Vasavi College Of Engineering

TECHGYAN

Department Of Computer Science & Engineering

EDITORIAL

All those in the field of computer science and medicine know how rapidly things seem to be jumping into the market scene if one does not look out. A number of browsers, operating systems, platforms, all only to make our lives easier as far as programming an idea is concerned, because that is what one lives by in the world, a nascent idea.

If you are looking at a job, or plainly to make money or even if it's passion that you have, it's very important to move with the time and times right now are racing. Even if you go no further than plain programming, you'll see very soon why C and C++ are archaic and even that the way we design the web pages using html etc, as we are taught in our syllabus, are technologies that belong to an era ages ago.

Then why are we taught them?

For the concept of course but in 2011, we need to look at ways that will take the concepts that we learn further and mold them into something that will be of immense value to us that will help us realize our goals..

You might have heard a number of times that it is not sufficient if you limit your knowledge to text books and that you need to know more. You must also be seeing your peers working with softwares and platforms that you dont, such as Photoshop or Flash or Dreamweaver and in your defense, you may say that you are not like them and that you cannot learn something all by yourself like they do

But did you know that it is no longer necessary to work on those different products to gain an edge over others?

That's true. It is sufficient if you can just make yourself aware.
Let's take Photoshop for example and answer these simple questions:
1. Do you know what it is?
2. What are its uses?
3. Its advantages and disadvantages
4. How does it rate in comparison to other products of that kind?

And done!
All these answers, you'll find them on the net.. Wikipedia will be able to give you a structured look.
And now you can hold an intelligent conversation on any product plus the edge.

But if you don't know where to start, what to look for, TechGyan will be able to introduce you to a number of areas, some of which will be able to interest you and if you feel you need to know more, you can google.

So, let's move towards a different way...

Team TECHGYAN

**You must be the change you want to see in the world - M.K.GANDHI**

REDTACTON

By C. Kavya, BE 4/4, CSE-B

Technology is making many things easier so far we have seen LAN, MAN, WAN, INTERNET & many more but here is new concept of RED TACTON which makes the human body as a communication network by name HAN (Human Area Network).

RedTacton is a new Human Area Networking technology that uses the surface of the human body as a safe, high speed network transmission path. RedTacton uses the minute electric field emitted on the surface of the human body. Technically, it is completely distinct from wireless and infrared .A transmission path is formed at the moment a part of the human body comes in contact with a RedTacton transceiver. Physically separating ends the contact and thus ends communication..Using RedTacton, communication starts when terminals carried by the user or embedded in devices are linked in various combinations according to the user's Communication is possible using any body surfaces, such as the hands, fingers, arms, feet, face, legs or torso. When using a RedTacton device, the human body effectively becomes an Ethernet cable, so the body can use its electrical field to connect devices to networks or the internet. For example, if a person wearing a RedTacton device sat at a table with RedTacton capabilities that was connected to the Internet, the laptop would immediately be connected to the internet. While on the surface this seems similar to a wireless network connection, it is not. There is a physical connection, the person. Also, the connection is more secure and does not slow down if many people are using the same connection, as a wireless connection does.

Applications:
1. Instantaneous private network via personal handshake.
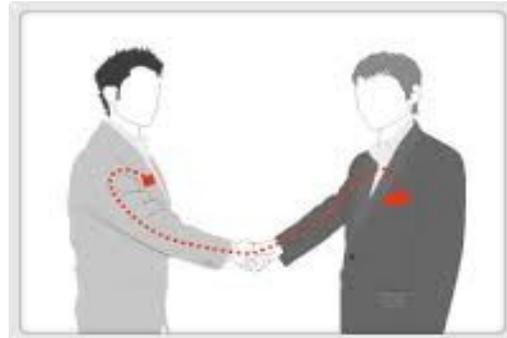
2. Connect to the network just by putting a laptop on the table.
3. Touch a printer to print.
4. Just sitting in the seat, triggers the car to load all its presets, the way you like.
5. User verification and unlocking just with a touch.

Advantages:
1. High speed
2. Currently, RedTacton is gearing up to compete with Bluetooth, Zigbee, and IrDA.
3. Security
RedTacton requires touch and has a low potential for interference, it is much more secure.In this technology there is no problem of hackers as our body is itself a media.

Future Scope:
This technology definitely stands out with perfection, when transfer of data is fast, feasible and more importantly reliable. So, in few years from now everything is going to fall under this super technology. RedTacton will replace the Bluetooth technology in few years which also works in short range because as the transmission path is on the surface of the body, transmission speed does not deteriorate in congested areas as in Bluetooth where

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Action expresses priorities   -   M.K.GANDHI

many people are communicating at the same time.

PERVASIVE COMPUTING

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What is 'pervasive'?

Pervasive literally means spreading or spread throughout. To put it simply it is computation that's freely available everywhere. Scenario where all devices are networked, human-centric, communicate and interact with each other without any hiccups; their primary objective being to bestow quality life to the user.

Pervasive computing

Pervasive computing is the trend towards increasingly ubiquitous, connected computing devices in the environment, a trend being brought about by a convergence of advanced electronic - and particularly, wireless - technologies and the Internet. Pervasive computing devices are not personal computers as we tend to think of them, but very tiny - even invisible - devices, either mobile or embedded in almost any type of object imaginable, including cars, tools, appliances, clothing and various consumer goods - all communicating through increasingly interconnected networks.

The goal of researchers is to create a system that is pervasively and unobtrusively embedded in the environment, completely connected, intuitive, effortlessly portable, and constantly available. Among the emerging technologies expected to prevail in the pervasive computing environment of the future are wearable computers, smart homes and smart buildings. Among the myriad of tools expected to support these are: application-specific integrated circuitry (ASIC); speech recognition; gesture recognition; system on a chip (SoC); perceptive interfaces; smart matter

smart matter; flexible transistors; reconfigurable processors; field programmable logic gates (FPLG); and microelectromechanical systems (MEMS).
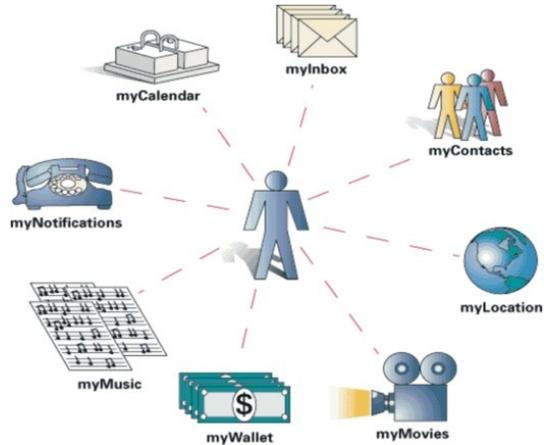
Thrusts of pervasive computing

Effective Use of Smart Spaces∷ The first research thrust is the effective use of smart spaces. A smart space brings together two worlds that have been disjoint until now.

Invisibility: The second thrust is invisibility.

Localized Scalability: As smart spaces grow in sophistication, the intensity of interactions between a user's personal computing space and his/her surroundings increases. This has severe bandwidth, energy, and distraction implications for a wireless mobile user.

Conclusion

Pervasive computing provides an attractive Vision for the future of computing. In this wireless world we will have instant access to the information and services that we will want to access with devices, such as Smart phones, PDA's etc, all linked to a network allowing us to connect anytime, anywhere seamlessly, and transparently. Whether it is how we shop, how we get

from one place to another or how we communicate, technology is clearly woven into the way we live. Indeed, we are hurtling towards 'Pervasive Computing'.

5 PEN PC TECHNOLOGY

By Y.Shilpa, BE-3/4, CSE-B

P-ISM (Pen-style Personal Networking Gadget Package), is a new discovery under development by NEC Corporation. P-ISM is a gadget package including five functions: a pen-style cellular phone with a handwriting data input function, virtual keyboard, a very small projector, camera scanner, and personal ID key with cashless pass function. P-ISMs are connected with one another through short-range wireless technology. The whole set is also connected to the Internet through the cellular phone function. This personal gadget in a minimalist pen style enables the ultimate ubiquitous computing.

CPU pen:

The functionality of the CPU is done by one of the pen. It is also known as computing engine.

Communication pen:

P-ISMs are connected with one another through short-range wireless technology. The whole set is also connected to the Internet through the cellular phone function. They are connected through Tri-wireless modes (Blue tooth, 802.11B/G,

and Cellular) which are made small and kept in a small pen like device.

Connectivity 802.11B/ and Bluetooth:

In fact, no-one expects much activity on 802.11n installations until the middle of 2008. Rolling out 802.11n would mean a big upgrade for customers who already have full Wi-Fi coverage, and would be a complex add-on to existing wired networks, for those who haven't. Bluetooth is widely used because we can able to transfer data or make connections without wires. This is very effective because we can able to connect whenever we need without having wires. They are used at the frequency band of 2.4 GHz ISM (although they use different access mechanisms). Blue tooth mechanism is used for exchanging signal status information between two devices. This techniques have been developed that do not require communication between the two devices (such as Blue tooth, Adaptive Frequency Hopping), the most efficient and comprehensive solution for the most serious problems can be accomplished by silicon vendors. They can implement information exchange capabilities within the designs of the Blue tooth. The circuit diagram for the 802.11B/G is given below. It is nothing but also type of Blue tooth. Using this connectivity we can also connect it with the internet and can access it anywhere in the world.

LED Projector:

The role of monitor is taken by LED Projector which projects on the screen. The size of the projector is of A4 size. It has the approximate resolution capacity of 1024 X 768. Thus it is gives more clarity and good picture .

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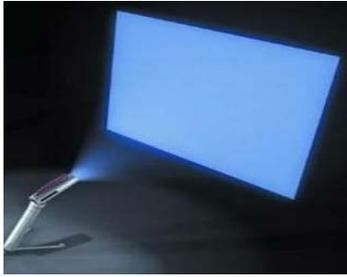
Virtual Keyboard:

The Virtual Laser Keyboard (VKB) is the ULTIMATE new gadget for PC users. The VKB emits laser on to the desk where it looks like the keyboard having QWERTY arrangement of keys i.e., it uses a laser beam to generate a full-size perfectly operating laser keyboard that smoothly connects to of PC and Most of the handheld devices (PDA's, tablet PC's). The I-Tech laser keyboard acts exactly like any other "ordinary" keyboard:

Features of virtual keyboards are:

VKB settings can be changed by Sound:
Controllable Virtual Keyboard sound effects (key clicks)
Connection: Connection to the appropriate Laptop/PC port
Intensity: Intensity of the projected Virtual Keyboard Timeouts: coordinated timeouts to conserve the Virtual Keyboard's battery life
Sensitivity: adjustable sensitivity of the Virtual Keyboard
Auto-repeat: Allows the VKB to automatically repeat a key based on prescribed parameters.
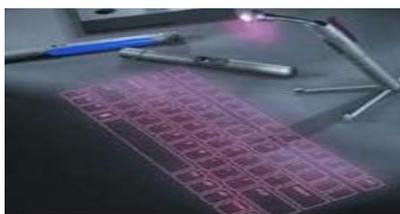
Digital Camera:

We had digital camera in the shape of pen .It is useful in video recording, video conferencing, simply it is called as web cam. It is also connected with other devices through Blue tooth. The major advantage it is small which is easily portable. It is a 360-Degree Visual Communication Device. We have seen video phones hundreds of times in movies. However, why can't we act naturally in front of videophone cameras? Conventional visual communications at a distance have been limited due to the display devices and terminals. This terminal enables showing of the surrounding atmosphere and group-to-group communication with a round display and a central super-wide-angle camera.

Battery:

The most important part in the portable type of computer is its battery. Usually batteries must be small in size and work for longer time. It comes with a battery life of 6+. For normal use it can be used for 2 weeks.
This 'pen sort of instrument' produces both the monitor as well as the keyboard on any flat surfaces from where you can carry out functions you would normally do on your desktop computer.

Conclusion:

The communication devices are becoming smaller and compact. This is only an example for the start of this new technology. We can expect more such developments in the future.

MIDORI

M. Anusha, BE 3/4, CSE-B

Forget Windows: Midori is coming…

WINDOWS is a name that has ruled the whole computer world since its first launch in November 1985. Since then it is like a trademark of Microsoft Corporation.

With many advanced versions of Windows available today such as Windows XP, Windows Vista, it is the most used operating system in the world. In 2010, Microsoft is going to launch WINDOWS 2007, but now here is time to experience a yet another technology of operating systems.

Yes, MICROSOFT is working on a new generation of operating systems called Cloud-Based Operating System and rumors are there that MIDORI will be their first such operating system, which will replace Windows fully from computer map.

WHAT'S THE DIFFERENCE?

MIDORI is an offshoot of Microsoft Research's Singularity operating system. In this the tools and libraries are completely managed code. MIDORI is designed to run directly on native hardware (x86, x64 and ARM), will be hosted on the Windows Hyper-V hypervisor, or even be hosted by a Windows process.

MIDORI can be also seen as MICROSOFT'S answer those competitors who are applying "Virtualization" as a mean to solving issues within contemporary computing.

The main idea behind MIDORI is to develop a light-weight portable OS which can be mated easily to lots of various applications. MIDORI is a managed node operating system.

The difference between managed mode and unmanaged mode is that unmanaged code is executed directly by the CPU whereas managed mode is a computer program code that executes under the management of a virtual machine! Microsoft is working to build a highly-dependable operating system in which the kernel, device drivers, and applications are all written in managed code.

IMPORTANCE OF MIDORI:

For knowing the importance of MIDORI you have to think about, how an operating system is loaded on a computer. Actually operating system is loaded onto a hard disk physically located on that machine. In this way, the operating system is tied very tightly to that hardware. As Windows is dependent on hardware, it might face opposition from contemporary ways of working because people are extremely mobile in using different devices in order get diverse information.

Due to this trend installing different applications on a single computer may led to different compatibility issues whenever the machine require updating. The new operating system will solve these problems by the concept of Virtualizing. This will solve problems such as widespread security vulnerabilities, unexpected interactions among different applications, failures caused by errant extensions, plug-ins, and drivers and many more.

Midori's proposed design is Internet-centric and provides an overall "connectedness" between applications and devices. It is being built for single systems as well as distributed systems.

STEGANOGRAPHY

R.V.Apurva, BE 3/4, CSE-B

Steganography is another form of cryptography, the use of codes. Cryptography provides privacy where as steganography aims for secrecy. Privacy is what you need when you use your credit card on the Internet -- you don't want your number revealed to the public. For this, you use cryptography, and send a coded pile of garbage that only the web site can decipher. Though the code may be un-breakable, it would be easy for any hacker to read the content of the message. For true secrecy, you don't want anyone to know you're sending a message at all. Steganography basically hides the secret message in the physical object which is sent. The cover message is merely a distraction, and could be anything.

The key innovation in recent years was to choose an innocent looking cover that contains plenty of random information, called white noise. You can hear white noise as the nearly silent hiss of a blank tape playing. The secret message replaces the white noise, and if done properly it will appear to be as random as the noise was. The most popular methods use digitized photograph. Digitized photographs and video also harbour plenty of white noise. A digitized photograph is stored as an array of colour dots, called pixels. Each pixel typically has three numbers associated with it, one each for red, green, and blue intensities, and these values often range from 0-255. Each number is stored as eight bits (zeros and ones), with a one worth 128 in the most significant bit (on the left), then 64, 32, 16, 8, 4, 2, and a one

in the least significant bit (on the right) worth just 1.

A difference of one or two in the intensities is imperceptible, and, in fact, a digitized picture can still look good if the least significant four bits of intensity are altered -- a change of up to 16 in the colour's value. This gives plenty of space to hide a secret message. Text is usually stored with 8 bits per letter, so we could hide 1.5 letters in each pixel of the cover photo. A 640x480 pixel image, the size of a small computer monitor, can hold over 400,000 characters. That's a whole novel hidden in one modest photo!

Hiding a secret photo in a cover picture is even easier. Line them up, pixel by pixel. Take the important four bits of each colour value for each pixel in the secret photo (the left ones). Replace the unimportant four bits in the cover photo (the right ones). The cover photo won't change much, you won't lose much of the secret photo, but to an untrained eye you're sending a completely innocuous picture.

There are a number of applications of Steganography. The simplest and oldest are used in map making, where cartographers sometimes add a tiny fictional street to their maps, allowing them to prosecute copycats. A similar trick is to add fictional names to mailing lists as a check against unauthorized resellers.

Most of the newer applications use steganography like a watermark, to protect a copyright on information. Photo collections, sold on CD, often have hidden messages in the photos which allow detection of unauthorized use. The same technique applied to DVDs is even more

effective, since the industry builds DVD recorders to detect and disallow copying of protected DVDs. Even biological data, stored on DNA, may be a candidate for hidden messages, as biotech companies seek to prevent unauthorized use of their genetically.
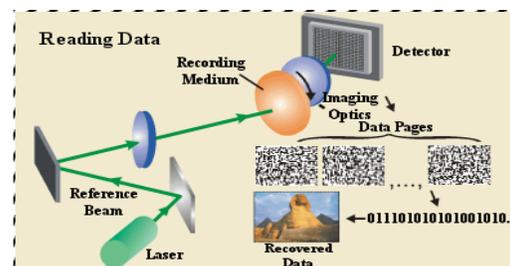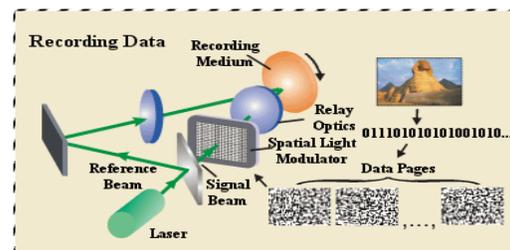
HOLOGRAPHIC MEMORY

by A.V.L Manasa, BE 3/4, CSE-B

Devices that use light to store and read data have been the backbone of data storage for nearly two decades. Compact discs revolutionized data storage in the early 1980s, allowing multi-megabytes of data to be stored on a disc that has a diameter of a mere 12 centimeters and a thickness of about 1.2 millimeters. CDs and DVDs are the primary data storage methods for music, software, personal computing and video. These conventional storage mediums meet today's storage needs, but storage technologies have to evolve to keep pace with increasing consumer demand. CDs, DVDs and magnetic storage all store bits of information on the surface of a recording medium. In order to increase storage capabilities, scientists are now working on a new optical storage method, called holographic memory, that will go beneath the surface and use the volume of the recording medium for storage, instead of only the surface area. Three-dimensional data storage will be able to store more information in a smaller space and offer faster data transfer times. In this article, you will learn how a holographic storage system might be built in the next three or four years, and what it will take to make a desktop version of such a high-density storage system.

Holographic memory offers the possibility of storing 1 terabyte (TB) of data in a sugar-cube-sized crystal. A terabyte of data equals 1,000 gigabytes.

When the blue-green argon laser is fired, a beam splitter creates two beams. One beam, called the object or signal beam, will go straight, bounce off one mirror and travel through a spatial-light modulator (SLM). An SLM is a liquid crystal display (LCD) that shows pages of raw binary data as clear and dark boxes. The information from the page of binary code is carried by the signal beam around to the light-sensitive lithium-niobate crystal. Some systems use a photopolymer in place of the crystal. A second beam, called the reference beam, shoots out the side of the beam splitter and takes a separate path to the crystal. When the two beams meet, the interference pattern that is created stores the data carried by the signal beam in a specific area in the crystal -- the data is stored as a hologram.

An advantage of a holographic memory system is that an entire page of data can be retrieved quickly and at one time. In order to retrieve and reconstruct the holographic page of data stored in the crystal, the reference beam is shined into the crystal at exactly the same angle at which it entered to store that page of data. Each page of data is stored in a different area of the crystal, based on the angle at which the

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reference beam strikes it. During reconstruction, the beam will be diffracted by the crystal to allow the recreation of the original page that was stored. This reconstructed page is then projected onto the charge-coupled device (CCD) camera, which interprets and forwards the digital information to a <u>computer</u>.

These devices could have storage capacities of 1 TB and data rates of more than 1 GB per second -- fast enough to transfer an entire <u>DVD</u> movie in 30 seconds.

The lack of cheap parts and the advancement of magnetic and <u>semiconductor</u> memories placed the development of holographic data storage on hold. Researchers are confident that technologies will be developed in the next two or three years to meet these challenges.

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Non-violence is the article of faith — <u>M.K.GANDHI</u>