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Welcome to News N Views !

FUTURE DIRECTION IN COMPUTING

MAHDI BALOCH wrote to PAKGRID about Future Direction In Computing on SEPTEMBER 6, 2009. His text has been shortened by Dr Mirza to nearly half to be contained comfortably in our newsletter. He wrote six advances could spell the end of traditional computing

1. Quantum
2. Light
3. Spin
4. Chemicals
5. DNA
6. Plastics

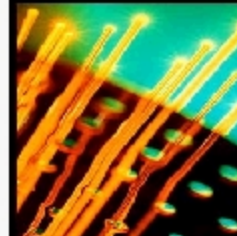
Quantum:

A quantum computer is a theoretical device that would make use of the properties of quantum mechanics, the realm of physics that deals with energy and matter at atomic scales. "It is a new paradigm for computation," said Professor Artur Ekert of the University of Oxford. "It's doing computation differently." A bit is a simple unit of information that is represented by a "1" or a "0" in a conventional electronic computer. A qubit can also represent a "1" or a "0" but crucially can be both at the same time - known as a superposition. This allows a quantum computer to work through many problems and arrive at their solutions simultaneously. "It is like massively parallel processing but in one piece of hardware," said Professor. In February 2007, the Canadian company D-Wave systems claimed to have demonstrated a working quantum computer.



Light:

Computers exploit the movement or accumulation of electrons to do useful calculations. These movements down tiny wires are the reason why PCs become so hot. Optics are already used to transfer data over the internet "We are dissipating huge amounts of power in chips right now," said Professor Stan Williams of computer firm Hewlett Packard. And the problem will get worse as the components become smaller, making chips even more inefficient, he said. "If we could find new ways of moving information around a chip, we could significantly reduce the amount of power that is dissipated." A potential solution would be to use particles of light - photons - instead of electrons to move information around and between chips. "Electrons will still be doing the computing but photons will be doing the communicating," he said



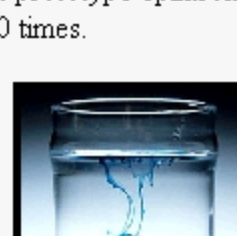
Spin:

Spintronics, also known as magnetoelectronics, is a technology that harnesses the spin of particles, a property ignored by conventional electronics. Spintronics harnesses the spin of sub-atomic particles. "Until now, electronics has worked by moving electrons around or moving charge around and that takes work," said Kevin Roche of computer giant IBM. "The most obvious example of that is that if you have a laptop that runs faster, it runs hotter." But, by using the spin of particles - detected as a weak magnetic force - scientists believe they can unlock almost infinite computing power. "It is called spin because the maths for dealing with it is similar to the maths for a spinning ball," said Mr Roche. "An electron always has spin and it can be spinning one of two different ways: up or down." These two different states can be used to represent a "1" or a "0" - the bits of information used by all computers. Basic spintronic devices are already used in today's computers. IBM has already shown off a prototype spintronic device known as "racetrack memory", a device that could increase storage density by up to 100 times.

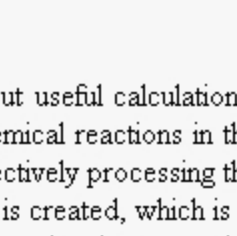


Chemical Computing:

Chemical computing is an unconventional approach to computation that uses a "soup" where data is represented by different concentrations of chemicals. Chemical computing can be used to solve a range of problems. Chemical computers can exploit several different kinds of reaction to carry out the computation. For example, so-called conformation computers use polymer molecules that change shape in response to a particular input. Metabolic computing exploits the kinds of reactions typically found inside a living cell. Dr Andrew Adamatzky of the University of West England works on another type. "I am dealing only with reaction-diffusion computing," he explains. This type of computation exploits waves traveling through a beaker of chemicals to carry out useful calculations. These waves are the information carriers in the computer. They are created by triggering chemical reactions in the soup at specific points. As waves propagate from different areas they collide and interact - effectively processing the information they hold. At the site of their interaction a point with a new chemical concentration is created, which in its effect an answer. With a beaker full of thousands of waves traveling and interacting with each other, complex computational problems can be solved.

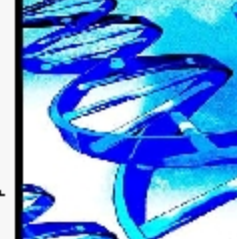


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DNA computing:

DNA computing, commonly called biomolecular computing, is an emerging field that uses DNA and biochemistry instead of silicon-based electronics. Professor Shapiro has designed a DNA computer to target cancer. The first proof-of-concept use of DNA to perform computation was carried out by Professor Leonard Adleman at the University of Southern California in 1994. The original goal of the field was to use biomolecules to beat electronic computers at solving large complex problems.



"Today, most people believe that biomolecular computing will not beat electronic computers in the foreseeable future," admitted Professor Ehud Shapiro of the Weizmann Institute of Science in Israel. Instead, said Professor Shapiro, the new goal is to try to use DNA computing to do things that traditional silicon cannot.

"What we offered in our work was a different vision," he said. In particular he is trying to develop smart drugs that are capable of computation.

"You want a drug that can sense the biochemical environment, analyse it and, in response, release a molecule which is the appropriate drug for that particular situation," he said.



Plastic:

Silicon is expensive and complex to produce, requiring clean rooms and precise manufacturing techniques in plants that can cost billions of dollars. Organic electronics can be used to make flexible displays. This means they are currently out of reach for low-cost products.

But organic polymers, a class of substances that are used to make everything from bin bags to solar panels, could offer a solution. "It really opens up a whole new set of options for what you do with electronics," said Professor Art Ramirez of Bell Labs. Highly conductive polymers were first discovered in the early 1960s and are already used in some electronic devices. In 2004, electronics giant Philips announced a concept flexible display, while other companies such as Cambridge Display Technology use them to manufacture organic light-emitting diodes (LEDs).

Earlier this year, UK firm Plastic Logic said that it would build the world's first factory to produce plastic electronic circuits. Although, circuits made of polymers are much slower than silicon devices, they have one significant advantage: they can be printed using techniques similar to those used to mass produce magazines and wallpaper.

<http://news.bbc.co.uk/2/hi/technology/7085019.stm>

EDITORIAL OF NATURES AND RAVE REVIEWS FOR HEC

From: Sohaib Khan <sohaib@hums.edu.pk>
Subject: [PUTF]

To: "putf@googlegroups.com" <putf@googlegroups.com>
Date: Thursday, September 3, 2009, 8:35 PM

"Massive funding for Pakistan's ailing universities holds many lessons for other developing nations", states the recent editorial of Nature. Nature, which is one of the most respected scientific journal, highlights the successes of Pakistan's higher education reforms initiated in 2002, citing the free national digital library, high-speed internet access

JEHAN ARA, PRESIDENT OF PAKISTAN SOFTWARE HOUSES ASSOCIATION FOR IT & ITES (P@SHA) WROTE

The Pakistan Software Houses Association for IT & ITES (P@SHA) is holding its 6th National Annual ICT Awards event on October 14, 2009 at the Sheraton Hotel in Karachi. For details do visit the website: <http://www.pashaictawards.org>



ABOUT TWITTER

Twitter is a unique approach to communication and networking based on the simple concept of status. What are you doing? What are your friends doing—right now? With Twitter, you may answer this question over SMS or the Web and the responses are shared between contacts.

Shahzad shameem



IEEE PRESIDENTS' CHANGE THE WORLD COMPETITION (SEP IEEE PAK GRID)

Do you have an idea that could benefit humanity and revolutionize the way we live? IEEE is hosting a global competition for students who develop unique solutions to real-world problems using engineering, science, computing and leadership skills. Winners could walk away with up to US\$10,000. The competition begins September 2009.

IEEE COMMUNITIES AT YOUR FINGERTIPS (SEP IEEE PAK GRID)

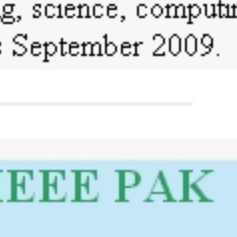
Back when IEEE was formed, a "network of friends" meant those you saw on a regular basis, a "tweet" was just a sound birds made and business connections were made at face-to-face meetings. But as the technological world has evolved, so has the way IEEE members network. Facebook, Twitter and LinkedIn are now part of the growing trend of social networking Web sites, and IEEE has created a presence on each of them that stronger each day.

DISCIPLINING UNDERGRADUATE PROJECT STUDENTS

We had some difficult time with our undergraduate project students. Either because they were busy with courses in the 8th semester or for some other reason they would not pay as much attention to projects as we would like them to do. So much so that in order to firm up their project reports project supervisor literally had to run after them: phone, e-mail and write letters to them and often to no use.

Dr Asad Hussain, HOD CS Dept, called a meeting of DARC, on 7/9/09 in his office at 9:00 AM to discuss the matter.

It was concluded that 80% attendance of the project students must be done by all the supervisors and the record will be kept. The concerned students will be reminded as to how many attendances they have logged to. It is not a step change from the previous routines so no objection will result from any quarters. Hopefully students will become sober and attend to project requirements. Often after submitting reports which might have contained some errors students were hard to catch to correct the reports resulting in report degradation.



PUBLICATIONS

Title: Assessment of Node Density in Cartesian Ad Hoc Routing Protocols (CARP)

Status: Submitted

Author(s): Inran Raza, Hassan Raza

Conference: IEEE International Conference on Information and Communication Technologies, IBA, Karachi

Title: Congestion Aware Nodes (CAN) based scheme for Mobile Ad hoc Network

Status: sent

Author(s): Inran Raza, S. A. Hussain and S. Qayyum

Journal: Computer Communications, Elsevier

Title: An Intelligent Priority Assignment Mechanism for Biomedical Wireless Sensor Networks

Status: sent

Author(s): Inran Raza, S. A. Hussain, Shahbaz Akhtar

Journal: Mobile Networks and Applications, Springer



The first paper (conference paper) was published in August 2009. Two other journal papers are under assessment

ADMINISTRATION

The facilities at mosque at CIIT Lahore needs to be enhanced. It was observed that more than 100 students offer their zohar prayers behind amam on nude ground. The current student enrolment now stands more than 4000 but the mosque open space has not been carpeted.

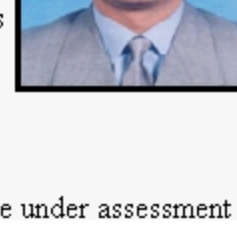


RESEARCH AT CS DEPARTMENT AND AN ADVICE

Research Areas of CS Department

A study was conducted to find out the areas of research interest of the faculty of the CS department. The result is given below. The use of this study is to enable ourselves to answer the query of the faculty with regard to the areas of research interest in the department. Also one can know how many other peoples are interested in his area of research and beneficial collaboration among them can ensue.

A survey was made by Dr Mirza in September 2009 as to the research areas of interest of the faculty of computer science. The purpose was to promote areas of research, the faculty is interested in, and to possibly bevy them in groups in order to promote research. The full report is being with Dr Mirza for anyone interested to see. The results of the survey briefly are represented below. Only those areas are mentioned below which have at least 2 researchers in it. The areas where only a loner is a player are not listed



| Serial No | Research Areas in which faculty showed interest | 1st choice No. of researchers | 2nd choice No. of researchers | 3rd choice No. of researchers |
|-----------|---|----------------------------------|----------------------------------|----------------------------------|
| 1 | Networking headed by Dr Asad HOD of the dept | 6 | | |
| 2 | Web Semantics headed by Dr Ahtisham | 4 | | |
| 3 | Database headed by | 4 | | |
| 4 | Software Engineering headed by Mr Qureshi | 3 | 5 | 2 |
| 5 | Image Processing headed by Mr Faisal Tehseen Shah | 2 | 2 | |
| 6 | Graphics | 2 | | |

Loners are 7 in first choice, 4 in 2nd choice, and 1 in 3rd choice. The areas are:

Speech processing,
Quantum computing

It is sincerely advised that in order to produce productive research and spruce up career the loaners should rather shift now to more populated areas. I, from my experience, can tell in advance that they cannot produce much in their areas and will remain laggard, come what may. Who said migrating to other areas is not feasible? When someone in bare 3 to 4 years can finish PhD in brand new area, you can create havoc after 3 to 4 years if you change your line now and sincerely join your productive colleague. Think

MORE ON RESEARCH AREAS AT THE SILICON INDUSTRY

At silicon industry Roll-to-Roll and inkjet printing technology are being utilized for developing cheaper and accurate digital devices. Printed electronics will be the preferred in manufacturing process for solar cell, RFIDs, flexible panel systems, displays, and sensors in future.

The Silicon Industry is looking for the people with experience in control of the printing mechanism with respect to the printing parameters to print different types of electronic devices through Inkjet Printing System, behavior of the ink during the printing and behavior of the ink on the substrate. MS in Mechanical engineering, Chemical Engineering or a related field is needed. The applicant should have good analytical and modeling skills as well as good communication skills.

Contact khalid@jejunu.ac.kr (Khalid Rahman)

Please include: Presentation letter, Curriculum Vitae, copy of transcript, research proposal, letters of recommendation and resume. Starting date: As soon as possible. Deadline: 10th October 2009