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Enlight IT with Global Vision

# ISHARE

Monthly Magazine

## K.S.Rangasamy College of Arts & Science (Autonomous), Tiruchengode

Technical Forum created by students for students

**Inside this issue**


- Computer speak
- AltEdge
- MYSELF IN BOOK SHELF
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**Lots more. Explore……**

## Department of Computer Science

UG(BCA & B.Sc)

PG(MCA & M.Sc)

M.Phil(CS)

## EDITORIAL …

Hardware is a vital core of IT forever. In this issue we have offered hardware information briefly step by step. Future innovations have always been dreamed today. Here in this issue we have offered an article which sketches a scene of future, internet related information for next generation infrastructure. Lots of new technologies have been discussed with neat illustrations and campus oriented information have been incorporated to share live happenings. Many more useful and interesting information are in this edition of I SHARE....

**Editorial Board**

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| **Emacs:** A text editor, acronym for **E**ditor **MAC**ro**S** |
| **Kerberos:** A computer network authentication protocol that is used by both Windows 2000 and Windows XP as their default authentication method. |
| **NetBIOS**: Network Basic Input / Output System allows applications on separate computers to communicate over a local area network (LAN) |
| **Jitter:** Distortion in a digital signal caused by a shift in timing pulses; can cause data interpretation errors |
| **AJaX:** A little like DHTML, but it adds asynchronous communication between the browser and Web site via either XML or JSON to achieve performance that often rivals desktop applications. |
| **TWAIN:** A standard for acquiring data from image scanners. "Twain" is a dated word for "two". Although TWAIN is not an acronym, it has often been referred to as an acronym for "**T**echnology **W**ithout **A**n **I**ntelligent **N**ame". |
| **Crowd Casting:** A problem-solving and idea-generating tactic in which a corporation disseminates details of a specific problem or situation to a carefully chosen group of people for possible solutions. |
| **Aliasing:** In sound and image generation, aliasing is the generation of a false (alias) frequency along with the correct one when doing frequency sampling. For images, this produces a jagged edge, or stair-step effect. For sound, it produces a buzz. |
| **Blue Cloud:** Blue Cloud is to provide services that automate fluctuating demands for IT resources. The set of all the connections involved is sometimes called the "cloud." |
| **Chorus:** In audio production, chorus is one of the two standard audio effects defined by the Musical Instrument Digital Interface (MIDI). The other effect is reverb (reverberation). Chorus adds a swirling property to a sound that it is applied to, thickening the sound. |
| **Drop shadow:** In graphic design, a drop shadow is an effect where an image is |

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| repeated behind itself to create the illusion that the image is floating over its background. |
| **AARON:** A screensaver program written by artist Harold Cohen who created the original artistic images. AARON utilizes artificial intelligence to continuously create original paintings on PCs. |
| **Aloha:** software from Media Synergy, allows a user to add graphics, animation, and sound to e-mail messages. |
| **Celestia:** is an open source, 3D astronomy program for Windows, Mac OS X, and Linux created by Chris Laurel. The program, based on the Hippocras Catalogue, allows user to display objects ranging in scale from artificial satellites to entire galaxies in three dimensions using OpenGL. |
| **Cron:** is a Unix application that runs jobs for users and administrators at scheduled times of the day. |
| **Cubase:** is a MIDI, music sequencer and digital audio editing computer application (commonly known as a DAW - Digital Audio Workstation) created by the German firm Steinberg in 1989. Cubase started as a MIDI recording and editing tool. Later, features for recording raw audio were introduced. |
| **PuTTY:** is a free and open source terminal emulator application which can act as a client for the SSH, Telnet, rlogin, and raw TCP computing protocols. |
| **HotHTML:** is a HTML editor and text editor rolled into one with a strong focus on web development, originally released as a freeware web coding tool (WYSIWYN). |
| **NuCalc:** also known as Graphing Calculator, is the name of a computer software tool, made by the company Pacific Tech, capable of performing many graphing calculator functions. It can graph inequalities and vector fields, as well as functions in two, three, or four dimensions. It supports several different coordinate systems, and can solve equations. It is available for Mac OS (under the name Graphing Calculator) and Microsoft Windows. |

# Academic Forum

Author

***Questions Posted By:*** *Ashitha,* **Final B.Sc CS 'A'**

***Answers Given by:*** **Ms. M. M. Kavitha, Lecturer,**

***Dept of Computer Science***

**What is IMAX 3D? How does IMAX 3D work?**


**IMAX** is a motion picture film format and projection standard created by the Canadian IMAX Corporation. The Company's activities include the design, leasing, marketing, maintenance and operation of IMAX film and digital theatre systems as well as the development, production, post production and distribution of IMAX motion pictures. When looking at an object, our two eyes see it from two slightly different angles. The brain fuses the two slightly different images together to make one 3-D image. This is why we have depth perception and can naturally determine how far to reach when picking up objects or how high to lift our feet when walking up stairs. In order to see a 3-D image on screen, two separate images are also required. The IMAX 3D projector simultaneously projects two strips of 15/70 film, one for each eye, onto a special silver IMAX 3D screen. Each strip of film contains images from two slightly different vantages. Each member of the audience must wear special 3D glasses, which channel the right-eye image to the right eye and the left-eye image to the left eye. Your

brain fuses the two images together to create a three-dimensional image. The results make the screen virtually disappear and the images seem to float around the theatre. IMAX has the capacity to record and display images of far greater size and resolution than most conventional film systems. A standard IMAX screen is 22 × 16.1 m (72 × 52.8 ft) and they are generally the same everywhere. IMAX theatres are described as either "Classic Design," (Purpose-built structures designed to house an IMAX theatre) or "Multiplex Design." (Existing multiplex auditoriums that have been retrofitted with IMAX technology). The world's largest cinema screen (and IMAX screen) is in the LG IMAX theatre in Sydney, New South Wales. It is approximately 8 stories high, with dimensions of 35.73 × 29.42 m (117.2 × 96.5 ft) and covers an area of more than 1,015 $m^2$ (10,930 sq ft).Imax Corporation has released four projector types that use its 15-perforation, 70mm film format: **GT** (Grand Theatre), **GT 3D** (dual rotor), **SR** (Small Rotor), and **MPX**, which was designed to be retrofitted in existing multiplex theatres


**The 15 kW Xenon short-arc lamp used in IMAX projectors**

## EASY / DIFFICULT

| Easy | Difficult |
|---|---|
| • Easy to judge the others mistakes | • Difficult to recognize our own mistakes |
| • Easy to criticize others | • Difficult to improve oneself |
| • Easy to set rules | • Difficult to follow them |
| • Easy to forgive others | • Difficult to ask for forgiveness |
| • Easy to think about improving | • Difficult to stop thinking it and put it into action |
| • Easy to receive | • Difficult is to give |
| • Easy is to think bad of others | • Difficult is to give them the benefit of the doubt |
| • Easy is to enjoy life everyday | • Difficult to give its real value |

| | |
|---|---|
| • Easy to read this | • Difficult to follow |

# COMPUTING HARDWARE (1960S-PRESENT)

Author

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Lecturer, CS

This article gives information about the hardware history till date and offers updation of knowledge about hardware

The **history of computing hardware** started at 1960 is marked by the conversion from vacuum tube to solid state devices such as the transistor and later the integrated circuit. By 1959 discrete transistors were considered sufficiently reliable and economical that they made further vacuum tube computers uncompetitive. Computer main memory slowly moved away from magnetic core memory devices to solid-state static and dynamic semiconductor memory, which greatly reduced the cost, size and power consumption of computer devices. Eventually the cost of integrated circuit devices became low enough that home computers and personal computers became widespread.

**Third generation**

The mass increase in the use of computers accelerated with 'Third generation' computers. These generally relied on Jack Kilby's invention of the integrated circuit (or microchip), starting around 1965. However, the IBM System/360 used hybrid circuits, which were solid-state devices interconnected on a substrate with discrete wires.

The first integrated circuit was produced in September 1958 but computers using them didn't begin to appear until 1963. Some of their early uses were in embedded systems, notably used by NASA for the Apollo Guidance Computer and by the military in the LGM-30 Minuteman intercontinental ballistic missile. By 1971, the Illiac IV supercomputer, which was the fastest computer in the world for several years, used about a quarter-million small-scale ECL logic gate integrated circuits to make up sixty-four parallel data processors. While large mainframe computers such as the System/360 increased storage and processing abilities, the integrated circuit also allowed development of much smaller computers. The

minicomputer was a significant innovation in the 1960s and 1970s. It brought computing power to more people, not only through more convenient physical size but also through broadening the computer vendor field. Digital Equipment Corporation became the number two computer company behind IBM with their popular PDP and VAX computer systems. Smaller, affordable hardware also brought about the development of important new operating systems like Unix.

Large-scale integration of circuits led to the development of very small processing units, an early example of this is the processor was the classified CADC used for analyzing flight data in the US Navy's F-14A Tomcat fighter jet. This processor was developed by Steve Geller, Ray Holt and a team from Garrett AiResearch and American Microsystems.
In 1966, Hewlett-Packard entered the general purpose computer business with its HP-2116, offering computing power formerly found only in much larger computers. It supported a wide variety of languages, among them BASIC, ALGOL, and FORTRAN.

Fig: 1969 Data General Nova.

In 1969, Data General shipped a total of 50,000 Novas at $8000 each. The Nova was one of the first 16-bit minicomputers and led the way toward word lengths that were multiples of the 8-bit byte. It was first to employ medium-scale integration (MSI) circuits from Fairchild Semiconductor, with subsequent models using large-scale integrated (LSI) circuits. Also notable was that the entire central processor was contained on one 15-inch printed circuit board. In 1973, the TV Typewriter, designed by Don Lancaster, provided electronics hobbyists with a display of alphanumeric information on an ordinary television set. It used $120 worth of electronics components, as outlined in the September 1973 issue of Radio Electronics magazine. The original design included two memory boards and could generate and store 512 characters as 16 lines of 32 characters. A 90-minute cassette tape provided supplementary storage for about 100 pages of text. His design used minimalistic hardware to generate the timing of the various signals needed to create the TV signal. Clive Sinclair later used the same approach in his legendary Sinclair ZX80.

**Fourth generation**

The basis of the fourth generation was the invention of the microprocessor by a team at Intel. Unlike third generation minicomputers, which were essentially scaled down versions of mainframe computers, the fourth generation's origins are fundamentally different. Microprocessor-based computers were originally very limited in their computational ability and speed, and were in no way an attempt to downsize the minicomputer. They were addressing an entirely different market. Although processing power and storage capacities have grown beyond all recognition since the 1970s, the underlying technology of large-scale integration (LSI) or very-large-scale integration (VLSI) microchips has remained basically the same, so it is widely regarded that most of today's computers still belong to the fourth generation.

**Microprocessors**

Fig: 1971: Intel 4004.

On November 15, 1971, Intel released the world's first commercial microprocessor, the 4004. It was developed for a Japanese calculator company, Busicom, as an alternative to hardwired circuitry, but computers were developed around it, with much of their processing abilities provided by one small microprocessor chip. Coupled with one of Intel's other products - the RAM chip, based on an invention by Robert Dennard of IBM, (kilobits of memory on one chip) - the microprocessor allowed fourth generation computers to be smaller and faster than prior computers. The 4004 was only capable of 60,000 instructions per second, but its successors, the Intel 8008, 8080 (used in many computers using the CP/M operating system), and the 8086/8088 family (the IBM personal computer (PC) and compatibles use processors still backwards-compatible with the 8086) brought ever-growing speed and power to the computers. Other producers also made microprocessors which were widely used in microcomputers.

**Supercomputers**

Fig: 1976: Cray-1 supercomputer.

At the other end of the computing spectrum from the microcomputers, the powerful supercomputers of the era also used integrated circuit technology. In 1976 the Cray-1 was developed by Seymour Cray, who had left Control Data in 1972 to form his own company. This machine, the first supercomputer to make vector processing practical, had a characteristic horseshoe shape, to speed processing by shortening circuit paths. Vector processing, which uses one instruction to perform the same operation on many arguments, has been a fundamental supercomputer processing method ever since. The Cray-1 could calculate 150 million floating point operations per second (150 megaflops). 85 were shipped at a price of $5 million each. The Cray-1 had a CPU that was mostly constructed of SSI and MSI ECL ICs.

**Mainframes and minicomputers**

Time-sharing computer terminals connected to central computers, such as the TeleVideo ASCII character mode smart terminal pictured here, were sometimes used before the advent of the PC. Before the introduction of the microprocessor in the early 1970s, computers were generally large, costly systems owned by large institutions: corporations, universities, government agencies, and the like. Users—who were experienced specialists—did not usually interact with the machine itself, but instead prepared tasks for the computer on off-line equipment, such as card punches. A number of assignments for the computer would be gathered up and processed in batch mode. After the jobs had completed, users could collect the output printouts and punched cards. In some organizations it could take hours or days between submitting a job to the computing center and receiving the output.

A more interactive form of computer use developed commercially by the middle 1960s. In a time-sharing system, multiple teletype terminals let

many people share the use of one mainframe computer processor. This was common in business applications and in science and engineering.

A different model of computer use was foreshadowed by the way in which early, pre-commercial, experimental computers were used, where one user had exclusive use of a processor. Some of the first computers that might be called “personal” were early minicomputers such as the LINC and PDP-8, and later on VAX and larger minicomputers from Digital Equipment Corporation (DEC), Data General, Prime Computer, and others. They originated as peripheral processors for mainframe computers, taking on some routine tasks and freeing the processor for computation. By today’s standards they were physically large (about the size of a refrigerator) and costly (typically tens of thousands of US dollars), and thus were rarely purchased by individuals. However, they were much smaller, less expensive, and generally simpler to operate than the mainframe computers of the time, and thus affordable by individual laboratories and research projects. Minicomputers largely freed these organizations from the batch processing and bureaucracy of a commercial or university computing center.

In addition, minicomputers were more interactive than mainframes, and soon had their own operating systems. The minicomputer Xerox Alto (1973) was a landmark step in the development of personal computers, because of its graphical user interface, bit-mapped high resolution screen, large internal and external memory storage, mouse, and special software.

**Microprocessor and cost reduction**

The minicomputer ancestors of the modern personal computer used integrated circuit technology, which reduced size and cost compared to discrete transistors. Processing was carried out by circuits with large numbers of components arranged on multiple large printed circuit boards. Minicomputers were consequently physically large and expensive to produce compared with later microprocessor systems. After the “computer-on-a-chip” was commercialized, the cost to produce a computer system dropped dramatically. The arithmetic, logic, and control functions that previously occupied several costly circuit boards were now available in one integrated circuit which was very expensive to design but cheap to produce in large quantities. Concurrently, advances in developing solid state memory eliminated the bulky, costly, and power-hungry magnetic core memory used in prior generations of computers.

Fig: The Apple II, one of the "1977 Trinity". The drive shown is a model made for the Apple III.

**Altair 8800 and IMSAI 8080**

Development of the single-chip microprocessor was an enormous catalyst to the popularization of cheap, easy to use, and truly personal computers. The Altair 8800, introduced in a *Popular Electronics* magazine article in the January 1975 issue, at the time set a new low price point for a computer, bringing computer ownership to an admittedly select market in the 1970s. This was followed by the IMSAI 8080 computer, with similar abilities and limitations. The Altair and IMSAI were essentially scaled-down minicomputers and were incomplete: to connect a keyboard or teletype to them required heavy, expensive "peripherals". These machines both featured a front panel with switches and lights, which communicated with the operator in binary. To program the machine after switching it on the bootstrap loader program had to be entered, without error, in binary, then a paper tape containing a BASIC interpreter loaded from a paper-tape reader. Keying the loader required setting a bank of eight switches up or down and pressing the "load" button, once for each byte of the program, which was typically hundreds of bytes long. The computer could run BASIC programs once the interpreter had been loaded.

Fig: 1975: Altair 8800.

The MITS Altair, the first commercially successful microprocessor kit, was featured on the cover of *Popular Electronics* magazine in January 1975. It was the world's first mass-produced personal computer kit, as well as the

first computer to use an Intel 8080 processor. It was a commercial success with 10,000 Altairs being shipped. The Altair also inspired the software development efforts of Paul Allen and his high school friend Bill Gates who developed a BASIC interpreter for the Altair, and then formed Microsoft.
The MITS Altair 8800 effectively created a new industry of microcomputers and computer kits, with many others following, such as a wave of small business computers in the late 1970s based on the Intel 8080, Zilog Z80 and Intel 8085 microprocessor chips. Most ran the CP/M-80 operating system developed by Gary Kildall at Digital Research. CP/M-80 was the first popular microcomputer operating system to be used by many different hardware vendors, and many software packages were written for it, such as WordStar and dBase II. Many hobbyists during the mid 1970s designed their own systems, with various degrees of success, and sometimes banded together to ease the job. Out of these house meetings the Homebrew Computer Club developed, where hobbyists met to talk about what they had done, exchange schematics and software, and demonstrate their systems. Many people built or assembled their own computers as per published designs. For example, many thousands of people built the Galaksija home computer later in the early 80s.

It was arguably the Altair computer that spawned the development of Apple, as well as Microsoft which produced and sold the Altair BASIC programming language interpreter, Microsoft's first product. The second generation of microcomputers, those that appeared in the late 1970s, sparked by the unexpected demand for the kit computers at the electronic hobbyist clubs, were usually known as home computers. For business use these systems were less capable and in some ways less versatile than the large business computers of the day. They were designed for fun and educational purposes, not so much for practical use. And although you could use some simple office/productivity applications on them, they were generally used by computer enthusiasts for learning to program and for running computer games, for which the personal computers of the period were less suitable and much too expensive. For the more technical hobbyists home computers were also used for electronics interfacing, such as controlling model railroads, and other general hobbyist pursuits.

**Micral N**

In France, the company R2E (Réalisations et Etudes Electroniques) formed by two former engineers of the Intertechnique company, André

Truong Trong Thi and François Gernelle introduced in February 1973 a microcomputer, the Micral N based on the Intel 8008. Originally, the computer had been designed by Gernelle, Lacombe, Beckmann and Benchitrite for the Institut National de la Recherche Agronomique to automate hygrometric measurements.[9][10] The Micral N cost a fifth of the price of a PDP-8, about 8500FF ($1300). The clock of the Intel 8008 was set at 500kHz, the memory was 16 kilobytes. A bus, called Pluribus was introduced and allowed connection of up to 14 boards. Different boards for digital I/O, analog I/O, memory, floppy disk were available from R2E. The Micral operating system was initially called Sysmic, and was later renamed Prologue. R2E was absorbed by Groupe Bull in 1978. Although Groupe Bull continued the production of Micral computers, it was not interested in the Personal Computer market. and Micral computers were mostly confined to highway toll gates (where they remained in service until 1992) and similar niche markets.

**Microcomputer emerges**

The advent of the microprocessor and solid-state memory made home computing affordable. Early hobby microcomputer systems such as the Altair 8800 and Apple I introduced around 1975 marked the release of low-cost 8-bit processor chips, which had sufficient computing power to be of interest to hobby and experimental users. By 1977 pre-assembled systems such as the Apple II, Commodore PET, and TRS-80 (later dubbed the "1977 Trinity" by *Byte* Magazine)[11] began the era of mass-market home computers; much less effort was required to obtain an operating computer, and applications such as games, word processing, and spreadsheets began to proliferate. Distinct from computers used in homes, small business systems were typically based on CP/M, until IBM introduced the IBM-PC, which was quickly adopted. The PC was heavily cloned, leading to mass production and consequent cost reduction throughout the 1980s. This expanded the PCs presence in homes, replacing the home computer category during the 1990s and leading to the current monoculture of architecturally identical personal computers.

## WELCOME TO THE FUTURE

Author

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This article gives information about the future innovations in the robotics and usage of the robot in day to day works

*Imagine a robot in your home doing the dishes, while safely interacting with you and reacting naturally to your mood. Imagine a gardener robot that can charge itself by converting compost or waste water into electricity. Imagine touching and feeling a simulated liver for medical diagnosis. Sounds like science fiction? Well, according to scientists at the Bristol Robotics Laboratory (BRL), this is where we are heading.*

BRL – a research partnership between the University of Bristol and the University of the West of England – is the biggest robotics laboratory in the UK. 'Robotics today is all about interdisciplinary solutions requiring multidisciplinary expertise,' explains Professor Chris Melhuish, director of BRL. According to BRL philosophy, state-of-the art robotics must exploit new materials such as artificial muscles and figure out how to best control them. This can only be done with various disciplines working together.

Fig: Professor Chris Melhuish with robot Bert

To this end, Melhuish brought together a number of experts from various fields – cognitive behaviour, microbiology, computer science, physics, biology, neuroscience and electrical, mechanical and aerospace engineering – and put them all under one roof. As a consequence, BRL, which opened in 2006, has fast become a 'one-stop research shop for robotics, where everything you need for an application is available in one place. This is the only way outstanding robotics research can be done. You need to have all these experts available – and Bristol is fortunate to have such broad expertise,' says Melhuish.

This open-minded and interdisciplinary attitude is also reflected in the architecture of the lab, which is divided into open workspaces, separated by glass walls. In one corner a robot arm is moving up and down, not far away a robot rat is being put through its paces, and in another corner the robot Bert is practising speech. For Adam Spiers, one of Melhuish's PhD students, the lab is a great place to work because 'through its openness you can always get inspiration, in case you run out of ideas'.

One successful example of this interdisciplinary approach is the SCRATCHbot – a robot rat. Working with neuroscientists, BRL researchers have created a neural architecture in silicon based on a rat's brain, in order to control this robot. Just like a rat, it seeks out and identifies objects using its whiskers. In the next step researchers will develop a new sensor, which will then be used in an autonomous, shrew-like, whiskered robot that will enable it to track fast-moving objects, the idea behind this being to gain more insight into the brain. Researchers hope that by designing such innovative artificial touch technologies for robots they will be able to understand how the brain controls the movement of the sensory systems.

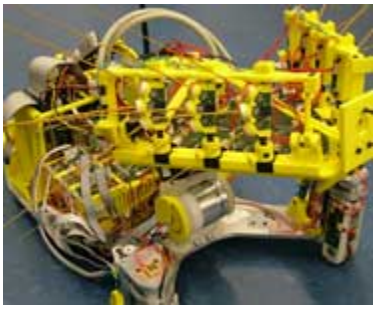


Fig: The robot rat SCRATCHbot identifies objects through its whiskers

Without having to think about it, humans naturally use the most effective and energy-saving way of carrying out an action; thus a research team at BRL developed control mechanisms for human-like movements of a robot's arm. 'In industry, robots are programmed to go to a certain point. Our robot also has to do the same, but it will do so in a human-like way and without programming. It is able to think through the position of its hand,' explains Adam Spiers.

The link between humans and robots is another important aspect of BRL's research. How can humans and robots work together in an easy, comfortable and, importantly, safe way? Here the emphasis is on cognitive models

providing ‘behavioural safety’. This means that if a robot is aware of its environment and can learn from it, the interaction can take part at a safer level because the robot platform is capable of controlled intelligent movements and its actions are largely predictable and understandable by humans.

Safe human–robot interaction is also the starting-point of the project CHRIS (Cooperative Human Robot Interactive Systems), which is funded by the European Commission. If a human and a robot perform co-operative tasks in a co-located space, such as in the kitchen, how can this be made more secure in terms of verbal and non-verbal communication, perception and understanding of intention? In other words, how can a common goal such as robots and humans cooking something together be reached?

‘When humans interact with others a lot of non-verbal as well as verbal communication is constantly happening: facial expression, body position, gestures, tone of voice and goal- sharing, as well as understanding and following instructions. We interpret these constantly, but unless they are missing, you never even think about them,’ explains Melhuish. Future robots will thus need a higher level of sophistication to meet these demands. This can be achieved through engineering the robot and its ‘thinking’ (cognition) so that it can perform physical tasks which involve real-world interactions.

‘Although humans find these interactions very simple to achieve, getting a machine to do it is proving very difficult. But if we can accomplish this one day, service robots could become a part of our society,’ says Melhuish. To help achieve this, researchers at BRL also use robot heads, Jules and Eve, to explore facial expressions. These robots can copy human facial expressions. The overall goal is to build a new robot that will include many elements: gesturing, facial expression, non-language utterances like gaze, body language and, of course, speech.

EcoBot II was able to prove its self-sustainability by running continuously for 12 days on dead flies

Biologically inspired projects (taking models from natural systems – not necessarily humans – and from those developing artificial intelligent systems as well as inventing new materials for robots) are yet another example of research at BRL where microbial fuel cells were first developed. These cells are able to turn biomass into electricity. When these cells were built into a

robot called EcoBot II, it was able to prove its self-sustainability by running continuously for 12 days in a row on dead flies. Ecobot II was the first robot in the world to carry out sensing, processing, communication and movement by converting biomass to electricity. The robot will feature in the Bristol Museum at the end of the year.

'Swarm robotics' is a new approach to co-ordinating the behaviours of a large number of relatively simple robots in a decentralised manner. As the robots in the swarm have only local perception and very limited local communication abilities, one of the challenges in designing swarm robotic systems with desired collective behaviour is to understand the effect of individual behaviour on group performance. BRL researchers are exploring techniques to design and optimise the interaction rules for a group of foraging robots that try to achieve energy efficiency collectively.

Research at BRL is forging into a new, exciting and also unknown future. How long it will take to develop a robot to do the dishes is hard to say, but the team around Professor Melhuish has made enormous progress. This impressed a recent visitor, Iain Gray, CEO of the Technology Strategy Board, a government-funded organisation to promote innovation: 'This is "real" science fiction happening on our doorstep in Bristol,' he said, 'for here we have world-leading research with world-leading researchers.'


***ASPIRING INSPIRATION***

***YOUTH ICON OF THE MONTH***

***The Rupee symbol and the designer Uday Kumar and on the right bottom the minister Ambika Soni***

# PREVENTING GRIDLOCK: DEVELOPING NEXT GENERATION INTERNET INFRASTRUCTURE

Fig: The MODE-GAP project is lead by ORC

The project is set to develop the next generation of internet infrastructure .To keep pace with society's ever increasing data-transmission requirements, the University of Southampton is leading a new project that is set to develop the next generation of internet infrastructure to enhance the capacity of broadband core networks, providing increased bandwidth of 100 times current capacity.

The 11.8m Euro MODE-GAP project, funded under the EU 7th Framework Programme, will seek to provide Europe with a lead in the development of next generation internet infrastructure. Combining the expertise of eight world-leading photonics partners, MODE-GAP will develop transmission technologies, based on specialist long-haul transmission fibres and associated enabling technologies such as novel rare-earth doped optical amplifiers, transmitter and receiver components and data processing techniques, to increase the capacity of broadband networks.

If successful, the MODE-GAP technology will have a significant impact in enabling 'future proof networks and systems' of 'increasing information throughput'. Without such a breakthrough, the internet of the future could be severely compromised. Led by the University of Southampton's Optoelectronics Research Centre (ORC), this collaborative project brings together the expertise of leading industrial and academic organisations across Europe: Phoenix Photonics Ltd, ESPCI ParisTech, OFS Fitel

Denmark APS, the COBRA Institute at Technische Universiteit Eindhoven, Eblana Photonics Ltd, Nokia Siemens Networks GMBH & Co. KG and the Tyndall National Institute of University College Cork.ORC Project Leader Professor David Richardson comments:“We are close to realising the fundamental data carrying capacity limits of current fibre technology in the laboratory and although there is plenty of headroom for capacity scaling of commercial systems for the next 10-15 years, we need to be looking now at developing a new generation of transmission techniques, based on novel fibres and amplifiers, if we are to keep pace with society’s ever increasing data transport demands in the longer term. “The MODE-GAP project has the potential to revolutionise the way we build and operate future generations of optical network. Success will require substantial innovation and major technological developments in a number of fields. The consortium partners believe that they are ideally equipped to undertake the work and are looking forward to the many challenges ahead.”Bart Van Caenegem, Project Officer at the European Commission, adds:

“A European consortium of highly qualified and talented researchers has teamed up and has adopted a ground-breaking approach in R&D to advance the transmission technologies that will enable the networks of the future. This EU-funded project contributes to the Digital Agenda objectives, namely it aims to improve the competitiveness of the European industry and it aims to enable Europe to master and shape future developments in information communication technology (ICT) so that it can meet the demands of its society and economy.”

# CHINA TO LEAD WORLD IN INNOVATION BY 2020

China and India seen eclipsing U.S. and Japan by 2020-poll

LONDON, Dec 5 (Reuters) - China is set to become the world's most important centre for innovation by 2020, overtaking both the United States and Japan, according to a public opinion survey to be published on Monday.

China is already the world's second-largest economy, after establishing itself as the global workshop for manufacturing. Now it wants to move up the value chain by leading in invention as well.

Today, the United States ranks as the world's most innovative country, with 30 percent of people surveyed taking that view, followed by Japan on 25 percent and China on 14 percent.

Fast-forward 10 years, however, and 27 percent of people think China will be top dog, followed by India with 17 percent, the United States 14 percent and Japan 12 percent, according to the survey of 6,000 people in six countries done by drugmaker AstraZeneca.

The shift is not because the United States is doing less science and technology, but because countries like China and India are doing more -- a fact reflected in a spike-up in successful Asian research efforts in recent years.

A study last month from Thomson Reuters showed China was now the second-largest producer of scientific papers, after the United States, and research and development (R&D) spending by Asian nations as a group in 2008 was $387 billion, compared with $384 billion in the United States and $280 billion in Europe. [ID:nN12122457]

ASIAN CONFIDENCE

Working out just how fast the world's new emerging market giants are developing their know-how is critical to many technology-focused companies in the West, as they seek to redeploy R&D resources.

The pharmaceutical industry, in particular, has been anxious to tap into China's science base and many companies, including AstraZeneca, have established Chinese centres as they try to reignite R&D productivity in laboratories at home.

The survey across Britain, the United States, Sweden, Japan, India and China found a strong sense of optimism amongst people living in China and India, in contrast to relative pessimism in the developed Western economies.

More than half of those in China and India thought their home countries would be the most innovative in the world by 2020, while just one in 20 Britons thought Britain would be able to claim this title.

There was an notable east-west divide in views of what had been the most important scientific breakthroughs. People in Asia put communications and computing top, while U.S. and European respondents placed equal importance on the invention of vaccines and antibiotics, the survey found. (Editing by Karen Foster)

Author

**G.Manigandaprabhu,III B.Sc(CS)B**

This article helps to know about the future frontiers of the computer industry.

# TSR PROGRAM#1

**Blinking Lights on Keyboard**

```
#include<dos.h>
void interrupt mytimer();
void interrupt (*prev)();
int run=0,lt=0,ticks=0;
char far *mode;
int temp;
void main()
{
mode=(char far*)0x417;
prev=getvect(0x8);
setvect(0x8,mytimer);
keep(0,100);
getch();
}
void interrupt mytimer()
{
if(run==0)
{
ticks++;
if(ticks==5)
{
```

```
ticks=0;
run=1;
lt++;
if(lt==1)
{
temp=*mode;
temp=temp&0x8f;
temp=temp|0x40;
*mode=temp;
}
else if(lt==2)
{
temp=*mode;
temp=temp&0x8f;
temp=temp|0x20;
*mode=temp;
}
else if(lt==3)
{
temp=*mode;
temp=temp&0x8f;
temp=temp|0x10;
*mode=temp;
lt=0;
}
}
run=0;
}
(*prev)();
}
```

## TSR PROGRAM #2

**Adds text to current dislay line while person is typing and increases the cursor position**

```
#include<dos.h>
void interrupt our();
void interrupt (*prev)();
void writechar(char ch,int row,int col,int attr);
int a,b,kp,run=0;
```

```
char far *scr;
void main()
{
scr=(char far*) 0xb8000000;
prev=getvect(9);
setvect(9,our);
keep(0,500);
}
void interrupt our()
{
kp++;
if(kp==5)
{
run++;
_AH=3;
_BH=0;
geninterrupt(0x10);
a=_DH;
b=_DL;
if(run==1)
writechar('M',a,b,7);
if(run==2)
writechar('S',a,b,7);
if(run==3)
{
writechar('P',a,b,7);
run=0;
}
b++;
_AH=2;
_BH=0;
_DH=a;
_DL=b;
geninterrupt(0x10);
kp=0;
}
(*prev)();
}
void writechar(char ch,int row,int col,int attr)
{
```

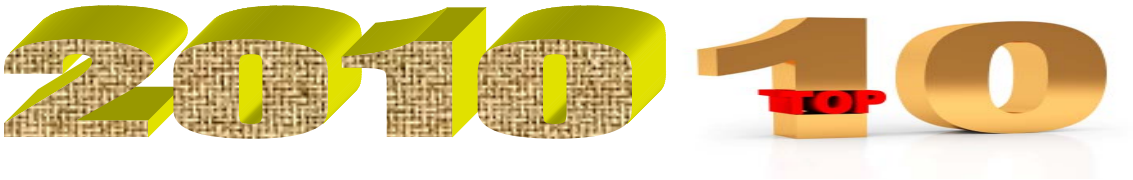
```
*(scr+row*160+col*2)=ch;
*(scr+row*160+col*2+1)=attr;  }
```


**M. Mohammad arif , III B.Sc(CS) B**

This article gives the TSR program which would be very useful. Try it.

## TRENDS IN PC – APPLE TABLET

It has always been tough to determine what Apple will put out in the next year. But this time, the anecdotal evidence seems to add up. Its safe to say you will see a touchscreen-based tablet Apple product that will both fight with Kindle for books and netbook manufacturers for small computing.




## TOP 10 STRATEGIC TECHNOLOGIES 2010

The top 10 strategic technologies for 2010 include:

**Cloud Computing.** Cloud computing is a style of computing that characterizes a model in which providers deliver a variety of IT-enabled capabilities to consumers. Cloud-based services can be exploited in a variety of ways to develop an application or a solution. Using cloud resources does not eliminate the costs of IT solutions, but does re-arrange some and reduce others. In addition, consuming cloud services enterprises will increasingly

act as cloud providers and deliver application, information or business process services to customers and business partners.

**Advanced Analytics.** Optimization and simulation is using analytical tools and models to maximize business process and decision effectiveness by examining alternative outcomes and scenarios, before, during and after process implementation and execution. This can be viewed as a third step in supporting operational business decisions. Fixed rules and prepared policies gave way to more informed decisions powered by the right information delivered at the right time, whether through customer relationship management (CRM) or enterprise resource planning (ERP) or other applications. The new step is to provide simulation, prediction, optimization and other analytics, not simply information, to empower even more decision flexibility at the time and place of every business process action. The new step looks into the future, predicting what can or will happen.

**Client Computing.** Virtualization is bringing new ways of packaging client computing applications and capabilities. As a result, the choice of a particular PC hardware platform, and eventually the OS platform, becomes less critical. Enterprises should proactively build a five to eight year strategic client computing roadmap outlining an approach to device standards, ownership and support; operating system and application selection, deployment and update; and management and security plans to manage diversity.

**IT for Green.** IT can enable many green initiatives. The use of IT, particularly among the white collar staff, can greatly enhance an enterprise's green credentials. Common green initiatives include the use of e-documents, reducing travel and teleworking. IT can also provide the analytic tools that others in the enterprise may use to reduce energy consumption in the transportation of goods or other carbon management activities.

**Reshaping the Data Center.** In the past, design principles for data centers were simple: Figure out what you have, estimate growth for 15 to 20 years, then build to suit. Newly-built data centers often opened with huge areas of white floor space, fully powered and backed by a uninterruptible power supply (UPS), water-and air-cooled and mostly empty. However, costs are actually lower if enterprises adopt a pod-based approach to data center construction and expansion. If 9,000 square feet is expected to be needed during the life of a data center, then design the site to support it, but only build what's needed for five to seven years. Cutting operating expenses, which are a nontrivial part of the overall IT spend for most clients, frees up money to apply to other projects or investments either in IT or in the business itself.

**Social Computing.** Workers do not want two distinct environments to support their work – one for their own work products (whether personal or group) and another for accessing "external" information. Enterprises must focus both on use of social software and social media in the enterprise and participation and integration with externally facing enterprise-sponsored and public communities. Do not ignore the role of the social profile to bring communities together.

**Security – Activity Monitoring.** Traditionally, security has focused on putting up a perimeter fence to keep others out, but it has evolved to monitoring activities and identifying patterns that would have been missed before. Information security professionals face the challenge of detecting malicious activity in a constant stream of discrete events that are usually associated with an authorized user and are generated from multiple network, system and application sources. At the same time, security departments are facing increasing demands for ever-greater log analysis and reporting to support audit requirements. A variety of complimentary (and sometimes overlapping) monitoring and analysis tools help enterprises better detect and investigate suspicious activity – often with real-time alerting or transaction intervention. By understanding the strengths and weaknesses of these tools, enterprises can better understand how to use them to defend the enterprise and meet audit requirements.

**Flash Memory.** Flash memory is not new, but it is moving up to a new tier in the storage echelon. Flash memory is a semiconductor memory device, familiar from its use in USB memory sticks and digital camera cards. It is much faster than rotating disk, but considerably more expensive, however

this differential is shrinking. At the rate of price declines, the technology will enjoy more than a 100 percent compound annual growth rate during the new few years and become strategic in many IT areas including consumer devices, entertainment equipment and other embedded IT systems. In addition, it offers a new layer of the storage hierarchy in servers and client computers that has key advantages including space, heat, performance and ruggedness.

**Virtualization for Availability.** Virtualization has been on the list of top strategic technologies in previous years. It is on the list this year because Gartner emphases new elements such as live migration for availability that have longer term implications. Live migration is the movement of a running virtual machine (VM), while its operating system and other software continue to execute as if they remained on the original physical server. This takes place by replicating the state of physical memory between the source and destination VMs, then, at some instant in time, one instruction finishes execution on the source machine and the next instruction begins on the destination machine. However, if replication of memory continues indefinitely, but execution of instructions remains on the source VM, and then the source VM fails the next instruction would now place on the destination machine. If the destination VM were to fail, just pick a new destination to start the indefinite migration, thus making very high availability possible. The key value proposition is to displace a variety of separate mechanisms with a single "dial" that can be set to any level of availability from baseline to fault tolerance, all using a common mechanism and permitting the settings to be changed rapidly as needed. Expensive high-reliability hardware, with fail-over cluster software and perhaps even fault-tolerant hardware could be dispensed with, but still meet availability needs. This is key to cutting costs, lowering complexity, as well as increasing agility as needs shift.


**Mobile Applications.** By year-end 2010, 1.2 billion people will carry handsets capable of rich, mobile commerce providing a rich environment for the convergence of mobility and the Web. There are

already many thousands of applications for platforms such as the Apple iPhone, in spite of the limited market and need for unique coding. It may take a newer version that is designed to flexibly operate on both full PC and miniature systems, but if the operating system interface and processor architecture were identical, that enabling factor would create a huge turn upwards in mobile application availability.“This list should be used as a starting point and companies should adjust their list based on their industry, unique business needs and technology adoption mode,” said Carl Claunch, vice president and distinguished analyst at Gartner. “When determining what may be right for each company, the decision may not have anything to do with a particular technology. In other cases, it will be to continue investing in the technology at the current rate. In still other cases, the decision may be to test/pilot or more aggressively adopt/deploy the technology.”

***THE TOP 10 COMPANIES FROM INDIA ON THE CLDI IS IN THE TABLE BELOW:***

Carbon Disclosure Leadership Index India 2010: Top 10

Interesting to note that only two of the top ten companies are in the area of information technology and that Infosys Technologies that has also been in the forefront of green initiatives is absent from the top ten and have also held their CDP answers not public.

**Companies recognised on Carbon Disclosure Leadership Index(CDLI) in India**

| Company | CDLI Score |
|---|---|
| Wipro | 87 |
| Jubilant Organosys | 77 |
| Tata Consultancy Services | 75 |
| Tata Chemicals | 72 |
| Tata Steel | 71 |
| Larsen & Toubro | 70 |
| ACC | 70 |
| Mahindra & Mahindra | 67 |
| Ambuja Cements | 64 |
| Sesa Goa | 64 |


# Who Invented Google?

**Larry Page and Sergey Brin invented Google**


# Who Invented YouTube?

**YouTube was invented by Steve Chen, Chad Hurley and Jawed Karim.**

## *Future Inventions*

Future inventions will both make life easier and save energy. One of the future inventions that is progressing is the use of robotic surgery. Having robots do routine surgery such as remove moles plus mold and implant caps on teeth will be nothing. One of the future inventions that will be considered disruptive technology is robots doing major surgery.

Robots in the surgical rooms will be equipped with compact X-rays, MRI machines, lasers, scalpels and other equipment. They will be able to draw blood, collect urine, and analyze the data against huge medical databases. They will make diagnoses and conduct treatment much more quickly than is humanly possible.

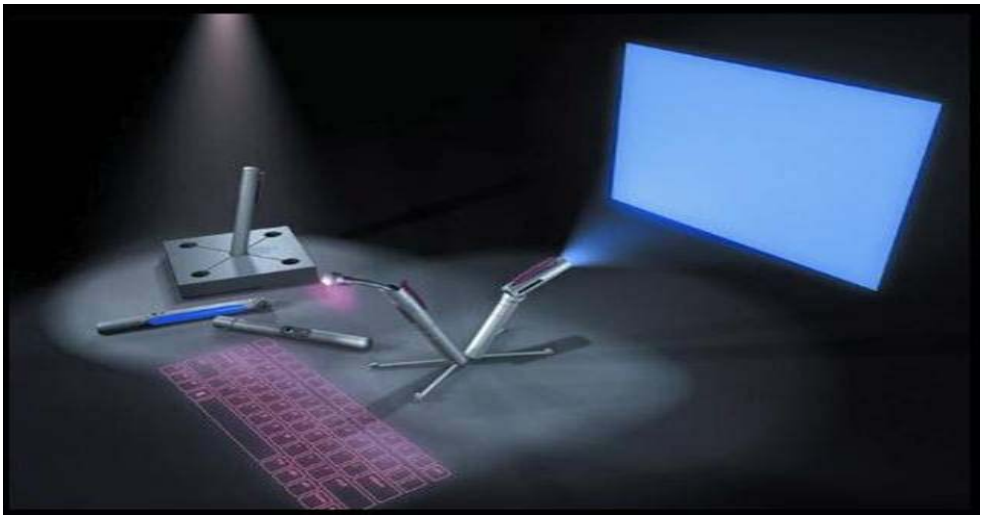
### Projector Pens

Computers have evolved from being king size to the size of a mobile that you can carry with you all the time. Smart phones and mobile phones of

the present are known to be the computers that one uses to surf the web, send and receive mails and connect to friends on social networking websites. Mobile phones have made it possible for everyone to carry their world around in their pocket.

Even after fulfilling so many requirements mobile phone cannot satisfy the feel one gets when he uses his PC. Now you can actually carry your world around in your pocket in these pens.

Some simple looking pens have this ability to project screen and keyboard. This will provide you with a full fledge keyboard to operate on and the sensors will sense the keystrokes to give the feel of an actual keyboard. The screen is also projected with one such pen making the user as if he is working on a laptop.



**Projector Pens Future Computer Technology**

These pens or so called pocket computers may replace laptops in coming future and will be less expensive. The commercial models are not yet out but are expected to hit the market in coming years. These pocket computers will not put a burden on your market and are light enough to carry in your pocket.

## GET ON NET


**Logical Reasoning**

- http://www.indiabix.com/logical-reasoning/questions-and-answers/ → contains logical reasoning questions along with answers solved.
- http://www.aptitudecoach.com/onlintest/logical1.doc → Logical Reasoning Questions
- http://www.bestsamplequestions.com/gre-questions/logical-reasoning/logical-reasoning.html → Logical Reasoning Questions

- http://latestexams.com/2008/07/tcs-placement-paper-quantitative-logical-reasoning-questions/ → Sample TCS placement paper.
- http://www.2dix.com/pdf-2010/logical-reasoning-questions-and-answers-pdf.php
- http://www.2dix.com/pdf-2010/logical-reasoning-questions-and-solutions-pdf.php
- http://placementpapers.net/helpingroot/INFOSYS_INTERVIEW_PUZZLES_WITH_ANSWERS

**set of placement question papers of various companies and the experience of candidate who got placed.**

- http://www.chetanasinterview.com/categories/RELIANCE/ → Reliance.
- http://www.chetanasinterview.com/categories/ACCENTURE/ → Accenture

**General Knowledge Questions**

- http://www.eveandersson.com/general-comments/attachment/1565/50interviewqas.pdf → frequently asked questions in an interview
- http://placementpapers.net/helpingroot/files/Aptitude-Test-Paper-By-Placementpapers.net_.pdf → aptitude questions
- http://www.kidport.com/grade7/tal/reasoning.htm → Verbal Reasoning.

# MYSELF IN BOOKSHELF

**Book Name** : ADHOC Networking

**Author** : Charles E. Perkins

**Publication** : Pearson Publication.

I am entitled as "ADHOC Networking" and composed by Charles E. Perkins. Before looking into the contents of mine, I want to give a brief note on the term "ADHOC".

**ADHOC :**

**Adhoc Networks are wireless mobile networks that can be set up anywhere and anytime – outside the internet / another pre-existing network infrastructure. This field has tremendous commercial and military potential, supporting applications such as mobile conferencing battlefield communication, embedded**

| S.NO | ARTICLE TITLE | AUTHOR NAME | ISSUE | MONTH | YEAR |
|---|---|---|---|---|---|
| **1.** | Windows 7 New Microsoft Release | S.Maheswaran,<br>III -BCA'A' | Issue#15 | November | **2009** |
| **2.** | How to Perform Special Searches | Prof. K. Natarajan, Director | Issue#15 | November | **2009** |



Archives

**sensor devices that automate household functions.**

"ADHOC Networking" is a collection of algorithms, protocols applied for the wireless networking. I have enclosed the innovative ideas from leading practitioners and researches that will propel the technology towards the mainstream deployment (MANET). I am yet to discuss about numerous potential applications and review relevant networking concepts and examine the various approaches that define emerging Adhoc networking technologies.

The content of mine will be useful for the readers who intend to do research in networking.

**Note :** I am available at KSRCAS Main Library

| | | | | | |
|---|---|---|---|---|---|
| **3.** | Cloud computing Vs Grid computing | S.Sasikala, Lecturer, CS | Issue#16 | December | **2009** |
| **4.** | Revolutionary web2.0 tools | S.Prema, Lecturer, CS | Issue#16 | December | **2009** |
| **5.** | Article on Antivirus And Content Security Cluster Solution | J.Rajasekharreddy II-MCA-A | Issue#13 | September | **2009** |
| **6.** | Brain Twisters | G. Manigandaprabhu II B.Sc(CS) 'B' | Issue#12 | August | **2009** |
| **7.** | Jargons | K.Naveenkumar ,III-Bsc(cs) c | Issue#16 | December | **2009** |
| **8.** | Hacking Spectrum | M.Mohammad arif ,<br>AR.abdul jabbar sheriff,<br>II Bsc(cs) B | Issue#13 | September | **2009** |
| **9.** | This Month That Day | Pauline precillaMary,<br>Tamilarasi,III-BCA C | Issue#13 | August | **2009** |
| **10.** | **Ubiquitous Computing** | **S.Nithya, Lecturer, CS** | **Issue#16** | **December** | **2009** |

# Mailing List

## To whom we send

- **The Vice-Chancellor, Periyar University ,Salem-11**
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- **The HOD, Department of Computer Science, Periyar University,Salem-11**

- **The HOD, Government Arts College for Women, Salem-8**
- **The HOD, Government Arts College for Women , Krishnagiri**
- **The HOD, Government Arts & Science College (W), Burgur, Kirshnagiri**
- **The HOD, J.K.K Nataraja College of Arts & Science**
- **The HOD, M.G.R College of Arts & Science**
- **The HOD, Sengunthar Arts & Science College**
- **The HOD, Muthayammal College of Arts & Science**
- **The HOD, PEE GEE College of Arts &, Science**
- **The HOD, Harur Muthu Arts & Science College for Women**
- **The HOD, Vivekanandha College of Arts & Sciences (W)**
- **The HOD, Mahendra Arts & Science college**
- **The HOD, Selvam Arts & Science college**
- **The HOD, St.Joseph's College of Arts & Science for (W)**
- **The HOD, Vysya College of Arts &, Science**
- **The HOD, NKR Government Arts College for Women**
- **The HOD, Arignar Anna Government Arts College**
- **The HOD, Salem Sowdeswari College**
- **The HOD, P.G.P College of Arts & Science**
- **The HOD, Attur Arts & Science College**
- **The HOD, SSM College of Arts & Science**
- **The HOD, Government Arts College Salem**
- **The HOD, Government Arts College Men**
- **The HOD, Government Arts College, Dharmapuri**
- **The HOD, Gobi Arts and Science College (Autonomous)**
- **The HOD, Sri Kandhan College of Arts & Science**
- **The HOD, Sri Ganesh College of Arts & Science**
- **The HOD, Jairam Arts & Science College**
- **The HOD, Sri Balamurugan College of Arts & Science**
- **The HOD, PSG College of Arts and Science**

- **The Secretary, PSG College of Arts and Science**
- **The HOD, Kongunadu Arts and Science College(Autonomous)**
- **The HOD, Vivekanandha College for Women**
- **The HOD, Sri Vidhya Mandir Arts & Science College**
- **The HOD, *St*.John's College *Palayamkottai* - 627 007**
- **Mr. S.T.Rajan, St. Joseph's College, Trichy**
- **Dr.S.K.Jayanthi, Head, CS Dept., Vellalar College for Women, Erode**

**KSR COLLEGE OF ARTS AND SCIENCE (Autonomous)**

**TIRUCHENGODE**

**DEPARTMENT OF COMPUTER SCIENCE (UG)**

**Student's participation in intellectual events in Other Colleges**

| S. NO | NAME OF THE COLLEGE | EVENT NAME | NAME OF THE STUDENT | WINNERS POSITION |
|---|---|---|---|---|
| 1. | Bharathiar University, Coimbatore | National Conference in Recent Advancements in computer Applications | 1.G.ManikandaPrabu III CS B<br>2. R.Manojkumar III CS B<br>3.B.Veeramanikandan III CS B | Presented paper entitled "Analyzing WWW for predicting user Behavior" |


# Achievers Archives


**S.Sasikala, Lecturer in Computer Science department presented a paper entitled " Hyperlink Attribute Analysis for Detecting Spamdexing" on "International Joint Conference on Advances in Engineering and Technology" held at Trivandrum, Kerela on 21 to 22 Dec 2010,published in ACEEE Search digital Library.**

**S.Sasikala, Lecturer in Computer Science department presented a paper entitled " A framework for Efficient IR in web" on " International Conference on Emerging Trends in Computer Applications" held at Mepco Shlenk Engineering College, Sivakasi on 16 to 18 Dec 2010.**

**S.Prema, Lecturer in Computer Science department presented a paper entitled " BSDS Data structure for visualization" on " International Conference on Emerging Trends in Computer Applications" held at Mepco Shlenk Engineering College, Sivakasi on 16 to 18 Dec 2010.**

**D.Saraswathi, Lecturer in Computer Science department presented a paper entitled " Combating Spamdexing in Web Search Engines" on " International Conference on Emerging Trends in Computer Applications" held at Mepco Shlenk Engineering College, Sivakasi on 16 to 18 Dec 2010.**

**S.Nagarajan, Lecturer in Computer Science department presented a paper entitled " Unsupervised Learning an Image Segmentation of Satellite Images Through Non-Linear Processing" on " Second International Conference on Advanced Computing and Communications Technologies for High Performance Applications" held at Angamly,Kerela on 16 to 18 Dec 2010.**

**S.Anita, Lecturer in Computer Science department presented a paper entitled "Design of Idiosyncratic Tool for Internet Plagiarism " on " International Conference on Emerging Trends in Computer Applications" held at Mepco Shlenk Engineering College, Sivakasi on 16 to 18 Dec 2010.**

We welcome your valuable comments, suggestions & articles to
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