Pioneering quake study

The Civil Engineering Department at IIT Delhi has been at the forefront of seismological research

By Sangeeth Sebastian

EVEN a seemingly incident free earthquake like the one which rocked the Capital last week is not entirely innocuous. Nobody knows this better than Vasant Matsagar.

An Assistant Professor with the Department of Civil Engineering, IIT, Delhi, Matsagar and his team of Ph.D. students have been researching on ways to minimise damage from tremors, including those that do not lead to any visible trail of destruction and casualties.

"The media gets excited only when there are casualties," said Matsagar. "The damage done to electronic equipment inside the building or the disruption in essential communication services seldom gets reported," he said.

This impact on what he terms as the "secondary equipment and services" can be equally, if not more, devastating than one often cares to acknowledge.

"For instance, acid leakage in a chemistry lab during an earthquake has the potential to ruin the entire building. Similarly, computer servers and hospital equipment cease to function in the aftermath of a tremor when they are most needed," said Matsagar, who was conferred the 'Young Scientist Award' by the Science and Engineering Research Council at the Department of Science and Technology in 2011.

To protect office and hospital equipment against shaking and tipping over, Matsagar and his team have now come up with a technology that promises to isolate all secondary equipment from the direct impact of an earthquake. The technology, which relies on rubber pads and stainless steel plates acts as a buffer between the floor and the equipment. The dimension of the protective holding varies according to the size of the equipment," said Matsagar, who along with his colleague R. Ayyubraman and research student Pravin Jagtap and Alok Pradhan have developed the project funded by the Baba Atomic Research Centre.

The technology aimed at protecting sensitive nuclear equipment at the centre's research lab is the latest in the series of quake proof technologies, which the team has developed.

Matsagar and his team had come up with a "base isolation" technique that claimed to withstand earthquakes with an intensity of up to 8 on the Richter scale, last year. The technique relied on oblate steel spheroids to minimise the impact of quakes. According to the IIT professor, the severity of a quake varies from region to region, classified as zones, on a scale from I to V Delhi, located to the south of the Himalayas, is in zone IV. The category "zone I," regarded as a safe region, was taken away from the official classification in the wake of the Latur earthquake in Maharashtra nearly two decades ago. "Almost every region in the country is vulnerable to earthquakes," said Matsagar.
IIT-M paves way for students to do research in 2 fields at once

CHENNAI: Now research scholars can sign up to pursue research on more than one field covering more than one subject at the Indian Institute of Technology - Madras. Interdisciplinary research is the newest initiative by the premier institution to draw students to research.

IIT-M has been introducing various proposals in their effort to be looked at as a global institution and a research one at that. The institute is among the few to find a place among the top 500 institutions, though no Indian institution has made it to the top 200 list.

"We have pooled faculty interested in inter-disciplinary research from 16 departments in the institute to guide research scholars. They can be attached to one of the departments for administrative purpose, but can work with more than one," said dean of academic research S K Das. He said that the idea was a hit, with the institute receiving 500 applications so far.

Academics said that such interdisciplinary research is rare in India because only universities with a comprehensive character can afford to take it up, whereas Indian policy has isolated the competency of universities into technical, medical and humanities.

There are very few model universities in this regard in India. Some research and development labs of the Council for Scientific and Industrial Research (CSIR) and the Defence Research and Development Organisation (DRDO) have been able to set up interdisciplinary research centres, but not academic institutions, said academics. Only the Indian Institute of Science, Bangalore has been able to transcend this barrier.

Dean of planning and development of SASTRA University S Vaidhyasubramaniam, said, "Lack of interdisciplinary research does not mean that we lag behind in research output, only that we miss out on path breaking research and new knowledge. This is why we still import ideas from outside the country, and reflects on our poor patent output."

The idea of interdisciplinary research follows other initiatives by IIT-M to boost research, and to draw the best minds to the institute. This year IIT-M has also tried to draw the cream of undergraduates from self-financing private institutions by giving them the flexibility to join research courses directly after PhD without pursuing a masters degree. The new schemes have increased PhD and MS research applications by 15% to 20% from last year, with the count touching 10,700 in 2013.
Against freedom

Why the AICTE’s decision to partner with Microsoft is unimaginative

The All India Council for Technical Education (AICTE) has become Microsoft’s biggest customer for cloud services. By June 30, students and teachers at 11,500 technical institutions will be locked down to Microsoft’s online productivity applications and storage. Cloud services reduce the cost of computing and increase reliability, so this is a good route to go. But a better fork in the same road could have been taken. What would it have cost to develop a free and open source cloud? Or to catch the interest of free and open source software providers who already offer such services to large populations? Even if big brands are in favour, Microsoft has competition which may have been more open.

Comparisons between proprietary and free and open systems usually focus on the cost advantage — free means free to use. It is a compelling argument for poorer countries that face the challenge of educating, skilling and connecting large populations very rapidly. But the real, long-term advantages lie in the alternative meanings of free — free to play with, free to change, free to reprogramme, free to apply to unintended purposes. And most importantly, free to learn from and free to share. When the users of a system have technical interests, the potential gains from these flavours of freedom are immense. Instead of being passive users of a locked system, they would be encouraged to be curious, to tinker with the very tools they use and innovate ways to adapt them to their needs — or to future needs. The cloud itself could be adapted. And users would have access to at least 40,000 software packages to use, study or get involved in developing.

In the open source ecosystem, it’s redundant to ask who the stakeholders and beneficiaries are. Over the long term, everyone owns the ecosystem and benefits from it. Besides, in calculating the benefit to education, a computation of savings should be accompanied by a projection of profits accruing to communities, the nation, the knowledge economy. And to students, who could start developing software professionally even before joining the workforce. In terms of opportunity cost, the AICTE’s decision to partner with Microsoft is prudent but unimaginative.
How brain can do a quick search

WASHINGTON: Ever wondered how we are able to focus so sharply to find that contact lens on the bathroom floor or a lost set of car keys?

Scientists have discovered that when we embark on a targeted search, various visual and non-visual regions of the brain mobilize to track down a person, animal or thing. This means that if we’re looking for a youngster lost in a crowd, the brain areas usually dedicated to recognizing other objects, or even the area aimed at abstract thought, shift their focus and join the search party.

Thus, the brain rapidly switches into a highly focused child-finder, and re-directs resources it uses for other mental tasks. "Our results show that our brains are much more dynamic than previously thought, rapidly reallocating resources based on behavioural demands, and optimizing our performance by increasing the precision with which we can perform relevant tasks," said Tolga Colca, lead author of the study from the University of California, Berkeley.

"As you plan your day at work, for example, more of the brain is devoted to processing time, tasks, goals and rewards, and as you search for your cat, more of the brain becomes involved in recognition of animals," he added. The findings may help explain why we find it difficult to concentrate on more than one task at a time.

The results also shed light on how people are able to shift their attention to challenging tasks, and may provide greater insight into neurobehavioral and attention deficit disorders.

The results were obtained in studies that used functional Magnetic Resonance Imaging (fMRI) to record the brain activity of study participants as they searched for people or vehicles in movie clips.

In one experiment, participants held down a button whenever a person appeared in the movie. In another, they did the same with vehicles.

The brain scans simultaneously measured neural activity via blood flow in thousands of locations across the brain.

The team compared how much of the cortex was devoted to detecting humans or vehicles depending on whether or not each of those categories was the search target. They found that when participants searched for humans, relatively more of the cortex was devoted to humans, and when they searched for vehicles, more of the cortex was devoted to vehicles. For example, areas that were normally involved in recognizing specific visual categories such as plants or buildings switched to become tuned to humans or vehicles, vastly expanding the area of the brain engaged in the search.

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अप्लाइड साइंस में भी बीटेक

कंप्यूटर साइंस और इलेक्ट्रॉनिक्स स्टूडेंट्स को फायदा

नवी नई बीटेक

स्तर की वे उपभोक्ताओं में अप्लाइड साइंस के...
जलविद्युत हमारी मजबूति लेकिन निदाया भी जरूरी

इससे कोई शक नहीं है कि जलविद्युत परियोजनाएं सवार की जरूरत है लेकिन इस कम में निदाया पर हो रही ज्यादता को लेकर चिंता व्यक्त कर रहे हैं सुनिश्चित करणा।

सौलभ्य के माध्यम से इसका नहीं लेनी चाहिए कहा जा रहा है कि आश्चर्य यह किसी-किसी का नहीं है। यह यह महसूस है कि इसके लिए हम अपनी निदाया की धारणा सुधार नहीं कर रहे हैं। वहाँ भी देखा जा रहा है कि जब परियोजना इस समस्या समेती ज्यादता और निदाया का जल सरल चक्र रहने का संयोग कर पड़ता?

मैं चिंतित कुछ माहीं से इस समस्या पर विचार कर रहे हैं। इसलिए अब जब भी गंता पर किसी भी प्रयोजनेन्ज़्यों के संबंध में निदाया ही नहीं करने के नियमों की संरक्षण का पालन होना चाहिए।

जब चाह यह गंता के संरक्षण के नियमों के विपरे मानी जाती है कि यह यहाँ तक इस्तीफें को मिलना, करना है। इसलिए निदाया का उपयोग और उदारता के विकल्पों के बाद निदाया भी चीज़ा जाना। इस बात से यह ज्यादा लायक है कि भारतीय और अलंकार-निदाया का उपयोग 80 परियोजना और 65 परियोजना भी सही हो सकता है।

अन्य दलों के लिए परियोजनाएं बड़ी निदाया पर होंगी। ये निदाया उत्पादन और बिक्री की सुनिश्चित सुविधाओं का पालन होगी लेकिन यह भी यथोत्तम निदाया की है।

जलविद्युत परियोजनाएं निदाया के उपयोग का अनुभव व्यक्त किया जा रहा है।

इस प्रकार इसे निरंतर परियोजनाएं में निदाया के उपयोग का समर्थन आरम्भ किया जा रहा है।

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IIM-A is Toughest B-School to Get Into In the World

Testing into top B-school is tougher than getting into Stanford

ERIN ZLOMEK

Find acceptance rates for MBA programmes at Stanford University (7%) and Harvard University (13%) terrifying? Here's a bit of perspective: Not even 1 percent of applicants were admitted to India's top business school last year.

The Indian Institute of Management in Ahmedabad (IIM-A) offered spots to only 0.25% of applicants for the 2012-14 academic years. Entry is based heavily on their performance in Common Admission Test (CAT). Applicants who were admitted to the school and also took the US-based GMAT bested business students the world over: The minimum GMAT score for students in IIM-A's postgraduate programme in management was 770, compared with an average score of 730 at Stanford’s Graduate School of Business, according to data reported by 200 global B-schools to QS Quacquarelli Symonds, a London-based researcher.

“Competition in India is intense. So many kids have outstanding grades,” says QS Quacquarelli Symonds founder Nunzio Quacquarelli. “The application to acceptance rate probably makes [IIM-A] the most competitive business school in the world.”

The institute received 173,366 applications for 2012-14, versus 6,618 for Stanford’s Class of 2013. “India’s population is so large, particularly among young people, it’s easy for [IIM-A] to have the luxury of making one huge cut” based on test scores, says Graham Richmond, co-founder of Clear Admit, an MBA admissions consulting firm.

Some question whether CAT is the best predictor of business aptitude. Tushar Dublish, a computer science student at the Indian Institute of Technology in Mandi, doesn't plan on applying to IIM-A and will instead shoot for Harvard Business School and the Yale School of Management, among others. Dublish, 20, says the pressure of doing well on the CAT isn’t what bothers him. It’s the notion that his score on a single exam — not his background, achievements, and other qualities — would determine his fate.
DU faces contempt notice for not starting biometric attendance

HT Correspondent

NEW DELHI: The Delhi High Court on Monday sought the response of the Delhi University on a petition seeking initiation of contempt proceedings against it for failing to implement the biometric attendance system for its teachers.

DU's lawyer told the court that a resolution had been passed for adopting the system before the next academic session commencing in July. However, the court issued a notice to DU Vice Chancellor Dinesh Singh and Registrar Alka Sharma. Justice GS Sijtani sought their reply on an affidavit by August 7.

"University of Delhi is committed to adopt and implement measures which are favourable and beneficial to the university system as a whole, such as biometric attendance system for teachers," said an affidavit filed by DU on September 19, 2012 in response to a PIL. The university had tried to introduce the system in 2009, but had to hastily withdraw the decision after the Delhi University Teacher's Association (DUTA) went on strike in protest.

DU's failure to keep the promise was brought to the court's attention by NGO Indian Council of Legal Aid and Advice. Emphasising the need for a system to keep a tab on teachers, its lawyer RK Saini told the court: "There is no system in place to ensure that a teacher comes to class regularly. They also go on strikes for frivolous reasons. A system must be put in place to make sure that the teachers complete their teaching hours." The decision to implement biometric attendance norms in colleges was passed in the university's executive council in October last year, but the administration has not moved forward, keeping in view the opposition from the teachers.

"We will have to implement the biometric attendance system soon despite opposition from the teachers as we cannot ignore the court's decision anymore," said a senior DU official.
Jayashree Nand | TES

New Delhi: When a group of architects interviewed some children in Delhi, they found the youngsters didn’t know the city developed around the Yamuna. It made them wonder if, come 2050, the river will exist at all in the new generations’ landscapes.

What else will change in the city? Will it be more unsafe to step out at night? Will the city choke on jams and toxic air? A team of architects and town planners launched a unique online project recently that aims to recreate Delhi in 2050 with inputs from citizens.

Dutchman Anne Feenstra, working with the architecture platform March, started Delhi 2050 in 2010. “Before approaching the government, we wanted to gather all facts, figures and opinions,” he said. The team recently contacted National Capital Planning Board, Delhi Development Authority and the urban development ministry which showed interest.

The team, School of Social Sciences at JNU, School of Planning and Architecture and Indian Institute for Human Settlements are generating data for the project.

The process is simple. Anyone interested in participating may log on to the Delhi 2050 website. Here, infographics compare Delhi with other international cities for various parameters. Delhi has very high particulate matter pollution compared to Milan which has very high nitrogen dioxide emissions. “We are trying to see how Delhi is faring compared to other cities with similar population density and size. We can not compare Delhi with New York or London but it can be compared to Sao Paolo, Milan and Madrid,” Feenstra said.

The team has developed a number of demo models. The “urban harvest” model explores how a residential colony in Mayur Vihar can be completely decentralized. To harness solar energy, the infrastructure is covered with a membrane of titanium dioxide which can also harvest rainwater. Vertical farms have been installed on this micro-model which use hydroponics to reduce water intake by 1/10th of its current demand. The future societies living in this imaginary model could comprise farms where we live and work there.

The live-and-work paradigm is also in force in the Life Street model which is trying to make Khirki Village a safe and friendly neighborhood by making it a space where people put up and work and there is activity on streets even at night.

Another project, Aap Ki Sadak, has involved residents of Malviya Nagar, Karol Bagh, Gole Market and Sheikh Sarai in developing a consensus plan for improvement of public transport. The data collated from public consultations and online inputs will be presented to agencies in June.

The website has detailed information on the urban heat island effect (in which temperatures of built up areas are higher than Delhi.

“These areas demand more energy because their cooling needs are way higher. The temperature difference can be up to eight degrees,” said Feenstra.

Delhi 2050 is the only Indian architecture project part of 26 international projects to be presented at the fifth International Architecture Biennale 2012 in Rotterdam.
Eng teachers vow to oppose 4-yr degree

**DECISION TIME:** For city residents, DU has been an automatic choice

**TIMES NEWS NETWORK**

New Delhi: English teachers from nearly 25 DU colleges met on Monday and decided to oppose introduction of the four-year undergraduate programme. About 60 teachers, including representatives from the South Campus colleges, made it to the general body (GB) meeting.

Teachers with colleagues who are part of the syllabus-design process attended just to let the others know that the selection of teachers for curriculum development wasn’t a departmental decision. “Many who had refused to go said the phone call came from the vice chancellor’s office,” said Vinita Chandra, who teaches English at Ramjas College.

She added that just like social science subjects, those working on the English curriculum have been instructed to keep the details confidential until the Faculty of Arts has cleared it.

The English teachers at the meeting, who resolved to oppose the new structure as “academically unsound”, don’t want to be “complicit in getting it through”. “We feel that the structure academically dilutes the honours course,” said Chandra.

Many English teachers, even some of those invited to frame the syllabus, had protested when they were given less than a fortnight for the job. “There can be no academic seriousness in this exercise. Usually there’s a GB meeting and then a committee but here, the HoD didn’t call the teachers,” she said.

Teachers also feel an extra year will weigh heavy on students from economically weaker backgrounds without “any concrete academic gain”.
He’s different: IIT-B student makes it to circus troupe

Bhavya Dore
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MUMBAI: Indian Institute of Technology-Bombay (IIT-B) student Samanth Vinil has landed an opportunity of a lifetime — all because he can shimmy and shake his body in a whirl of fluid motions, amazingly.

Vinil, 22, a final year student who graduates this year, has been selected to the database of potential performers by the internationally renowned circus arts and dance troupe, Cirque du Soleil, a Quebec (Canada)-based company.

Marking a radical shift in career choice off the beaten path of engineering and management, Vinil, 22, was selected in February after going through an audition process. The team at Cirque came across some of his videos online and invited him to the audition. The selection now makes him eligible to get a role in an upcoming show.

Described as an “artistic dance company,” Cirque’s productions combine circus acts, dance, drama, acrobatics and story telling and have won numerous awards and performed across the world.

“I didn’t know I would reach this level, I just started dancing for fun,” said Vinil. “Later I thought maybe I can do this as a profession.”

Vinil, an engineering physics student, started dancing in his second year at IIT-B, with dancing then becoming a passion. Since then he has performed at college festivals and honed his moves from watching videos, having received no formal training.

RIGHT MOVES

IITian shimmies into Canadian troupe

Bhavya Dore
■ bhavya.dore@hindustantimes.com

MUMBAI: Shimmying and shaking to the beats, Samanth Vinil has all the moves, which have landed the IIT-B student an opportunity of a lifetime. The 22-year-old final-year student has been selected to the database of potential performers by the internationally renowned circus arts and dance troupe, Cirque du Soleil.

Vinil was selected in February after going through an audition process. The team at Cirque came across some of his videos online and invited him to audition. The selection now makes him eligible to get a role in an upcoming show.

Described as an “artistic entertainment company”, Cirque’s productions combine circus acts, dance, drama, acrobatics and story telling and have won numerous awards and performed across the world.

“I didn’t know I would reach this level,” said Vinil, adding that his parents are concerned about his career choice. “It’s not a conventional choice, so they are a little worried.”