



VIDYAVARDHINI'S COLLEGE OF
ENGINEERING & TECHNOLOGY

LOGIN

TO EXPLORE

Department Of

**INFORMATION
TECHNOLOGY**

8TH Edition

Vidhyavardhini's College Of Engineering & Technology

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From HOD'S Desk

I am immensely proud to present to you yet another edition of VCET Information Technology's departmental magazine, "LOGIN...To Xplore". The magazine you are holding in your hands right now is the epitome of the zealous activities and profound involvement of the students as well as the staff of the Information Technology Department.

This magazine will take you through a thrilling journey of fast paced world of changing and emerging IT industry and technologies thereby acquainting you readers with the hitherto unknown marvels of the world of technology. For second, third and fourth year students, it will provide the invaluable inside into what to be ready for, what skill sets are essential in the industry and thus how to prepare themselves for employment.

The department staff predominantly the Staff-In-Charges of the I-TECH committee Prof. Bharti Gondhalekar and the students who have worked tirelessly for this magazine are to be highly congratulated for bringing out such a fine, informative piece of publication. I hope the IT Department and I-TECH Committee will continue to strive and make mammoth efforts to keep up their good work and raise the bar of their soaring ability.

Happy Reading!!!

Prof. Madhvi Waghmare
Head Of Department, INFT
VCET



From Staff-Incharge's Desk

We are happily delighted to present to you the sixth edition of "LOGIN... To Xplore", the annual technical magazine of the department of Information Technology. The magazine that you hold in your hands now is an outcome of grueling efforts of everyone involved in making fuelled by right mix of passion, dedication and determination. The magazine under I-TECH committee was first published in the academic year 2009-2010. The first edition of magazine was named "Dig-It" which was later named as "Login... To Xplore"..

The Key Purpose of this magazine is to convey to the readers the trends and developments in the field of Information Technology. You will see the success story of various Entrepreneurs in the field of Information Technology with their Interviews in this edition of the magazine. Also, the I-TECH committee aspires to provide the students with continual exposure to the ever-increasing scope of Information Technology enriching the knowledge based in their chosen field and thereby acquainting them with knowledge pertaining to the IT industry that awaits them

For and behalf of I-TECH committee we would like to extend our sincere gratitude to Dr.A.V.Bhonsale-Our honorable principal for his support and guidance as also Prof. Madhavi Waghmare - H.O.D of information Technology Department for constantly encouraging us to make this magazine bigger and better and infusing us with dynamism to succeed in our endeavors. Also a special word of thanks to our dedicated team of designers, editors, and PRs as also the entire I-TECH Committee who have put in their heart and soul to the making of this magazine..

We are sure you will enjoy the technological extravaganza this magazine holds.

Prof.Bharti Gondhalekar
Staff-In-Charge,
ITECH-Committee



CHAIRPERSON'S DESK

“The function of education is to teach one to think intensively and to think critically. Intelligence plus character - that is the goal of true education.” -Martin Luther King, Jr.

I take this opportunity to thank and congratulate all members of ITECH for making a valiant attempt to reach our desired goals and executing it with precision. ITECH is a committee which looks after all the technical activities as well as academic interests of all students pursuing Information Technology engineering in VCET. We aim in keeping the students updated with the latest enthralling technologies and advancements.

To give an over view of the committee: it was formed by Prof. Anagha Patil in 2010 and it launched its first technical publication-‘Login : to explore’ informing students about the latest technologies. Since then we have come a long way and this is our 6th edition.

Amidst the placement season we present our diverse articles focusing on our juniors like the best programming language every beginner should learn. As certifications are an added advantage when placements come into picture, we have also added some top IT certifications.

I would extend my thanks to our respectable H.O.D Prof.Madhavi Waghmare who gave us our invaluable time and support. We are thankful to our staff in charge Prof. Bharti Gondhalekar, and Prof. Anagha Patil, the teaching and non-teaching staff of IT department for their constant encouragement and guidance.

We plan to outdo our expectations each year and we will do that in coming years too, by organizing new events to encourage fellow students’ participation and expand the committee’s horizons. We assure to remit a better and enlightening magazine and carry forward the vision.

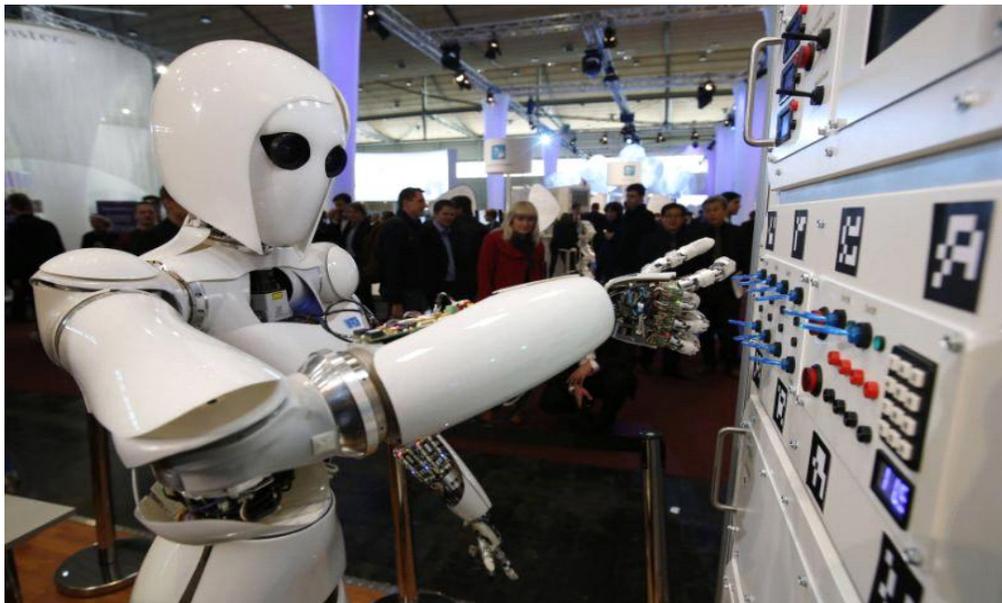
Kuldeep Mourya
-BE IT

LOGIN

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1. Artificial Intelligence May Require New Laws

Artificial intelligence (AI) is intelligence exhibited by machines. In computer science, the field of AI research defines itself as the study of "intelligent agents": any device that perceives its environment and takes actions that maximize its chance of success at some goal. Colloquially, the term "artificial intelligence" is applied when a machine mimics "cognitive" functions that humans associate with other human minds, such as "learning" and "problem solving" (known as Machine Learning). As machines become increasingly capable, mental facilities once thought to require intelligence are removed from the definition. For instance, optical character recognition is no longer perceived as an example of "artificial intelligence", having become a routine technology. Capabilities currently classified as AI include successfully understanding human speech, competing at a high level in strategic game systems (such as Chess and Go), self-driving cars, intelligent routing in content delivery networks, and interpreting complex data.



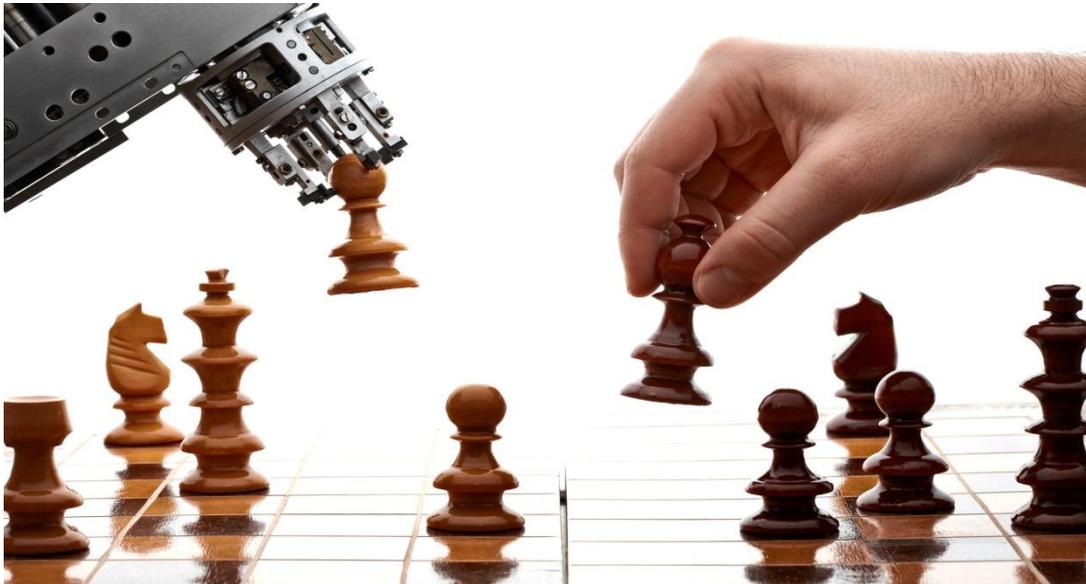
The International Bar Association said new legal structures will be needed for the "fourth industrial revolution."

The coming era of artificial intelligence and automation will drastically change the workplace, and new laws need to exist to keep up with impending changes, an international group of lawyers.

The Global Employment Institute of the International Bar Association released a 120-page report Tuesday, titled "Artificial Intelligence and Robotics and Their Impact on the Workplace." In the report, the legal group warned technological change is outpacing our ability to pass new legislation and install legal frameworks, which means our laws won't reflect the workforce realities they govern if countries don't move quickly to keep up.

Read: China Technology 2017: Artificial Intelligence Research Gets Billions To Develop New Robots,

"The AI phenomenon is on an exponential curve, while legislation is doing its best on an incremental basis," Gerlind Wisskirchen, one of the report's authors, said in a statement. "New labor and employment legislation is urgently needed to keep pace with increased automation."



The report explores what types of laws countries might adopt in the wake of widespread automation. The authors imagine a marketplace that values "human-made" products like consumers currently value organic or fair-trade goods. Products might need "Made By Humans" labels, for example. Laws could be implemented that require quotas for human workers, or give tax breaks to companies that employ human beings.

Roshni Patel

TE IT

Reference: (<http://www.livescience.com>)

2.GREEN COMPUTING

INTRODUCTION

Green computing is in the news a lot and is often a buzzword at trade shows and sales meetings, but what does the term "green computing" really mean? Here we look at the essential concepts involved with green computing to help readers differentiate between hype and reality.

Defining Green Computing

Green computing seeks to minimize the environmental impact of information technologies. This is done by implementing several core concepts that impact products which are deployed in the business environment and how those products are managed.

Here we look at core concepts of green computing that help can help form the basis of any environmentally sustainable business model.



Virtualization

By allowing multiple servers to function on a single hardware platform, fewer servers are needed to support the enterprise. Virtualization, therefore, has multiple "green" aspects that help make modern businesses environmentally sustainable. These aspects are as follows:

1. Power conservation. Although servers that host virtualized resources are not necessarily more energy efficient than a standalone server, the reduced number of servers required to support a business or data center reduces power demands by default.

2. Manufacturing. Because fewer servers are required to support modern businesses, this reduces the amount of raw materials that must be extracted from the earth. Additionally, recycled materials can be used in green computing products to induce further reductions in resources required for the manufacturing process.

3. External factors. Some of the benefits of virtualization are incidental with implementation. Fewer physical servers means less space is needed to perform the same functions. This reduces the scope required for buildings, further reducing the footprint of a business on the environment.

eWaste and Recycling

Greenpeace and other organizations have been instrumental in drawing attention to the adverse affects of discarded computer equipment has had on the earth. Waste has contaminated ground and water in some of the poorest parts of the world, resulting in untold human misery and potentially irreversible damage to the environment.

Fortunately, the awareness of the impact of electronic waste has allowed businesses to develop new procedures for recycling that help keep the environment free of toxins while reducing the need for new raw materials in the manufacturing process

Conservation

The final concept of green computing we mention here is the overall conservation effort. Green computing must use power efficiently, reducing demand over non-green devices. This mandates power management technology that reduces electricity use while devices are idle.

The government's Energy Star program has set forth criteria defining power requirements that help define when computing devices are green. Although these requirements may not define the maximum power savings possible, they help IT manufacturers and consumers alike determine what devices may be considered as environmentally friendly.

Other concepts involving conservation are also at play. For example, technologies that facilitate telecommuting are green because they help reduce the consumption of fossil fuels by commuting workers and the associated pollution emanating from motor vehicles.

Conclusion

Equipment that does not conform to the concepts of green computing mentioned here may not be green at all. To be green, computing devices must have a minimal impact on the environment throughout their life cycle. For example, it is hard to consider power-efficient devices manufactured using environmentally destructive processes to be green indeed.

It is, therefore, the responsibility of businesses and consumers to purchase and use equipment that adheres to as many green concepts as possible.

Kuldeep Mourya

BE IT

Reference: (<http://www.pcworld.com>)

3. Machine learning

Machine learning is a method of data analysis that automates analytical model building. Using algorithms that iteratively learn from data, machine learning allows computers to find hidden insights without being explicitly programmed where to look.

Evolution of machine learning

Because of new computing technologies, machine learning today is not like machine learning of the past. It was born from pattern recognition and the theory that computers can learn without being programmed to perform specific tasks; researchers interested in artificial intelligence wanted to see if computers could learn from data. The iterative aspect of machine learning is important because as models are exposed to new data, they are able to independently adapt. They learn from previous computations to produce reliable, repeatable decisions and results. It's a science that's not new – but one that's gaining fresh momentum.

While many machine learning algorithms have been around for a long time, the ability to automatically apply complex mathematical calculations to big data – over and over, faster and faster – is a recent development. Here are a few widely publicized examples of machine learning applications you may be familiar with:

The heavily hyped, self-driving Google car? The essence of machine learning.

Online recommendation offers such as those from Amazon and Netflix? Machine learning applications for everyday life.

Knowing what customers are saying about you on Twitter? Machine learning combined with linguistic rule creation.

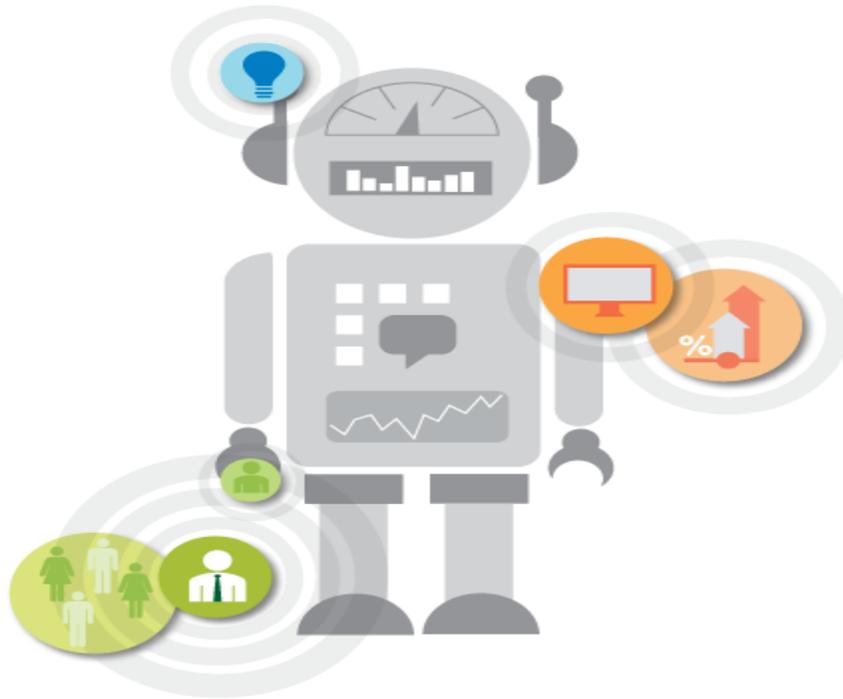
Fraud detection? One of the more obvious, important uses in our world today.

Why is machine learning important?

Resurging interest in machine learning is due to the same factors that have made datamining and Bayesian analysis more popular than ever. Things like growing volumes and varieties of available data, computational processing that is cheaper and more powerful, and affordable data storage.

All of these things mean it's possible to quickly and automatically produce models that can analyze bigger, more complex data and deliver faster, more accurate results – even on a very large scale. And by building precise models, an organization has a better chance of identifying profitable opportunities – or avoiding unknown risks.





Machine Learning

The main difference with machine learning is that just like statistical models, the goal is to understand the structure of the data – fit theoretical distributions to the data that are well understood. So, with statistical models there is a theory behind the model that is mathematically proven, but this requires that data meets certain strong assumptions too. Machine learning has developed based on the ability to use computers to probe the data for structure, even if we do not have a theory of what that structure looks like. The test for a machine learning model is a validation error on new data, not a theoretical test that proves a null hypothesis. Because machine learning often uses an iterative approach to learn from data, the learning can be easily automated. Passes are run through the data until a robust pattern is found

Saurabh Kanojia

TE IT

Reference: (<http://www.informit.com>)

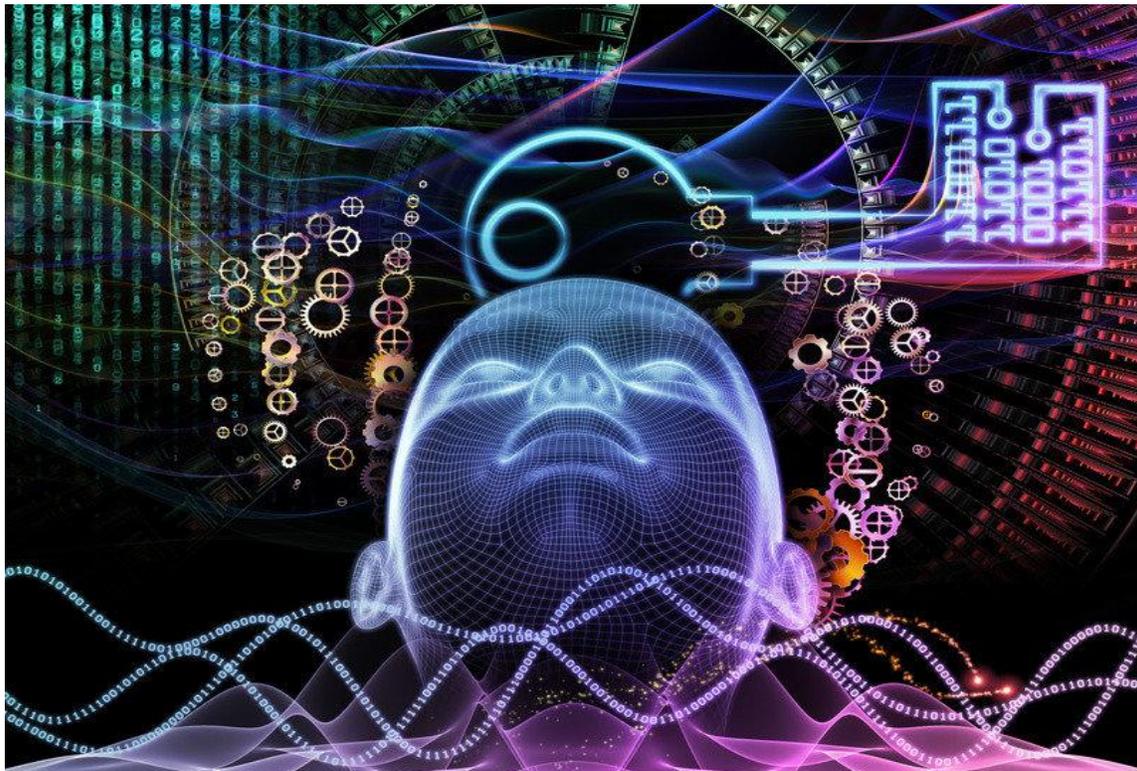
4. Memristor: A Groundbreaking New Circuit

This simple memristor circuit could soon transform all electronic devices.

This simple memristor circuit could soon transform all electronic devices.

Since the dawn of electronics, we've had only three types of circuit components--resistors, inductors, and capacitors. But in 1971, UC Berkeley researcher Leon Chua theorized the possibility of a fourth type of component, one that would be able to measure the flow of electric current: the memristor. Now, just 37 years later, Hewlett-Packard has built one.

What is it? As its name implies, the memristor can "remember" how much current has passed through it. And by alternating the amount of current that passes through it, a memristor can also become a one-element circuit component with unique properties. Most notably, it can save its electronic state even when the current is turned off, making it a great candidate to replace today's flash memory.



Memristors will theoretically be cheaper and far faster than flash memory, and allow far greater memory densities. They could also replace RAM chips as we know them, so that, after you turn off your computer, it will remember exactly what it was doing when you turn it back on, and return to work instantly. This lowering of cost and consolidating of components may lead to

affordable, solid-state computers that fit in your pocket and run many times faster than today's PCs.

Someday the memristor could spawn a whole new type of computer, thanks to its ability to remember a range of electrical states rather than the simplistic "on" and "off" states that today's digital processors recognize. By working with a dynamic range of data states in an analog mode, memristor-based computers could be capable of far more complex tasks than just shuttling ones and zeroes around.



The memristor is just one of the incredible technological advances sending shock waves through the world of computing. Other innovations in the works are more down-to-earth, but they also carry watershed significance. From the technologies that finally make paperless office a reality to those that deliver wireless power, these advances should make your humble PC a far different beast come the turn of the decade.

Ruchita Mall

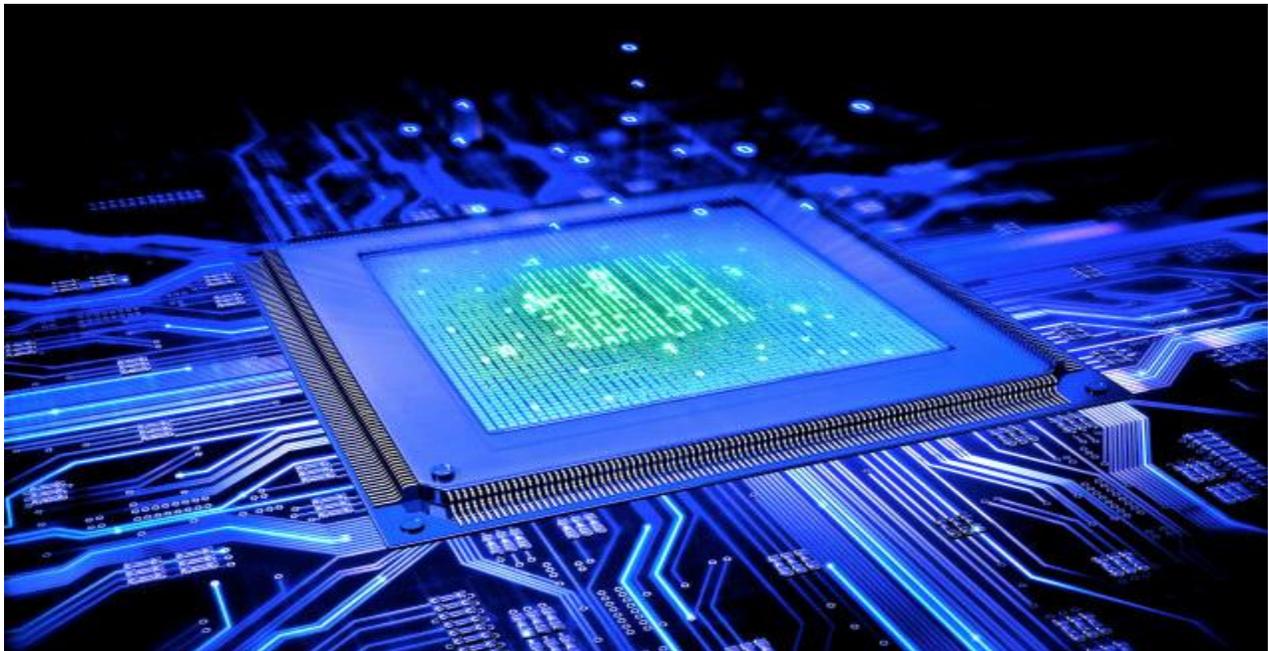
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Reference: (<http://www.livescience.com>)

5. 32-Core CPUs From Intel and AMD

If your CPU has only a single core, it's officially a dinosaur. In fact, quad-core computing is now commonplace; you can even get laptop computers with four cores today. But we're really just at the beginning of the core wars: Leadership in the CPU market will soon be decided by who has the most cores, not who has the fastest clock speed.

What is it? With the gigahertz race largely abandoned, both AMD and Intel are trying to pack more cores onto a die in order to continue to improve processing power and aid with multitasking operations. Miniaturizing chips further will be key to fitting these cores and other components into a limited space. Intel will roll out 32-nanometer processors (down from today's 45nm chips) in 2009.



When is it coming? Intel has been very good about sticking to its road map. A six-core CPU based on the Itanium design should be out imminently, when Intel then shifts focus to a brand-new architecture called Nehalem, to be marketed as Core i7. Core i7 will feature up to eight cores, with eight-core systems available in 2009 or 2010. (And an eight-core AMD project called Montreal is reportedly on tap for 2009.)

It features:

- Scalable, 32-core System on Chip (SoC) design, with two threads per core
- Up to 16 DDR4 DIMMS on 8 memory channels and up to 2TB of memory capacity
- Support for up to 32 DIMMs of DDR4 on 16 memory channels, delivering up to 4TB of total memory capacity in a 2-socket server

- Complete SoC with fully integrated I/O supporting 128 lanes of PCIe 3
- Cache structure for high-performance, energy efficient compute
- Infinity Fabric coherent interconnect for Naples CPUs in a 2-socket system
- Dedicated security hardware

After that, the timeline gets fuzzy. Intel reportedly canceled a 32-core project called Keifer, slated for 2010, possibly because of its complexity (the company won't confirm this, though). That many cores requires a new way of dealing with memory; apparently you can't have 32 brains pulling out of one central pool of RAM. But we still expect cores to proliferate when the kinks are ironed out: 16 cores by 2011 or 2012 is plausible (when transistors are predicted to drop again in size to 22nm), with 32 cores by 2013 or 2014 easily within reach. Intel says "hundreds" of cores may come even farther down the line.

Seema Pandey

BE IT

Reference: (<http://www.technologyreview.com>)

6. Nehalem and Swift Chips Spell the End of Stand-Alone Graphics Boards

When AMD purchased graphics card maker ATI, most industry observers assumed that the combined company would start working on a CPU-GPU fusion. That work is further along than you may think.



What is it? While GPUs get tons of attention, discrete graphics boards are a comparative rarity among PC owners, as 75 percent of laptop users stick with good old integrated graphics, according to Mercury Research. Among the reasons: the extra cost of a discrete graphics card, the hassle of installing one, and its drain on the battery. Putting graphics functions right on the CPU eliminates all three issues.



Chip makers expect the performance of such on-die GPUs to fall somewhere between that of today's integrated graphics and stand-alone graphics boards--but eventually, experts believe, their performance could catch up and make discrete graphics obsolete. One potential idea is to devote, say, 4 cores in a 16-core CPU to graphics processing, which could make for blistering gaming experiences.

When is it coming? Intel's soon-to-come Nehalem chip includes graphics processing within the chip package, but off of the actual CPU die. AMD's Swift (aka the Shrike platform), the first product in its Fusion line, reportedly takes the same design approach, and is also currently on tap for 2009.

Putting the GPU directly on the same die as the CPU presents challenges--heat being a major one--but that doesn't mean those issues won't be worked out. Intel's two Nehalem follow-ups, Auburndale and Havendale, both slated for late 2009, may be the first chips to put a GPU and a CPU on one die, but the company isn't saying yet.

Omkar Shinde

TE IT

Reference: (<http://www.techedu.com>)

7. USB 3.0 Speeds Up Performance on External Devices

The USB connector has been one of the greatest success stories in the history of computing, with more than 2 billion USB-connected devices sold to date. But in an age of terabyte hard drives, the once-cool throughput of 480 megabits per second that a USB 2.0 device can realistically provide just doesn't cut it any longer.



What is it? USB 3.0 (aka "SuperSpeed USB") promises to increase performance by a factor of 10, pushing the theoretical maximum throughput of the connector all the way up to 4.8 gigabits per second, or processing roughly the equivalent of an entire CD-R disc every second. USB 3.0 devices will use a slightly different connector, but USB 3.0 ports are expected to be backward-compatible with current USB plugs, and vice versa. USB 3.0 should also greatly enhance the power efficiency of USB devices, while increasing the juice (nearly one full amp, up from 0.1 amps) available to them. That means faster charging times for your iPod--and probably even more bizarre USB-connected gear like the toy rocket launchers and beverage coolers that have been festooning people's desks.

When is it coming? The USB 3.0 spec is nearly finished, with consumer gear now predicted to come in 2010. Meanwhile, a host of competing high-speed plugs--DisplayPort, eSATA, and HDMI--will soon become commonplace on PCs, driven largely by the onset of high-def video. Even FireWire is looking at an imminent upgrade of up to 3.2 gbps performance. The port proliferation may make for a baffling landscape on the back of a new PC, but you will at least have plenty of high-performance options for hooking up peripherals.

Neha Raut

BE IT

Reference: (<http://www.mbaskool.com>)

8. Wireless Power Transmission

Wireless power transmission has been a dream since the days when Nikola Tesla imagined a world studded with enormous Tesla coils. But aside from advances in recharging electric toothbrushes, wireless power has so far failed to make significant inroads into consumer-level gear.

What is it? This summer, Intel researchers demonstrated a method--based on MIT research--for throwing electricity a distance of a few feet, without wires and without any dangers to bystanders (well, none that they know about yet). Intel calls the technology a "wireless resonant energy link," and it works by sending a specific, 10-MHz signal through a coil of wire; a similar, nearby coil of wire resonates in tune with the frequency, causing electrons to flow through that coil too. Though the design is primitive, it can light up a 60-watt bulb with 70 percent efficiency.



When is it coming? Numerous obstacles remain, the first of which is that the Intel project uses alternating current. To charge gadgets, we'd have to see a direct-current version, and the size of the apparatus would have to be considerably smaller. Numerous regulatory hurdles would likely have to be cleared in commercializing such a system, and it would have to be thoroughly vetted for safety concerns.

Assuming those all go reasonably well, such receiving circuitry could be integrated into the back of your laptop screen in roughly the next six to eight years. It would then be a simple matter for your local airport or even Starbucks to embed the companion power transmitters right into the walls so you can get a quick charge without ever opening up your laptop bag.

Suman Yadav

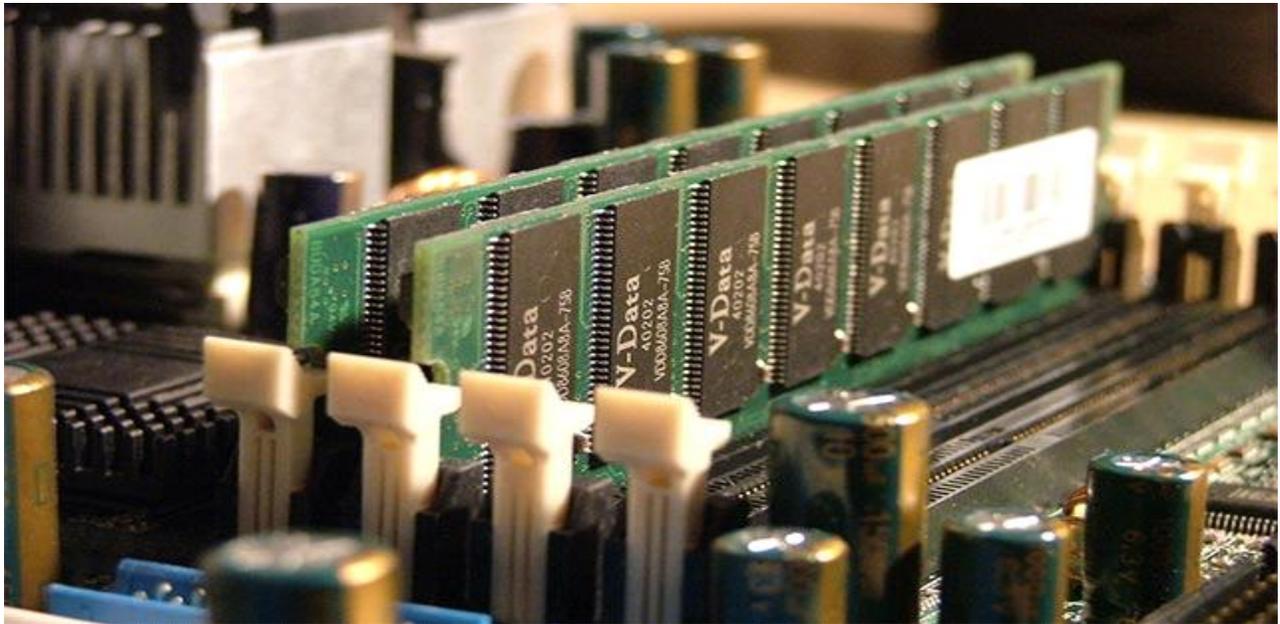
BE IT

Reference: (<http://www.mitpress.mit.edu>)

9. 64-Bit Computing Allows for More RAM

In 1986, Intel introduced its first 32-bit CPU. It wasn't until 1993 that the first fully 32-bit Windows OS--Windows NT 3.1--followed, officially ending the 16-bit era. Now 64-bit processors have become the norm in desktops and notebooks, though Microsoft still won't commit to an all-64-bit Windows. But it can't live in the 32-bit world forever.

What is it? 64-bit versions of Windows have been around since Windows XP, and 64-bit CPUs have been with us even longer. In fact, virtually every computer sold today has a 64-bit processor under the hood. At some point Microsoft will have to jettison 32-bit altogether, as it did with 16-bit when it launched Windows NT, if it wants to induce consumers (and third-party hardware and software developers) to upgrade. That isn't likely with Windows 7: The upcoming OS is already being demoed in 32-bit and 64-bit versions. But limitations in 32-bit's addressing structure will eventually force everyone's hand; it's already a problem for 32-bit Vista users, who have found that the OS won't access more than about 3GB of RAM because it simply doesn't have the bits to access additional memory.



Tejas Patil

TE IT

Reference: (<http://www.gadgetguru.com>)

10. Windows 7: It's Inevitable

Whether you love Vista or hate it, the current Windows will soon go to that great digital graveyard in the sky. After the tepid reception Vista received, Microsoft is putting a rush on Vista's follow-up, known currently as Windows 7.

What is it? At this point Windows 7 seems to be the OS that Microsoft wanted to release as Vista, but lacked the time or resources to complete. Besides continuing refinements to the security system of the OS and to its look and feel, Windows 7 may finally bring to fruition the long-rumored database-like WinFS file system. Performance and compatibility improvements over Vista are also expected.

But the main thrust of Windows 7 is likely to be enhanced online integration and more cloud computing features--look for Microsoft to tie its growing Windows Live services into the OS more strongly than ever. Before his retirement as Microsoft's chairman, Bill Gates suggested that a so-called pervasive desktop would be a focus of Windows 7, giving users a way to take all their data, desktop settings, bookmarks, and the like from one computer to another--presumably as long as all those computers were running Windows 7.



When is it coming? Microsoft has set a target date of January 2010 for the release of Windows 7, and the official date hasn't slipped yet. However, rumor has the first official beta coming out before the end of this year.

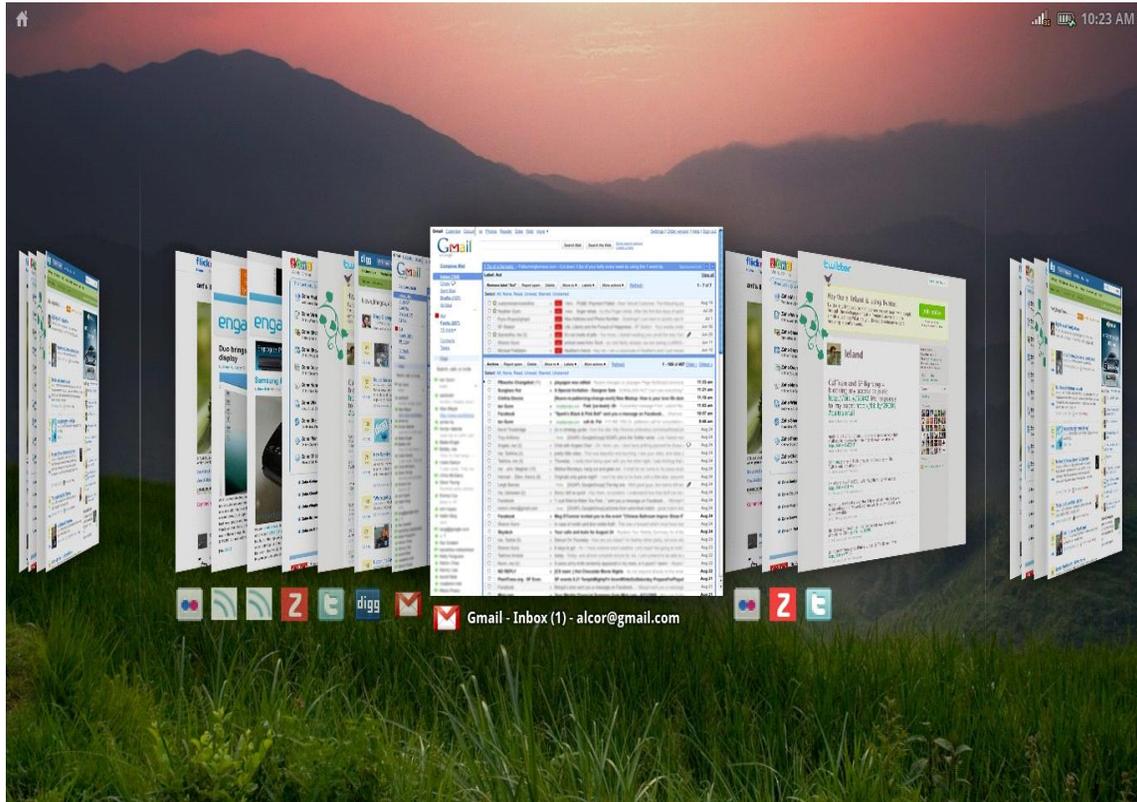
Suraj Shukla

TE IT

Reference: (<http://www.informit.com>)

11. Google's Desktop OS

In case you haven't noticed, Google now has its well-funded mitts on just about every aspect of computing. From Web browsers to cell phones, soon you'll be able to spend all day in the Googiverse and never have to leave. Will Google make the jump to building its own PC operating system next?



What is it? It's everything, or so it seems. Google Checkout provides an alternative to PayPal. Street View is well on its way to taking a picture of every house on every street in the United States. And the fun is just starting: Google's early-beta Chrome browser earned a 1 percent market share in the first 24 hours of its existence. Android, Google's cell phone operating system, is hitting handsets as you read this, becoming the first credible challenger to the iPhone among sophisticated customers.

When is it coming? Though Google seems to have covered everything, many observers believe that logically it will next attempt to attack one very big part of the software market: the operating system.

The Chrome browser is the first toe Google has dipped into these waters. While a browser is how users interact with most of Google's products, making the underlying operating system somewhat irrelevant, Chrome nevertheless needs an OS to operate.

To make Microsoft irrelevant, though, Google would have to work its way through a minefield of device drivers, and even then the result wouldn't be a good solution for people who have specialized application needs, particularly most business users. But a simple Google OS--perhaps one that's basically a customized Linux distribution--combined with cheap hardware could be something that changes the PC landscape in ways that smaller players who have toyed with open-source OSs so far haven't been quite able to do.

Prathamesh Kadam

BE IT

Reference(<http://www.technologyreview.com>)

12. Gesture-Based Remote Control

We love our mice, really we do. Sometimes, however, such as when we're sitting on the couch watching a DVD on a laptop, or when we're working across the room from an MP3-playing PC, it just isn't convenient to drag a hockey puck and click on what we want. Attempts to replace the venerable mouse--whether with voice recognition or brain-wave scanners--have invariably failed. But an alternative is emerging.

What is it? Compared with the intricacies of voice recognition, gesture recognition is a fairly simple idea that is only now making its way into consumer electronics. The idea is to employ a camera (such as a laptop's Webcam) to watch the user and react to the person's hand signals. Holding your palm out flat would indicate "stop," for example, if you're playing a movie or a song. And waving a fist around in the air could double as a pointing system: You would just move your fist to the right to move the pointer right, and so on.

Gesture recognition is a neat way to pause the DVD on your laptop, but it probably remains a way off from being sophisticated enough for broad adoption. All the same, its successful development would excite tons of interest from the "can't find the remote" crowd. Expect to see gesture recognition technology make some great strides over the next few years, with inroads into mainstream markets by 2012.



When is it coming? Gesture recognition systems are creeping onto the market now. Toshiba, a pioneer in this market, has at least one product out that supports an early version of the technology: the Qosmio G55 laptop, which can recognize gestures to control multimedia playback. The company is also experimenting with a TV version of the technology, which would watch for hand signals via a small camera atop the set. Based on my tests, though, the accuracy of these systems still needs a lot of work.

Sanmesh Sankhe

TE IT

Reference: (<http://www.ndtbadget.com>)

13. Radical Simplification Hits the TV Business

The back of most audiovisual centers looks like a tangle of snakes that even Medusa would turn away from. Similarly, the bowl of remote controls on your coffee table appeals to no one. The Tru2way platform may simplify things once and for all.

What is it? Who can forget CableCard, a technology that was supposed to streamline home A/V installations but that ultimately went nowhere despite immense coverage and hype? CableCard just didn't do enough--and what it managed to do, it didn't do very well. Enter Tru2way.



Tru2way is a set of services and standards designed to pick up the pieces of CableCard's failure by upgrading what that earlier standard could do (including support for two-way communications features like programming guides and pay-per-view, which CableCard TVs couldn't handle), and by offering better compatibility, improved stability, and support for dual-tuner applications right out of the box. So if you have a Tru2way-capable TV, you should need only to plug in a wire to be up and running with a full suite of interactive cable services (including local search features, news feeds, online shopping, and games)--all sans additional boxes, extra remotes, or even a visit from cable-company technicians.

When is it coming? Tru2way sets have been demonstrated all year, and Chicago and Denver will be the first markets with the live technology. Does Tru2way have a real shot? Most of the major cable companies have signed up to implement it, as have numerous TV makers, including LG, Panasonic, Samsung, and Sony. Panasonic began shipping two Tru2way TVs in late October, and Samsung may have sets that use the technology available in early to mid-2009.

Tanmay Naik

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Reference: (<http://www.techedu.com>)

14. Curtains for DRM

Petrified of piracy, Hollywood has long relied on technical means to keep copies of its output from making the rounds on peer-to-peer networks. It hasn't worked: Tools to bypass DRM on just about any kind of media are readily available, and feature films often hit BitTorrent even before they appear in theaters. Unfortunately for law-abiding citizens, DRM is less a deterrent to piracy than a nuisance that gets in the way of enjoying legally obtained content on more than one device.

What is it? It's not what it is, it's what it isn't--axing DRM means no more schemes to prevent you from moving audio or video from one form of media to another. The most ardent DRM critics dream of a day when you'll be able to take a DVD, pop it in a computer, and end up with a compressed video file that will play on any device in your arsenal. Better yet, you won't need that DVD at all: You'll be able to pay a few bucks for an unprotected, downloadable version of the movie that you can redownload any time you wish.

When is it coming? Technologically speaking, nothing is stopping companies from scrapping DRM tomorrow. But legally and politically, resistance persists. Music has largely made the transition already--Amazon and iTunes both sell DRM-free MP3s that you can play on as many devices as you want.

Video is taking baby steps in the same direction, albeit slowly so far. One recent example: RealNetworks' RealDVD software (which is now embroiled in litigation) lets you rip DVDs to your computer with one click, but they're still protected by a DRM system. Meanwhile, studios are experimenting with bundling legally rippable digital copies of their films with packaged DVDs, while online services are tiptoeing into letting downloaders burn a copy of a digital movie to disc.

Amol Duraphe

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Reference: (<http://www.popsci.com>)

15. Use Any Phone on Any Wireless Network

The reason most cell phones are so cheap is that wireless carriers subsidize them so you'll sign a long-term contract. Open access could change the economics of the mobile phone (and mobile data) business dramatically as the walls preventing certain devices from working on certain networks come down. We could also see a rapid proliferation of cell phone models, with smaller companies becoming better able to make headway into formerly closed phone markets.

What is it? Two years is an eternity in the cellular world. The original iPhone was announced, introduced, and discontinued in less than that time, yet carriers routinely ask you to sign up for two-year contracts if you want access to their discounted phones. (It could be worse--in other countries, three years is normal.) Verizon launched the first volley late last year when it promised that "any device, any application" would soon be allowed on its famously closed network. Meanwhile, AT&T and T-Mobile like to note that their GSM networks have long been "open."



When is it coming? Open access is partially here: You can use almost any unlocked GSM handset on AT&T or T-Mobile today, and Verizon Wireless began certifying third-party devices

for its network in July (though to date the company has approved only two products). But the future isn't quite so rosy, as Verizon is dragging its feet a bit on the legal requirement that it keep its newly acquired 700-MHz network open to other devices, a mandate that the FCC agreed to after substantial lobbying by Google. Some experts have argued that the FCC provisions aren't wholly enforceable. However, we won't really know how "open" is defined until the new network begins rolling out, a debut slated for 2010.

Swati Shirke

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Reference: (<http://www.cnet.com>)

16. Your Fingers Do Even More Walking

Last year Microsoft introduced Surface, a table with a built-in monitor and touch screen; many industry watchers have seen it as a bellwether for touch-sensitive computing embedded into every device imaginable. Surface is a neat trick, but the reality of touch devices may be driven by something entirely different and more accessible: the Apple iPhone.

What is it? With the iPhone, "multitouch" technology (which lets you use more than one finger to perform specific actions) reinvented what we knew about the humble touchpad. Tracing a single finger on most touchpads looks positively simian next to some of the tricks you can do with two or more digits. Since the iPhone's launch, multitouch has found its way into numerous mainstream devices, including the Asus Eee PC 900 and a Dell Latitude tablet PC. Now all eyes are turned back to Apple, to see how it will further adapt multitouch (which it has already brought to its laptops' touchpads). Patents that Apple has filed for a multitouch tablet PC have many people expecting the company to dive into this neglected market, finally bringing tablets into the mainstream and possibly sparking explosive growth in the category.



When is it coming? It's not a question of when Multitouch will arrive, but how quickly the trend will grow. Fewer than 200,000 touch-screen devices were shipped in 2006. iSuppli analysts have estimated that a whopping 833 million will be sold in 2013.

Rupali Banerjee

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Reference: (<http://www.technewsworld.com>)

17. Cell Phones Are the New Paper

Log in to your airline's Web site. Check in. Print out your boarding pass. Hope you don't lose it. Hand the crumpled pass to a TSA security agent and pray you don't get pulled aside for a pat-down search. When you're ready to fly home, wait in line at the airport because you lacked access to a printer in your hotel room. Can't we come up with a better way?

What is it? The idea of the paperless office has been with us since Bill Gates was in short pants, but no matter how sophisticated your OS or your use of digital files in lieu of printouts might be, they're of no help once you leave your desk. People need printouts of maps, receipts, and instructions when a computer just isn't convenient. PDAs failed to fill that need, so coming to the rescue are their replacements: cell phones.

Applications to eliminate the need for a printout in nearly any situation are flooding the market. Cellfire offers mobile coupons you can pull up on your phone and show to a clerk; Tickets.com now makes digital concert passes available via cell phone through its Tickets@Phone service. The final frontier, though, remains the airline boarding pass, which has resisted this next paperless step since the advent of Web-based check-in.



When is it coming? Some cell-phone apps that replace paper are here now (just look at the ones for the iPhone), and even paperless boarding passes are creeping forward. Continental has been experimenting with a cell-phone check-in system that lets you show an encrypted, 2D bar code on your phone to a TSA agent in lieu of a paper boarding pass. The agent scans the bar code with an ordinary scanner, and you're on your way. Introduced at the Houston Intercontinental Airport, the pilot project became permanent earlier this year, and Continental rolled it out in three other airports in 2008. The company promises more airports to come. (Quantas will be doing something similar early next year.)

Chinmayee Parulekar

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Reference: (<http://www.technewsworld.com>)

18. Where You At? Ask Your Phone, Not Your Friend

GPS is taking off, as phone makers, carriers, and service providers have realized that consumers generally have no idea where they are, ever. A location-based service (LBS) takes raw GPS data that pinpoints your location and enhances this information with additional services, from suggesting nearby restaurants to specifying the whereabouts of your friends.



What is it? LBS was originally envisioned as simply using old-school cell-phone signal triangulation to locate users' whereabouts, but as the chips become more common and more sophisticated, GPS is proving to be not only handy and accurate but also the basis for new services. Many startups have formed around location-based services. Want a date? Never mind who's compatible; who's nearby? MeetMoi can find them. Need to get a dozen people all in one place? Both Whrrl and uLocate's Buddy Beacon tell you where your friends are in real time.

Of course, not everyone is thrilled about LBS: Worries about surreptitious tracking or stalking are commonplace, as is the possibility of a flood of spam messages being delivered to your phone.

When is it coming? LBS is growing fast. The only thing holding it back is the slow uptake of GPS-enabled phones (and carriers' steep fees to activate the function). But with iPhones selling like Ben & Jerry's in July, that's not much of a hurdle to overcome. Expect to see massive adoption of these technologies in 2009 and 2010.

Parth Harkhani

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Reference: (<http://www.livescience.com>)

19. 25 Years of Predictions

Predicting the future isn't easy. Sometimes PC World has been right on the money. At other times, we've missed it by a mile. Here are three predictions we made that were eerily prescient-- and three where we may have been a bit too optimistic.

1983 What we said: "The mouse will bask in the computer world limelight... Like the joystick before it, though, the mouse will fade someday into familiarity."



We hit that one out of the park. Mice are so commonplace that they're practically disposable.

1984 What we said: "Microsoft Windows should have a lasting effect on the entire personal computer industry."

"Lasting" was an understatement. Windows has now amassed for Microsoft total revenues in the tens of billions of dollars and is so ubiquitous and influential that it has been almost perpetually embroiled in one lawsuit or another, usually involving charges of monopoly or of trademark and patent infringements.

1988 What we said: "In the future you'll have this little box containing all your files and programs... It's very likely that eventually people will always carry their data with them."

For most people, that little box is now also their MP3 player or cell phone.

When we arrive in our office, the computer ignores us, slowly delivers the overnight e-mail, and puts all the spam on top.

1994 What we said: "Within five years... batteries that last a year, like watch batteries today, will power [PDAs]."

Perhaps our biggest whiff of all time. Not only do these superbatteries not exist (nor are they even remotely in sight), but PDAs are pretty much dead too.

2000 What we said: We wrote about future "computers that pay attention to you, sensing where you are, what you're doing, and even what your vital signs are... Products incorporating this kind of technology...could hit the market within a year."

While many devices now feature location-sensing hardware, such a PC has yet to come to pass. And frankly, we'd be glad to be wrong about this one.

Saurabh Pandey

BE IT

Reference: (<http://www.livescience.com>)



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