient tool for note-taking. The pen-style design makes it a natural choice for anyone accustomed to using pen and paper, while the Bluetooth connectivity and wireless capabilities enable universal computing.[9],[14],[17]

Figure: 2. Diagram of Pen PC CPU

B.   HOW DOES IT WORK?

A package of five pens, each with a different function, makes up the P-ISM, or Pen-style Personal Gadget package, a virtual computing experience. When used together, these pens can create a keyboard and monitor on any flat surface, enabling users to execute tasks they would typically perform on a desktop computer. The Bluetooth short-range wireless technology is used to connect the ISM pens to one another. The full set is additionally linked to the internet via the cellular phone feature. With P-ISM, it's possible to carry a virtual computer in the form of a pen-style package and perform computing functions on any flat surface, making it a convenient and versatile tool for computing on-the-go.[20]
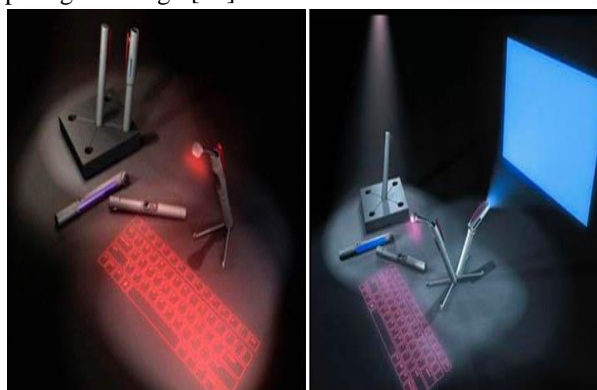

Figure 3. Virtual Keyboard and projector

C. THE FIVE COMPONENTS OF P-ISM:

During the 2003 Geneva Telecom Expo, the NEC Corporation demonstrated the adaptability of 5Pen Technology. In order to construct a prototype, this technology combines a number of currently available technologies, including Bluetooth, Network, Camera, and virtual reality techniques. Figure 2.0 depicts the functions of each class of the 5Pen, which carry out interdependent heterogeneous and homogeneous activities. In order to develop a full computer system that can accomplish the same duties as an office computer (Desktop/Laptop) without any movement limitations, the 5Pen Technology integrates a number of technologies. The functionality of this device is comparable to that of the human body, where each portion serves a specific purpose to allow for simple movement. The 5Pen Technology does not provide any Pen supremacy over the others because they are all interchangeable.[5],[6]

The components are

1. CPU pen
2. Communication pen
3. Virtual keyboard
4. LED projector
5. Digital camera

D. COMMUNICATION PEN

P-ISM devices utilize short-range wireless technology to connect with each other and the internet. Tri-wireless modes, which combine Bluetooth, 802.11B/G, and data storage capacities greater than that of modern hard discs, are used to establish this communication. This wireless connectivity eliminates the need for wires and allows for seamless connection whenever needed. The devices use various access techniques but operate in the 2.4 GHz ISM bandwidth. While other methods have been created that do not need communications between the devices, the Bluetooth mechanism is used to exchange transmission status information between two devices. Some methods, like Bluetooth's Adaptive Frequency Hopping, offer a thorough and effective answer to the most critical connectivity issues, and semiconductor makers may put them into practise. [8],[9],[22]

Figure: 5. Communication Pen

E. VIRTUAL KEYBOARD

The Virtual Laser Keyboard, often known as the VKB, is a much desired device for PC users. It projects a QWERTY keyboard layout onto any flat surface using a laser light, providing a full-size and fully functional keyboard that seamlessly connects to PCs and several portable devices. As we type on the laser projection, the VKB analyses our keystrokes based on the coordinates of the location. Essentially, A virtual keyboard is a piece of software that allows people to type characters., and it can be used with various input devices, such as touch screens, physical keyboards, computer mice, head mice, and eye mice. [7],[9],[21]

Figure 6. Virtual Keyboard

F. LED PROJECTOR

The LED projector in the P-ISM package serves as a monitor and projects images onto a screen or surface. It has a resolution of 1024 X 768, which provides decent clarity and a good picture. Video projectors are frequently utilised in a variety of settings, including classroom instruction, home theatre, and live events. They operate by taking in a video signal and managing a lens system to project the associated image onto a projection screen. Most modern projectors can correct any image distortion or inconsistencies through manual settings. In educational settings, projectors are often used in conjunction with interactive whiteboards to enhance teaching and learning experiences [8,[9],[24]

G. DIGITAL CAMERA

It sounds like the digital camera pen in the P-ISM package has a variety of features. In addition to capturing still images, it can also record video, function as a webcam for video conferencing, and has a 360-degree view for visual communication. The camera is also able to connect with other devices through Bluetooth, allowing for easy transfer of images and videos. The 360-degree view and super wide angle camera would be useful for group communication and for capturing a wider range of surroundings [8],[9],[25]

Figure 7.5Pen technology Digital Camera

H. CPU PEN

Mohammad et. al., [7] One of the pens in the P-ISM package is responsible for the CPU's functionality, commonly referred to as the **computing engine**. This pen comes with a dual-core CPU and is compatible with the Windows operating system. The CPU is a crucial component of any computer system, responsible for putting software applications into action and executing the system's fundamental arithmetic, logical, and input/output processes. The central processing unit (cpu) unit executes each set of instructions sequentially, permitting the computer to perform complicated tasks and operations. [8]

Figure: 4. Light Emitting Diode (LED) Projectors.

I. ADVANTAGES

1. Portability: The P-ISM package is designed to be highly portable, making it easy to carry around and use on-the-go. It eliminates the need for a bulky desktop computer or laptop and allows users to work from anywhere.
2. Cost-effective: The compact design of P-ISM makes it more cost-effective than traditional computer systems. It requires less hardware and less energy to operate, resulting in lower costs for the user.
3. Wireless Connectivity: P-ISM uses Wi-Fi technology to provide wireless connectivity, eliminating the need for cables and making it easier to connect to the internet or other devices.
4. Multifunctional: The 5 pen technology package is multifunctional, providing users with a range of capabilities, including web browsing, email, document editing, and
5. multimedia playback.

6. Interactive and Intuitive: P-ISM allows users to interact with the technology using touch and feel technology, which makes the interface more intuitive and user-friendly.

J. DISADVANTAGES

1. Limited functionality: 5 pen technology is limited to only writing and drawing, and does not offer the same functionality as a computer or other electronic devices.
2. Limited durability: The pens used in 5 pen technology may not be as durable as other writing instruments, which could result in a shorter lifespan.
3. Limited accuracy: The accuracy of the technology may not be as high as that of other electronic devices, such as a tablet or computer, which could result in errors or inaccuracies in the notes or drawings.
4. Limited compatibility: 5 pen technology may not be compatible with other devices or software, which could limit its usefulness in certain situations.
5. Limited availability: 5 pen technology may not be widely available or accessible, which could make it difficult for users to obtain or replace the pens and associated materials.
6. Limited functionality: 5 pen technology is limited to only writing and drawing, and does not offer the same functionality as a computer or other electronic devices.
7. Limited memory: As it is not an electronic device, 5 pen technology does not have the ability to store large amounts of data or information.

IV. RESULT

The technology is designed to be intuitive and easy to use, allowing users to perform a variety of tasks with minimal effort. The paper also discusses the history of the technology, its five components, and how it works. The 5 Pen PC Technology has the potential to increase productivity, reduce costs, and provide a more natural and efficient way of interacting with computers. Additionally, it has the potential to revolutionize virtual reality and augmented reality applications, allowing for more immersive experiences. This will lead to an convenient and easiest way to use the computer in advanced ways rather than traditional ways.[3],[7] ,[4] ,[20],[21].s

Figure 8. Picture of 5Pen Technology.

V.   CONCLUSION

The trend in technology is for communication devices to become increasingly smaller and more compact, with the expectation of more such developments in the future. Despite their small size, these information terminals continue to be manipulated with our hands. A novel example of this trend is the P-ISM, a gadget package that resembles a pen and includes A pen-style cell phone with the ability to input handwriting data, a virtual keyboard, a mini projector, a camera device, and a personal ID key with a cashless pass feature are the five features. Short-range wireless technology links these P-ISMs to one another, while cellular phone functionality links them to the internet .The design concept of the P-ISM is based on using five different pens, each with a specific function, to create a computer. A holding block that stores the mass storage and allows for battery recharging may accommodate all five pens, while communicating wirelessly, potentially via Bluetooth. Ultimately, the P-ISM represents a sleek and minimalistic gadget that enables ubiquitous computing.

VI.   REFERENCES

[1] Di Blas A. (Orig. by C. Barzeghi) 2006. CMPE12-Fall, History of Computers. University of California Berkeley 1868.

[2] Randell B. (1973). The History of Digital Computer. Computing laboratory, university of Newcastle upon tyne

[3] Alan C. (2012). Honesty in History. School of Computing, University of Teesside, Middlesbrough TS1 3BA, UK.

[4] Brice C. (2000). An introduction to digital computers and the mad language. Assistant professor of chemical engineering and Biostatistics, university of Michigan

[5] Anandhavadivel S. (2013). 5 Pen Pc Technology department Of Electronics & Communication Engineering, Perunthalaivar Kamarajar Institute Of Engineerring And Technology Karaikal

[6]   Conrad   H.   &   Blickenstorfer   (2003).   Pen   Windows/Webpads/Tablet   Pcs. http://pencomputing.com/frames/tpc_intermecct60.html

[7] Mrunal S. & Mohammad U. (2013). 5 Pen PC Technology, International Journal of Scientific & Engineering Research, Volume 4, Issue 12, Page 2229-5518

[8] Maxwell (2018). 5PEN TECHNOLOGY: A New Dawn in Homogeneous and Heterogeneous Computing. International Journal of Computer Science & Information Technology (IJCSIT) Vol 8, No 2, April 2016

[9] ApekshaPrabhuGaonker (2018) , 5 Pen PC Technology, International Journal of Computer Science Engineering (IJCSE), Vol. 7 No.04

[10] M. Sumithra and Dr. S. Malathi, "A Novel Distributed Matching Global and Local Fuzzy Clustering (DMGLFC) FOR 3D Brain Image Segmentation for Tumor Detection", IETE Journal of Research, doi.org/10.1080/03772063.2022.2027284, 2021

[11] B.Buvanswari and T.Kalpalatha Reddy, "A Review of EEG Based Human Facial Expression Recognition Systems in Cognitive Sciences" International Conference on Enenrgy, Communication,Data analytics and SoftComputing(ICECDS),CFP17M55-PRJ:978-1-5386-1886-8",August 2017.

[12] M. Sumithra and Dr. S. Malathi, " Modified Global Flower Pollination Algorithm-based image fusion for medical diagnosis using computed tomography and magnetic resonance imaging", International Journal of Imaging Systems and Technology, Vol. 31, Issue No.1, pp. 223-235, 2021

[13] K. Sridharan , and Dr. M. Chitra "SBPE: A paradigm Approach for proficient Information Retrieval , Jokull Journal" , Vol 63, No. 7;Jul 2013

[14] M. Sumithra and Dr. S. Malathi, "3D Densealex NET Model with Back Propagation for Brain Tumor Segmentation", International Journal OfCurent Research and Review, Vol. 13, Issue 12, 2021.

[15] B.Buvaneswari and Dr.T. Kalpalatha Reddy,"EEG signal classification using soft computing techniques for brain disease diagnosis",Journal of International Pharmaceutical Research ,ISSN : 1674-0440,Vol.46,No.1,Pp.525-528,2019.

[16] K. Sridharan , and Dr. M. Chitra "Web Based Agent And Assertion Passive Grading For Information Retervial", ARPN Journal of Engineering and Applied Sciences, VOL. 10, NO. 16, September 2015 pp:7043-7048

[17] M. Sumithra and Dr. S. Malathi, "Segmentation Of Different Modalitites Using Fuzzy K-Means And Wavelet ROI", International Journal Of Scientific & Technology Research, Vol. 8, Issue 11, pp. 996-1002, November 2019.

[18] M. Sumithra and S. Malathi, " A Survey of Brain Tumor Segmentation Methods with Different Image Modalitites", International Journal of Computer Science Trends and Technology (IJCST) – Vol. 5 Issue 2, Mar – Apr 2017

[19] B.Buvaneswari and Dr.T. Kalpalatha Reddy, "High Performance Hybrid Cognitive Framework for Bio-Facial Signal Fusion Processing for the Disease Diagnosis", Measurement,ISSN: 0263-2241, Vol. 140, Pp.89-99,2019.

[20] M. Sumithra and Dr. S. Malathi, "A Brief Survey on Multi Modalities Fusion", Lecture Notes on Data Engineering and Communications Technologies, Springer, 35, pp. 1031-1041,2020.

[21] M. Sumithra and S. Malathi, "A survey on Medical Image Segmentation Methods with Different Modalitites", International Journal of Engineering Research and Technology (IJERT) – Vol. 6 Issue 2, Mar 2018.

[22] B.Buvaneswari and Dr.T. KalpalathaReddy,"ELSA- A Novel Technique to Predict Parkinson's Disease in Bio-Facial",International Journal of Advanced Trends in Computer Science and Engineering, ISSN 2278-3091,Vol.8,No.1,Pp. 12-17,2019

[23] K. Sridharan , and Dr. M. Chitra , Proficient Information Retrieval Using Trust Based Search On Expert And Knowledge Users Query Formulation System, Australian Journal of Basic and Applied Sciences, 9(23) July 2015, Pages: 755-765.

 [24] B.Buvaneswari and Dr.T. Kalpalatha Reddy, "ACPT- An Intelligent Methodology for Disease Diagnosis",Journal of Advanced Research in Dynamical and Control Systems,ISSN : 0974-5572,Vol.11,No.4,Pp.2187-2194,2019.

[25] Sumithra, M., Shruthi, S., Ram, S., Swathi, S., Deepika, T., "MRI image classification of brain tumor using deep neural network and deployment using web framework", Advances in Parallel Computing, 2021, 38, pp. 614–617.

[26] K. Sridharan , and Dr. M. Chitra "RSSE: A Paradigm for Proficient Information Retrieval using Semantic Web" , Life Science Journal 2013;10(7s), pp: 418-425