Volume 1, Issue 2 (Feb '08)

BROUGHT OUT BY ACM STUDENT CHAPTER

CSE Newsletter

**Inside this issue:**



## *Editor's Column*

The harshness of winters is gone, spring is just around the corner. After all the wait, we present to you a pleasant *Spring Edition* of our department newsletter.

It's been both hard work and a privilege for us to bring out this second edition. While 1st edition received great reviews, it also set a good benchmark. For this edition, we thank Prof. Subhashis for writing an article, which is quite inspiring, just like he himself is. Like last time, we also included some good projects running in the department to further inspire students. The *Profiles* section is a key highlight in this edition, with short articles on two of the greatest contributors to CS today—Stallman and Fran Allen.

The newsletter aims to bring you up-to-date with CS related activities in both the inside and outside world. While the former is compiled through department news flashes, a peek into the status of computer science education is provided in the article by Arindam Pal. An interview of Prof Dhruv Nath, who visited the department and gave an inspiring talk is published.

The newsletter team hopes that you would like this edition too, and looks forward to more contributions from the second and third year students. This is your forum to share ideas and news with your department. Happy Reading!

*Anubha Verma (Editor)*

# Cover Article: Status of Computer Science Education in India

*By Arindam Pal*

India is viewed as a country full of talented software engineers. In fact, Bangalore is considered by many as the Silicon Valley of India. Yet, the teaching and research standards at most Indian Universities are far from ideal. Barring a few institutes of excellence (IIT, IISc, IIM, ISI, TIFR and some others), the quality of students produced by most engineering colleges are not up to the mark. This is clearly evident, both in academia, as well as in industry. Even the top institutes in India do not appear in the top 200 research universities in the world, as published by various ranking systems. While these rankings should be taken with a grain of salt, the fact that Indian institutes never feature in the top 200 is a serious cause of concern. In industry too, there is a huge shortage of qualified manpower. According to NASSCOM, India will have a shortfall of 500,000 software engineers by 2010 for its ever increasing domestic and international markets. But companies are unable to stuff them with the existing supply of engineering graduates. It has been repeatedly pointed out that most computer science undergraduates are unemployable due to lack of communication skills and analytical abilities. So we are in a peculiar situation, where there are a large number of white-collar jobs, but not enough people to fill them.

> ***...emphasis should be on how to Apply those theorems to solve new problems***

*The Problems*

To understand why the quality of students coming out of colleges are below standard, we will go through the root causes of the problem.

1.*Teaching of Computer Science in India*- The problem with teaching in our institutes is that they don't impart knowledge. It merely throws a body of information to the students, without bothering whether they are able to digest and assimilate it into their learning process. We are taught about learning a bunch of theorems and reproducing it in the examination, whereas the emphasis should be on how to *Apply* those theorems to solve *new* problems. We are taught about *theory building*, while the focus should be on *problem solving*. The culture of reading lecture notes and not studying good books encourages students to study the subject to get marks and not learning it. This in turn encourages unscrupulous means like cheating, which hinder the learning process.

*2. Society's Role*- Indian society plays a very important role in our mindset and education. While great emphasis is placed on the importance of education, including higher education, there is still a lot more that the society can do for its advancement. One area where we lack is our assertiveness and inquisitiveness. We are taught from the childhood not to question our parents and teachers. While this may have been thought of as showing mark of respect to the seniors, it has its pitfalls. From the beginning we don't ask questions in schools, fearing that the teacher or fellow students may not think well about us. This does not augur well for free thinking.

*Contd. On page 2*

# Status of Computer Science Education in India (... contd.)

One should always keep his mind open and ask questions, whenever he does not understand something. Being assertive and inquisitive does not mean being disrespectful and aggressive. That is why you will find that an American or an European is far more assertive and inquisitive than an Asian. It has something to do with our culture. Another area I would like to emphasize is society's view on higher education and academia. While most parents encourage their wards to study engineering, medicine, and law, very few parents actually tell them to go for Masters and Ph.D. We seem to have a biased view toward higher education. The balance is tilted in favor of *making money* instead of *acquiring knowledge*. The same is true for teaching jobs. While most parents and students will complain about the lack of good teachers in our institutes, very few want to be teachers themselves. If we don't encourage people to become teachers, we have to be satisfied with the existing quality of teachers.

3. *Computer Science Research in India* - Research in computer science is in a bad shape in India. While we may feel proud of producing one of the highest number of undergraduates anywhere in the world, the number of our graduate students is pathetic. According to various estimates, India produces one of the lowest number (40) of Ph.D. students annually among countries of similar size and importance. The quality of research is also not of the highest standard. In most institutes, a handful of faculty and very few Ph.D. students regularly publish scholarly articles in international journals and conferences. The government and the private sector do not seem to be supportive of research either. While there are not many fellowships and scholarships available for researchers, the amounts of these do not motivate bright students to take up a career in research. We don't have a well-organized, central research grant approving body like the National Science Foundation in US and similar bodies in Europe and Japan. As a result, applying for grants and getting them sanctioned is a lengthy, ad-hoc, and time consuming process, tangled in bureaucratic interference.

4. *Shortage of Faculty and Ph.D. Students*- This is an area of serious concern and it is related to the points mentioned above. Most of our bright students don't want to take up a career in research and teaching. The reasons are many -- wide difference of salary in academia and industry, lack of opportunities available in India for doing fundamental research, pressure from society, long time to get established as a researcher and so on. As a result, we lose our best and brightest minds to foreign universities and industry. With some exceptions, most students go for Ph.D. because of lack of opportunities elsewhere, not because of their interest and passion for the subject. This is very unfortunate.

5. *The Industrial Scenario*- The situation is not much better in the industry either. While India has an established IT and BPO industry, the quality of work in most of these companies are not very good. While most companies do outsourcing work for their American and European counterparts, there are very few companies which work on developing new products or high-end R&D. Even some of the most admired MNCs keep their core R&D work in their headquarters in US/Europe, while outsourcing work not strategic to the company to take advantage of the cheap labor available in India. As a result, most of the engineering graduates lose interest in their work after a few years and look for other opportunities like management, finance, or civil services. This is clearly a great loss for us.

There is another side of this story. While the employees complain that they don't get to work on challenging and interesting assignments, the employers feel that employees lack the ability to work on strategic R&D work. This is not a totally unfounded claim. The author had first-hand experience of interviewing many candidates during his tenure at some of the top software companies. Most of the candidates, even from good institutes, lack understanding of basic computer science concepts like sorting, searching, semaphores, recursion among others. This is true both for fresh graduates as well as experienced candidates, many of whom are themselves working in top IT companies. This is not a one-off incident as other interviewers expressed similar concerns about the candidates. IT industry is finding it increasingly difficult to hire and retain qualified people. The quality of education in our institutes is the primary reason for this.

*Solutions*

*1. Teaching the Teachers*

The problem with many teachers is that they don't share the joys and beauty of mathematics and computer science with their students. Many of them teach the subjects in such a dull way that students quickly lose interest. To attract more students, they should not only explain the theory in great details, but also stress on the applications and problem solving aspects of the theory. Using computers to do simulation is a great way to engage students in such activities. Problem solving competitions such as International Mathematical Olympiad can go a long way in motivating students for pursuing a career in these subjects. Training the teachers to teach students in a more fascinating way and encouraging them to think independently and solving problems is very helpful for the growth of students.

*2. What Other Countries are Doing?*

While most developed and emerging countries are focusing on high quality science and engineering education, one program is particularly noteworthy: The American Competitiveness Initiative. As part of this, the American Federal government is investing $137 billion for research and development. Of particular interest is the availability of 100,000 highly qualified mathematics and science teachers by 2015. By emphasizing on basic research and mathematics, the American government is making sure that they maintain their technological edge and thought leadership in the 21st century.

3. *Indian Competitiveness Initiative*

India has to take a cue from these initiatives. We need to invest heavily on both higher education as well as primary education by setting up new schools, colleges, and universities. It is time to stop basking in the glory of IT revolution and

*Contd. On page 4*

# Richard Stallman *on* The Dangers of Software Patents

*Richard Stallman is a free software philosopher, hacker and evangelist. He is the founder of the GNU project, and father of the Free Software Movement. He is also the author of emacs, GNU Compiler Collection and GDB. This article gives an abstract of the talk given by Richard M. Stallman at IIT Delhi on 8th January 2008.*

The major focus of the talk was on various issues involved with software patents. Software patents like other all patents give exclusive right to its owner. Other developers who want to use the patented ideas have to pay to do the same. Stallman discussed three major issues involved with patents. First issue is, if a new software programmer wants to write a program, he has to search all the patents issued by the patent office. Apart from this, the other issue he raised is that the patent office usually does not disclose patent applications under consideration for around 18 months. If a patent was not there when the programmer started writing his code but gets issued later, it creates problems for him. The third issue is that filing a patent is also a tricky task. Because of its complicated language, a lawyer is required to understand the processes involved and the language used. Speaker suggested three methods of avoiding the complications accompanying patents. First is to avoid using patented work. Second is to get the license for it and the third is to invalidate in the court.

*"Clearly avoiding patents can sometimes be very difficult. There is no simple test to check if an idea is already patented or not."*

Clearly, avoiding patents can sometimes be very difficult. There is no simple test to check if an idea is already patented or not. Further, there may be several ideas involved in implementing an algorithm. Similarly if features of a software tool are patented, one can leave those features and use others but this is again not a practical solution. Getting license of the patent is sometimes feasible, sometimes painful and sometimes impossible. License holder may ask for huge amounts of money. Also there is a possibility of formation of mega-club which consists of big companies that hold most of the licenses. Stallman suggests that it will lead to cross-licensing, i.e., two companies may allow use of each others' patents. Due to this common programmer and small companies may suffer. The third way to get around the problem of patent is to battle in the court, i.e., one has to show patented idea was not original. That is again a long and pain giving process.

Speaker also discussed other aspects of software patents and put forward his thoughts with several examples. He concluded the talk with the thought that software patents are a danger for programmers and discouragement for research.

*Compiled by Neeraj*

# Profile: Frances Allen—First Lady to win Turing Award

If the honor of catapulting women in the midst of computer science has to go to someone, it must go to none other than Frances Elizabeth Allen, a pioneering American computer scientist, renowned for outstanding work in the field of optimizing compilers and conferred last year with the Turing award (ACM's prestigious technical award).

Born in 1932 and raised in a farm in upstate New York, "Fran" Allen graduated from Albany State Teachers' College in Mathematics leading to a master's degree in the same field from the University of Michigan (1957). Her love for teaching took her to a small rural school in Peru, NY where she started teaching practical math to farm kids. Luckily she joined IBM Research in 1957 as a temporary solution to pay student loans and history was set to witness an illustrious 45-year career of the pristine female "beautiful mind" (pun intended). Allen quickly carved a special niche for herself in IBM, where she led revolutionary research in compilers, code optimization and parallelization. She helped create one of the first automatic debugging systems and developed an advanced code-breaking language known as "Alpha". The respect she earned led to her being bestowed with an honorary Doctorate in Science in 1991 from the University of Alberta. She was the founder of the Parallel Translation Group (PTRAN) to study compiling for parallel machines which was one of the top research groups in that field.

Having served as senior technical consultant to IBM's Research Solutions and Services vice-president, Fran Allen made history when she was named as the first female IBM Fellow in 1989. This recognition was a direct consequence of the tremendous influence of Allen on the IBM community. She was also appointed as the president of the IBM Academy of Technology. Among other honors include fellowship of the IEEE, the ACM and the Computer History of Museum. In 1997, she was inducted into the WITI Hall of Fame. After winning the Augusta Ada Lovelace Award from the Association for Women in Computing, she was bestowed with A.M. Turing Award 2006 for contribution to high performance computing. Allen's technical expertise cannot eclipse the social imprint she left on her colleagues. Her ability to cultivate relationships was paramount to her success. She was so highly motivated for mentoring young employees that IBM established the "Frances E. Allen Women in Technology Mentoring Award", whose first recipient (2000) was Allen herself. Today as IBM Fellow Emeritus, Allen continues to influence women's lives through mentoring. Her resilience in everything she does is well exhibited in her own words –

"All the things I do are of a piece. I'm exploring the edges, finding new ways of doing things. It keeps me very, very engaged."

*Compiled by Harmeet*

# Status of Computer Science Education in India (... contd.)

strengthen the science education program in India. We need to update our curriculum to include the current state of the art, give financial incentives for doing fundamental research, and make the education sector free from political and bureaucratic interference.

I have a few proposals to improve the status of our computer science teaching and research.

• Put greater emphasis on mathematics and science subjects in middle and high school levels.

• Impart training to teachers to teach the subjects so that students find it interesting.

• Start more problem-solving competitions like the Olympiads at school level.

• Award more grants, scholarships, and fellowships for doing fundamental research in mathematics and computer science.

• Setup a central research grant approving body like the NSF.

• Hire and retain high-quality faculty for universities by giving them financial incentives and world-class research facilities [CR].

• Teachers should encourage and motivate students to take up a career in research.

The Government of India has realized the importance of research, albeit lately. In the 11th Five Year Plan, they are going to substantially increase the education budget in general and grants for research in particular. GoI will setup 30 new central universities, 7 IITs and IIMs, 10 NITs, 5 Indian Institute of Science, Education and Research. The goal is to provide more scholarships and fellowships for Ph.D. students and faculties, so that more bright students take up research as a career. This will significantly improve India's R&D potential and go a long way in building a knowledge-driven society.

To sum it all, to keep pace with the rapid growth of science and technology, we need to massively upgrade our education system, particularly higher education and mathematics and science education. We need to encourage students to do basic research in India and provide the fuel for the rapidly growing engine of Indian economy. To achieve this, we have to invest heavily in improving our educational infrastructure as well as our mindset towards higher education. This is essential to become a leader in the new knowledge intensive world. We hope that all sections of the society, including the citizens and the government will play their respective roles in fulfilling the dream of making India the new global superpower a reality.

*Written by -*

*Arindam Pal*
*(Ph.D. Student)*

# Realize Your Potential– *Prof. Subhashis Banerjee*

It is undeniable that our department attracts considerable talent at all levels. Adequate testimony to this are the high GATE scores and the JEE ranks of our students, the rigorous scrutiny of all applications, the impressive profile of the younger members of the faculty, and the multistage selection processes for the faculty and Ph. D. students. However, it is also true that when it comes to innovation and research and their direct impact to technology, science and society, our department falls short of expectations - especially when compared to some of the leading academic institutions of the world.

***It is time to shed our staid image and be more exciting***

This indeed is surprising, given that our students are as talented as in anywhere else and that our faculty have comparable training. What is it that we can do to break free? Perhaps there is something lacking in the way we go about things in the department? Is it the case that most of our time is consumed by the routine and the mundane, and we are too bogged down with assignments, exams, grades, Ph. D. comprehensive rules, publication worries, bio-data, awards, "aping and recommendation hunting", internships and other career planning activities? *Is planning for the future making our present unexciting and less enjoyable?*

We definitely need to create in our department a vibrant atmosphere of activities, enquiries, experimentation and discussions which in turn can engender innovation and creativity. For this to happen we need to engage more with each other through informal seminars, projects and discussions and somehow turn our laboratories into more happening places. It is indeed exciting and morale boosting for all to see a bunch of enthusiastic students engaged in fervent discussions and trying to build things in the labs.

We have to learn to enjoy the process more and worry less about the end results, which are bound to follow if we do the basics right. *Our role models should be those who create and innovate rather than those who "know" or have the best grades or the highest paid jobs.*

After all, as Sania Mirza says - Well-behaved women rarely make history.

It is time to shed our staid image and be more exciting and enterprising as a community. It is easier to do in CSE because, unlike in some other subjects, one doesn't need to wait to learn a great deal before one can innovate.

And, the young people of the department with their uncluttered minds are perhaps in a best position to show us the way.

*- Prof. Subhashis Banerjee*

*(CSE department, IIT Delhi)*

# Interesting Projects in Department (I)

## A Graph Based Framework for Exploration of News Topic

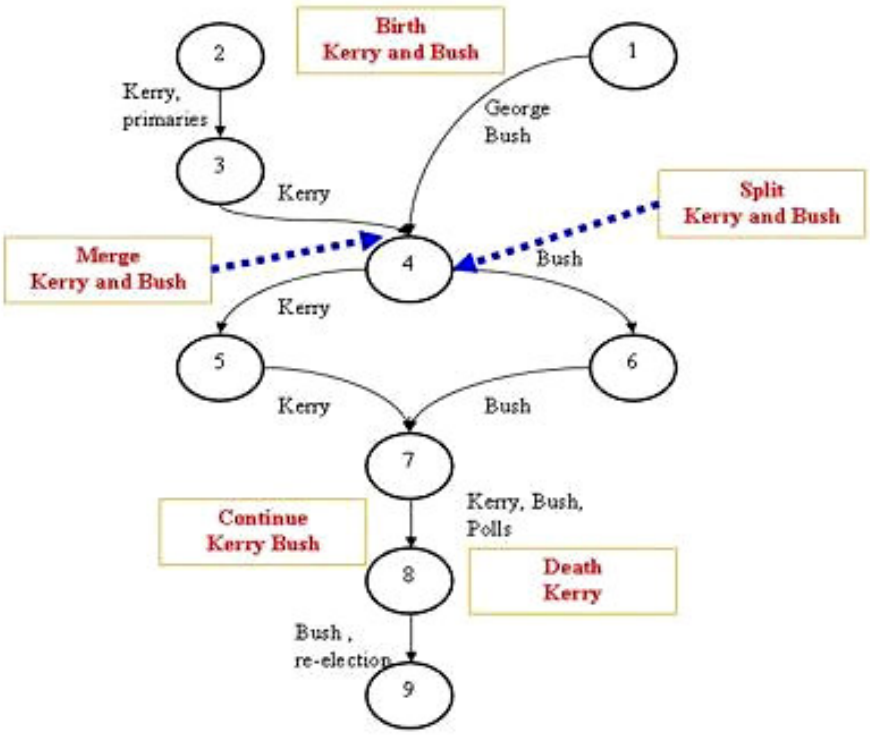
People involved in the project are—Rohan Choudhary, Rahul Balakrishnan, Prof. Amitabha Bagchi and Dr. Sameep Mehta (IBM Research Lab)

**Aim and Motivation of the Project**

The aim of this project is a more intuitive and efficient framework for exploration of any news topic. A news topic can be defined as a cluster of news stories connected by a seminal event. For example FIFA World Cup or US Elections etc. Current browsing tools basically consist of the news search engines, which simply list the news stories using relevance ranking measures, known only to them. We instead believed that a directed graph will be a much better representation of news corpus, where every node represents a news story (or a group of them) and a directed edge from one story to another implies both a textual and a temporal dependency. The problem thus is – Given a news corpus, develop an automatic algorithm, to generate a directed graph representing the news corpus.

**Technical Details**

The basic premise behind our algorithm was the presence of actors inside every news corpus. Actors are entities, which play a major role in the evolution of a news corpus. In case of FIFA world cup, the actors would be the teams and the well reported players. There are standard and efficient algorithms to extract such actors or themes inside a text corpus using techniques of probabilistic Latent Semantic Indexing. Every news story has some of these key actors, and thus the evolving news corpus implies changing interrelationships between actors of the corpus. We captured these interrelationships using five key transformations that these actors could undergo : create, split, merge, continue and cease (See Diagram). In the self explanatory figure, the key actors are Kerry and Bush. Each node corresponds to a news story and constituent actors have been mentioned inside the nodes. The relevant transformations have been marked in the figure. Some of the transformations inside a news corpus are more useful than others. We thus provided quantitative metrics to measure the importance of any transformation . The idea of transformations gave us a way of drawing a representative interaction graph for the news corpus, by enforcing only the key transformations. The underlying idea was that, the top ranked transformations represented the key events and stories inside the corpus. We have also developed techniques to summarize a huge interaction graph using agglomerative clustering and allen's temporal algebra. Finally, we developed a web based news visualization tool, which could be used to browse large interaction graphs. The tool has facilities to zoom, filter and summarize the graph, thus completing a holistic framework for the exploration of any news topic. The tool is ready and we expect to put it in public domain soon.




Currently, we are working on similar quantitative measures in other evolving graphs like scientist collaboration graph and actor movie networks.

*Contributed by Rohan Choudhary.*

"Success is almost totally dependent upon drive and persistence. The extra energy required to make another effort or try another approach is the secret of winning."

Denis Waitley

# Interesting Projects in Department (II)

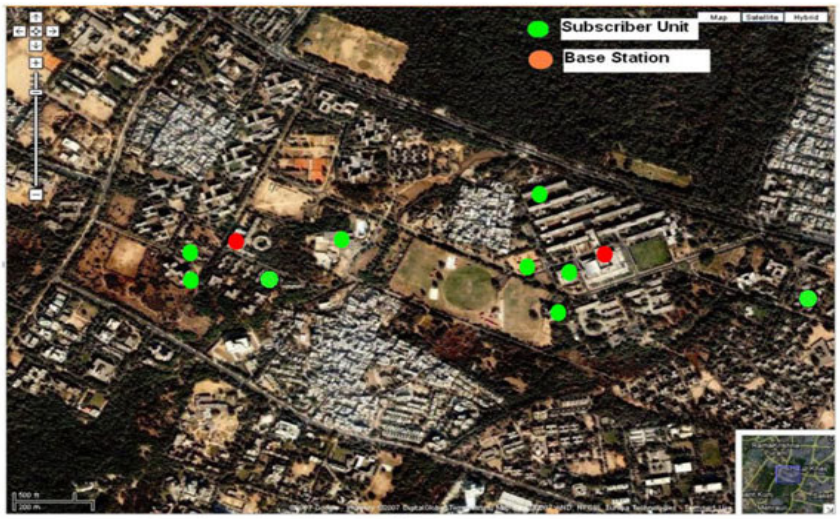
## *Networks—Assessment of WiMAX Technology for Performance*

*Interoperability and Manageability on Campus Area Test Bed*

Reaching out to the masses with broadband wireless connectivity is what is the promised potential of WiMAX (IEEE 802.16). This project at Indian Institute of Technology, (IIT) Delhi aims to develop a WiMAX network covering the entire campus and analyze its performance and interoperability with existing networks.

After successful deployment of the network consisting 2 Base Stations and 10 Subscriber Stations, the WiMAX Research Group at IIT Delhi headed by Prof Huzur Saran is analyzing the impact of various factors such as distance, line of sight conditions, data types (video/ audio streaming and general TCP packet data), QoS requirements of the users and traffic load on the throughput. Extensive field surveys have been carried out to examine the network coverage in a practical scenario ensuring fair assessment of the network performance which is otherwise not apparent through simulations.

**Reaching out to the masses with broadband wireless connectivity is what is the promised potential of WiMAX (IEEE 802.16)**




Network Deployed in IIT Delhi (Map Courtsey: Google Maps)

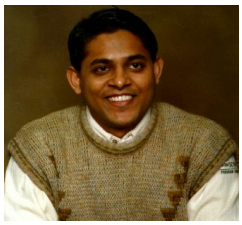
The group's research work also includes enhancement of mobility support in 802.16 technologies by improving the handover techniques already proposed. Seamless multi-cast transmissions while moving through heterogeneous WiMAX and WiFi networks is next big area for research.

**Project Investigator:**

Faculty: Prof. Huzur Saran

Student: Mrinal Sinha

# Profiles: New Faculty



**Subodh Kumar**

I joined the department in 2007, a good fifteen years after having said farewell as a student. It was a special place to be back then. It is an even more special place now. Having seen across oceans wide, I can say with authority that the students, facilities and faculties here are undeniably world-class. Make the best of it. I notice a greater emphasis, and even trepidation, on some students' parts about the level of remuneration one lands during the placement. That's alright. But realize this that you have the opportunity to be the world's leading expert in your chosen area. Go learn more. Use the resources. Be the best in your domain. The financial incentives will follow you, not the other way around.

In my own area of Computer Graphics, now the department has a much larger group – a critical mass, in a manner of speaking. It's the leading group in the nation. Expect many new research and educational activities in this area. We are starting projects to recreate virtual replicas of real world objects (that include you and me), to bring movie-like realism to computer games, and to perform medical data visualization. Many challenging problems remain and I am always keen to take them on alongwith you students.

**Kavitha Telikepalli** joined the Department of CSE, IIT Delhi as a visiting faculty on January 1, 2008. She is an Assistant Professor at the CSA Department, Indian Institute of Science, Bangalore. She will be at IIT Delhi till the end of April 2008. She joined IISc in January 2005 and prior to that, she was a post-doc at the Max Planck Institute, Saarbruecken, Germany (Sep 2002 – Dec 2004). She received her PhD (2002) from the Tata Institute of Fundamental Research, Mumbai and B.Tech (1995) in CSE from IIT Madras. She also worked as a Software Engineer in NOIDA (1995-96). Her research interests are in Algorithms and Complexity. More specifically, she works in efficient graph algorithms.

# ACES: Beyond the assignments ...

ACES, the association of students of CSE@IITD has been involved in organizing several events over the past few months. The first semester of the 2007-08 academic session began with a rocking Freshers' Welcome. The evening showcased the talents of the freshers, ranging from poetry to singing, to jokes and even a remarkable laugh (a piece of mono-acting)! The event ended with refreshments (Burgers ☺) and one of the most rocking dance parties our very own Bharti has ever seen!!

ACES was also actively involved in organizing various technical talks throughout the semester. Some of the notable ones included the AJAX seminar and programming contest held by TIBCO Software India and a talk on NFS by Michael Eisler, Sr. Technical Director, Network Appliance. The new year was indeed happy for those getting Xbox 360 (wow!), Windows Mobile phone, Bluetooth headsets and flash drives given away to the winners of the Microsoft Algorithm Challenge.

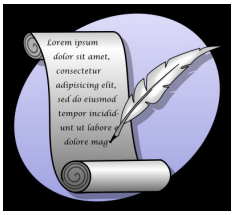
On the sports front, we had a badminton tournament to beat the chill this January. More events like lawn tennis and tennis ball cricket are on their way! Time to get your sports shoes out…

As soon as the minor exams got over, it was fun time again! We had a movie screening in the department. Also, this time we organized an Online Programming Contest in the department for the first time ever! It turned out to be a great success. The new designs for the latest batch of department T-shirts are under review and will be available soon.

Here's to a fun filled (in the gaps between the assignment deadlines) semester ahead!

*Contributed by:*
*Snigdha Goyal*
*(General Secretary, ACES, IIT Delhi)*

# Reviews for Newsletter—Issue 1




*The first issue of the newsletter brought out in November 2007, received rave and motivating reviews from professors and students alike. It was subsequently put up on the department site and also circulated amongst alumni. The newsletter team is grateful to the department for the support and also the encouragement. Here are some excerpts from the same—*

Congratulations for bringing out something long overdue and very relevant to the dept. I hope that this will catch on and give us a shared sense of identity and pride in dept activities.

-Sandeep Sen

"Three cheers to the team for doing a wonderful job!"

-Prof. Anshul Kumar

"I would like to commend you for the high quality and content of the newsletter. Keep it up. The choice of content is excellent, and hopefully it will enthuse many more students to participate in the department's activities and in contributing to the newsletter.It is a good mix of information about activities in the department, interaction with faculty, entertainment and research directions. (Informs, amuses and inspires)."

-Prof Sanjiva Prasad

"This is top-quality newsletter. I am quite impressed. My congratulations to the team who put it together. I hope this keeps going. One newsletter at the start of each semester to summarize the previous semesters events and happenings and other things could be a nice frequency. I think the ACM, with support from the dept to provide some info/notes, should commit to producing the newsletter once a semester."

-Prof Pankaj Jalote

"It has been my pleasure to put together the interview. The newsletter looks really good. I am sure people would appreciate it. I wish you all the very best for all your future endeavours. Keep up the good work."

-Debdoot

# Interview—Prof Dhruv Nath

A Distinguished alumni of our college, Dr. Nath was awarded a first class degree in Electrical Engineering by the Indian Institute of Technology, Delhi. (Computer science department did not exist at that time as a separate entity.) He capped his education with a Doctorate in Computer Science, once again from IIT Delhi, for his work on VLSI networks and algorithms. He worked under the guidance of Prof. S.N Maheswari.

Prof. Nath spent three years on the Research Staff of IIT Delhi. Subsequently he worked with NIIT Ltd. for almost 20 years. As part of his stint at NIIT he established and headed the National Institute of Sales (NIS) in 1991. Subsequently in 1995 he created and headed the LEDA project which revolutionizes children's learning through the use of Multimedia Technology. He also conceptualized and headed the e-Business Consulting Group at NIIT. His last assignment at NIIT was heading NIIT's CRM Practice as Senior Vice President after which he joined MDI in 2002.

Prior to joining MDI he was also a visiting faculty in the Department of Computer Science and Engineering at IIT Delhi

Prof. Nath has conducted Top Management Workshops in areas such as e-Commerce and Managing IT and been a consultant to organizations such as Glaxo Hindustan Lever, Apollo Hospitals, Gillette, Nestle, Indianoil Corporation, Thermax, Ministry of Railways, Vijaya Bank, Raymond, Air India, Bajaj Auto, etc. His consulting assignments have been in the area of IT Strategy and Planning and e-Business. He has also conducted programs in e-Governance for the Prime Minister of Namibia and the Chief Minister of Delhi.

Prof. Nath visited our department on Nov. 21 2007 and gave an engaging talk

The discussion was enriched by enlightening anecdotes by Nath himself. Having followed an illustrious career through the academic and managing world, he advocated practicality in our career choices.

The meeting began with an interesting simulated case scenario. Nath related his personal experience in the Consulting world focusing on a special project he worked on with the Apollo Hospital. The decision–making process in such a project was elaborated through a role-play group discussion, which included members of the audience.


The group discussion was followed by an intense and a question and answer session with the audience, excerpts of which are as follows:-

Q: What is the biggest lesson you have learnt in the Managing sector?

A: In management, there is no clear answer. Everyone has their own views which are equally valid. But interestingly, its not technology that comes in as the deciding factor in most business solutions, it is the management strategy, marketing and market competition that are the crucial issues.

Q: What was the most enjoyable experience of your career?

A: The fact that I received immense freedom in my time at NIIT, where I worked on virtually every position possible. Beginning with a teacher, moving on to be the manager of half the country's Operations was a journey full of new surprises and experiences.

Q: Did money influence your decision to explore avenues away from the academic field?

A: Yes, in a way, I did believe money in a pure academic setting would be limited. Therefore I spent time in the industry for few years, coming back to academics much later as a Visiting faculty in IIT itself. But the message here for you budding graduates is that Industry needs Applied Science. Being a sole researcher or academician without ever touching the implementation is not doing justice to our field. And industrial experience either through Consulting or otherwise is an amazing skill for getting a high paying job.

Q: What is the future of a PhD student in contemporary setting?

A : A PhD does not necessarily enforce one to opt for Research or R&D. I believe there is demand for high management skills in today's competitive corporate

*Contd. On page 10*

# Department News Flash

## I. Visitors

- Dr. Sakthi Balan, University of Western Ontario, 19th Nov
- Dr Nandit Soparkar, CEO, Ubiquiti Inc. 20th Nov
- Prof. Dhruv Nath, MDI Gurgoan, 21st Nov
- Dr. Amit Sahai, UCLA, 26th Dec (Theory afternoon)
- Dr. Samir Khuller, of Maryland, 26th Dec (Theory Afternoon)
- Dr. Mridul Nandi , CINEVESTAV IPL, Mexico, 4th Jan
- Prof. Umesh Vazirani, University of California, Berkeley, 7th Jan
- Saurabh Panjwani, UC San Diego, 8th Jan
- Richard Stallman, 8th Jan
- Prof. Anupam Joshi, Univ of Maryland, 17th Jan
- Dr. Prem Devanbu, UC Davis, 18th Jan
- Dr. Douglas Comer, Cisco Systems, 21st Jan
- Dr. Peter Hofstee, IBM Research lab, 25th Jan
- Dr. Ravi Sandhu, University of Texas at San Antonio, 5th Feb
- Dr. Nisheeth Vishnoi, IBM IRL, 20th Feb
- Dr. Lovekesh Vij, JNU, 25th Feb
- Dr. Mausam, University of Washington, 26th Feb

## II. Workshops

- SOA workshop, conducted by Debdatta of Accenture, 17th Nov
- Theory Afternoon, 26th December
- Workshop on Compiler Techniques and their Applications, Dec 11
- Workshop on BioInformatics and Systems Biology, Dec 15
- FSTTCS 2007 : 27th Conference on Foundations of Software Technology and Theoretical Computer Science, Dec 12-14, 2007
- ICISS 2007: Third International Conference on Information System Security, Dec 16-20, 2007

## III. Publications

- **"Towards Characterization of Actor Evolution and Interactions in News Corpora";** Rohan Choudhary, Amitabha Bagchi and Sameep Mehta; *To appear in 30th European Conference in Information Retrieval (ECIR 2008) April 2008, Glasgow, Scotland*
- **"Precomputation of Privacy Policy Parameters for Auditing SQL Queries";** S K Gupta, Vikram Goyal, Anand Gupta; *ACM International Conference on Ubiquitous Information Management and Communication (ICUIMC 08), 31Jan-Feb1, 2008, Seoul, Korea.*
- **"Characterizing User Sessions on YouTube.";** Phillipa Gill, Martin Arlitt, Zongpeng Li, and Anirban Mahanti; *ACM/SPIE Fifteenth Annual Multimedia Computing and Networking (MMCN) Conference, January, 2008.*
- **"REWIRED - Register Write Inhibition by Resource Dedication";** Pushkar Tripathi, Rohan Jain, Srikanth Kurra, Preeti Ranjan Panda; *13th Asia and South Pacific Design Automation Conference , Seoul, Korea, Jan 2008*
- **"Exhaustive Enumeration of Custom Instructions for Extensible Processors";** Nagaraju Pothineni, Anshul Kumar, Kolin Paul; *International Conference in VLSI Design and Embedded System (VLSI 2008), Hyderabad, India, Jan 2008*
- **"A Novel Approach to Compute Spatial Reuse in the Design of Custom Instructions";** Nagaraju Pothineni, Anshul Kumar, Kolin Paul; *International Conference in VLSI Design and Embedded System (VLSI 2008), Hyderabad, India, Jan 2008*
- **"A Result on the Distribution of Quadratic Residues with Applications to Elliptic Curve Cryptography";** V.N. Muralidhara and Sandeep Sen; *8th International Conference on Cryptology in India (Indocrypt 2007), Channai, December 2007*
- **"A linear time deterministic algorithm to find a small subset that approximates the centroid";** P. Worah and Sandeep Sen; *In Information Processing Letters Vol. 105(1), Dec 2007*
- **"Order Scheduling Models : Hardness and Algorithms";** Amit Kumar, Naveen Garg and Vinayak Pandit; *27th Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2007), New Delhi, Dec 2007*
- **"The priority k-median problem";** Amit Kumar and Yogish Sabharwal; *27th Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2007), New Delhi, Dec 2007*

## IV. Department Updates

- **PhD seminar series:** Every Thursday one of the PhD students of the department presents a talk about his research. For updates and details, please see calender on CSE website.
- **New faculty:** Dr Kavita joined as visiting faculty

## V. Awards

- S Arun Kumar and Preeti Ranjan Panda get IBM Faculty Award
- Akhilesh and Anshuman of B. Tech 3rd year got The Honda Young Engineer and Scientist award

# Interview (Contd..)

world. So the top industries would hire you only if your PhD thesis had some applied component in that field. Still, a PhD adds a lot to your analytical ability which is a factor heavily on your side in any interview on this earth.

Q: How difficult is it to manage such a diverse professional life as yours?

A: Personally I am finally catching up with many things that I intend to do. I wish I had more time to give to my students, for my industrial projects and what not. But if one prioritizes the various aspects of one's job, then it is still possible to enjoy oneself along with being ahead in the competitive world.

Q: What would be your advise to IIT students?

A: It is quintessential to do what you want in life. There is absolutely no joy in regretting one's choices after you're too old to make any amends. Of course, you guys are still very young, but do not allow yourself to stagnate in your professional careers and find time for stuff which you really crave for. Do not be swayed by money, family or peer pressure, but listen to your heart so that after years of hard toil, you will have no regrets.

*Honors: Prof. Nath has been elected a member of the New York Academy of Sciences. He was also invited by the Ministry of Science and Technology to deliver the National Science Day Lecture in 2001.*

*Compiled by Harmeet*

# Call for articles—Are you Innovative ?

The newsletter is a forum for dissemination of news and views of students for our department. Some ACM chapter members are currently a part of the editorial board. We invite contributions for articles and also volunteers for the editorial board for the next editions of the newsletter.

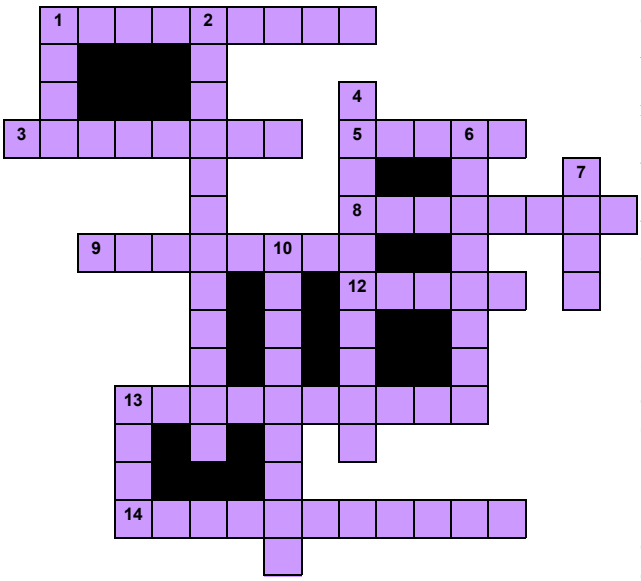
The immediate next issue of the newsletter will have a special theme—Innovation. At various points of time, we all have felt that we were innovative or want to be innovative or be involved in something innovative. What is innovation and what are the factors contributing to it?

We look forward to your contributions on this interesting topic. Your contributions can be in the form of articles, poems, or fun section elements like jokes and cartoons (original please). If you want to share an interesting personality in CS domain, or any of your achievements and miscellaneous hobbies/activities, they can also be included. So do not wait, the writers, thinkers, creators and anybody from the department.

Please send across your contributions by 31st March to any of the newsletter team members.

*-Anubha*
*(on behalf of Newsletter Team)*

# Fun Section: Crossword



Crossword Clues
Across:
1. Variable affected to a command or a program
3. A hardware device that adapts two wires or fibers to each other
5. An exact replica of the contents of a storage device, such as a hard disk, stored on a second storage device, such as a network server
8. Expansion
9. Of or relating to the simultaneous performance of multiple operations
12. An instant of time or a date selected as a point of reference
13. Display unit allowing only one color, most frequently white, orange or green
14. Systems where all changes follow clock edges

Down:
2. Capacity of a system allowing it to execute simultaneously several programs in the same computer
4. The set of software facilities that an application program may use to receive services from the platform.
6. A binary numeral system where two successive values differ in only one digit
7. A wireless receiver/transmitter that is typically combined with a sensor of some type to create a remote sensor
10. A python library module allowing random access to text lines
13. One of the pioneer RISC architectures.

*-Built by Anubha*
*Solutions at cse.iitd.ernet.in/~acm/Feb2008_solutions.html*

# ACM Distinguished Speaker Program

ACM student Chapter of IIT Delhi will host

Prof Mateo Valero

of UPC Barcelona, Spain

who will talk about

Supercomputing for the future, Supercomputing from the Past

On

12 March 2008

*About the Program:*

To reach the student community, Distinguished Speaker Program is one of ACM's most valued program. The program consists of many distinguished speakers from Academia, Industry and Government who are expert in different areas of Computer Science. ACM provide support to these speakers to talk about their research in student ACM chapters all over the world.

*About the Speaker:*

Mateo Valero, (www.ac.upc.es/homes-/mateo). Born in 1952, he received his M.S. degree from the Technical University of Madrid, UPM, in 1974 and his PhD degree from the Technical University of Catalonia, UPC, in 1980. He has been teaching at UPC since 1974 and since 1983 he has been a full professor at the Computer Architecture Department. He has served as the Computer Architecture Department Chair and as the Dean of the Computer Science School.

His research topics are in the area of computer architecture, with a special emphasis on high performance computers. Professor Valero has co-authored over 400 publications. He has served in the organization of more than 200 International Conferences as General Chair (11), Program Chair (20), Program Committee member (150) and Invited Speaker (55).

Since May 2004, he has been the director of the Barcelona Supercomputing Center (www.bsc.es), the National Centre of Supercomputing in Spain.

*Contributed by Neeraj*

Mice and *Mice* don't mix! Lets keep the pizza parties and snacks for somewhere else :)

Help us keep our labs clean.

## Humor with a Message !! ☺

All assignments and no seminars makes *Jack* a dull boy!

Lets make best use of the opportunities and exposure our department and institute provides.

# Learning– *A Poem*

*A passion to learn*
*But not just to earn,*
*Rather a passion to discover and uncover,*
*Facts known or unknown*
*Oh! its a world of its own*
*The focus! The mind's concentration!*
*Yields the purest form of meditation*
*Requires dedication*
*But is definitely worth it*
*To see progress bit by bit*
*Until an enlightenment dwells*
*Away and out go cobwebs of mind*
*And in peace again our beings revel*
*And with it we bind*
*Truly sweetened are the fruits of work*
*Sweeter still when work is one's love!*
*Be entrapped in the beauty of books*
*Deep and deeper into its mysterious world*
*Like a companion, it sticks to me*
*Like a mother it gives peace*
*Like a father, it gives security*
*Like God it gives a reason to live.*

*Contributed by:*
*Aditi Kapoor*

*(Dept. of Computer Science*
*M. Tech. 1st year)*

**BROUGHT OUT BY ACM STUDENT CHAPTER**

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*Special Thanks*
Kiran Chandramohan (An Alumni)




## ACM Student Chapters in India

ACM student chapter is an extension of ACM and acts as a local activity node for ACM members and computing community at large. The motive of an ACM student chapter is to inculcate professionalism, leadership qualities and to infuse the aptitude for research. Apart from that a student chapter also helps its members for professional growth and continued learning.

There are 20 ACM chapters in total in India. Some of the institutes which have ACM student chapters are IIT Delhi, BITS Pilani, ISM Dhanbad, PSG College of Tech Coimbatore, NIT Trichy, SGGS Mysore, SVNIT Nagpur, and many major institutes in India. All these chapters are involved in organizing the activities like experts' talks, workshops, tutorials etc. which give students opportunities to learn about advanced research subjects.

The Student chapter of IIT Delhi is working towards organizing various events and activities for the student community, including ACM distinguished lecture, Technical writing workshop, Linux workshops for beginners and Interaction with the alumni. We invite you all to be a part of this chapter, learn and contribute to it.

*Neeraj & Vikram*

*ACM Chapter Team*

## To leave you... Caption Contest

*A lovely peacock, captured by Prof Suban through his camera lenses. The serenity and beauty gives rise to various thoughts.*

*Give a caption to this picture and the best entries(2) will be published in the next issue, besides winning exciting prizes !*

*One entry per person to be sent to*

*acm@cse.iitd.ernet.in by*

*March 7th.*