

Newspaper Clips

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INNOVATIONS GALORE AT IIT-D

PROJECTS Braille tutor, haemoglobin monitor among the unique innovations

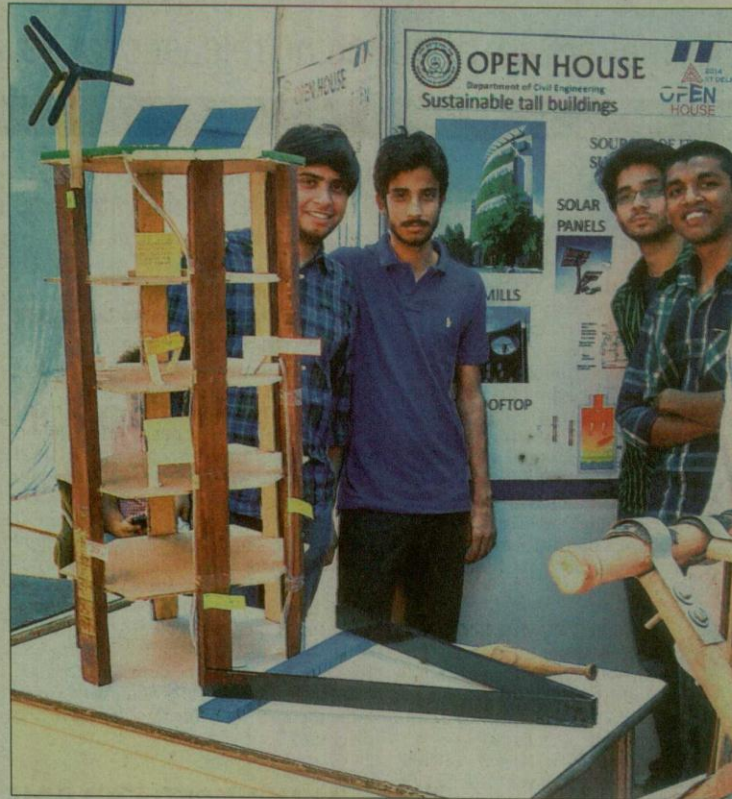
Gauri Kohli

The Indian Institutes of Technology (IITs) have been known for their socially relevant technological innovations and the students of IIT Delhi have added more such projects to this list. So much so that the institute's research funding reached around ₹106 crore this year, says Professor Suneet Tuli, dean of research and development at IIT Delhi.

Take, for instance, a Braille tutor developed by the students of electrical engineering, mechanical engineering and mathematics. Showcased at the 10th open house at IIT Delhi last week, the project was designed as a low-cost device which can be used for language tutoring in the Braille script for the visually challenged. "The user interacts with the device through on-device buttons and Braille keyboards attached as peripherals, along with voice assistance for navigating through the menu and device software. Braille tutoring is achieved through exercises and games on the device, with support for multi-player games and multiple languages, which will be added later," says Samarth Bahuguna, a student of electrical engineering who has worked on this project.

"While it is at present limited to being a Braille tutoring device, it has the potential to be used as a note-taking device, or for storing contacts and other important information," he adds.

Students of civil engineering have also come up with some remarkable ideas aimed at creating sustainable tall buildings which meet the housing or commercial needs of the present generation without compromis-



■ Civil engineering students with their proposed innovation project prototype of a green building at IIT Delhi

ing on the ability of future generations to meet their own needs.

Says Ashish Jayaswal, a student of civil engineering, "The development of such a building design is important keeping in mind the pressure on non-renewable sources of energy and other natural resources and their ever-growing rate of depletion. Our proposed green building will comprise all the feasible methods by which energy consumption can be reduced and natural

resource utilisation be optimised."

Some of the sources of the building's sustainability are energy saving integrated photovoltaics and daylight responsive controls, double low e-glass for window panes and walls, geothermal heat sinks, ventilated facades, T5 energy efficient light tubes, LED lights, resource optimisation, rainwater harvesting, waterless urinals, harnessing wind power using large scale wind turbines, sensor activated faucets, root zone technol-

WHAT'S COOKING AT IIT DELHI

Here are some projects developed by the students:

TrueHb Hemometer: Developed by Ambar Srivastava, an alumnus of IIT Delhi, this device can check for haemoglobin and identifying cases of anaemia easily

Lipoprotein analysis: A device which can check your cholesterol levels at a low cost has been developed by the department of chemical engineering. Tests will become cheap as this proposed method can analyse for whole lipoprotein profile (VLDL, IDL, HDL, LDL and its subfractions) for just ₹120

Waterless urinal: This waterless urinal can save 100 thousand litres of water per urinal per day. It recovers nitrogen, potassium and phosphorus salts from urine, and is a low-cost technology to recover fertilisers from human urine

ogy for waste water treatment, and using recycled paper for toilets.

Another group of mechanical engineering students has created a product that includes a computing or electronic device for programming a medication regimen. "This includes a prescription, a docking station, a personal medicine container for holding a daily or weekly supply. The personal medicine container is carried by a user and includes an alarm for reminding the user to take or administer the medicine in accordance with the regimen. The device automatically opens the docking stations schedule for medication," says Akash Verma, who has worked on this project.

Faculty members who have mentored these projects feel that the engineering curriculum should focus more on innovation. "As the country faces a clear decline in manufacturing, the challenge before IITs is to produce role models of techno-entrepreneurs. The challenge of interdisciplinarity in curriculum needs to be addressed," says M Balakrishnan, professor at IIT Delhi.

Looks like Terminator, but this robot will save lives

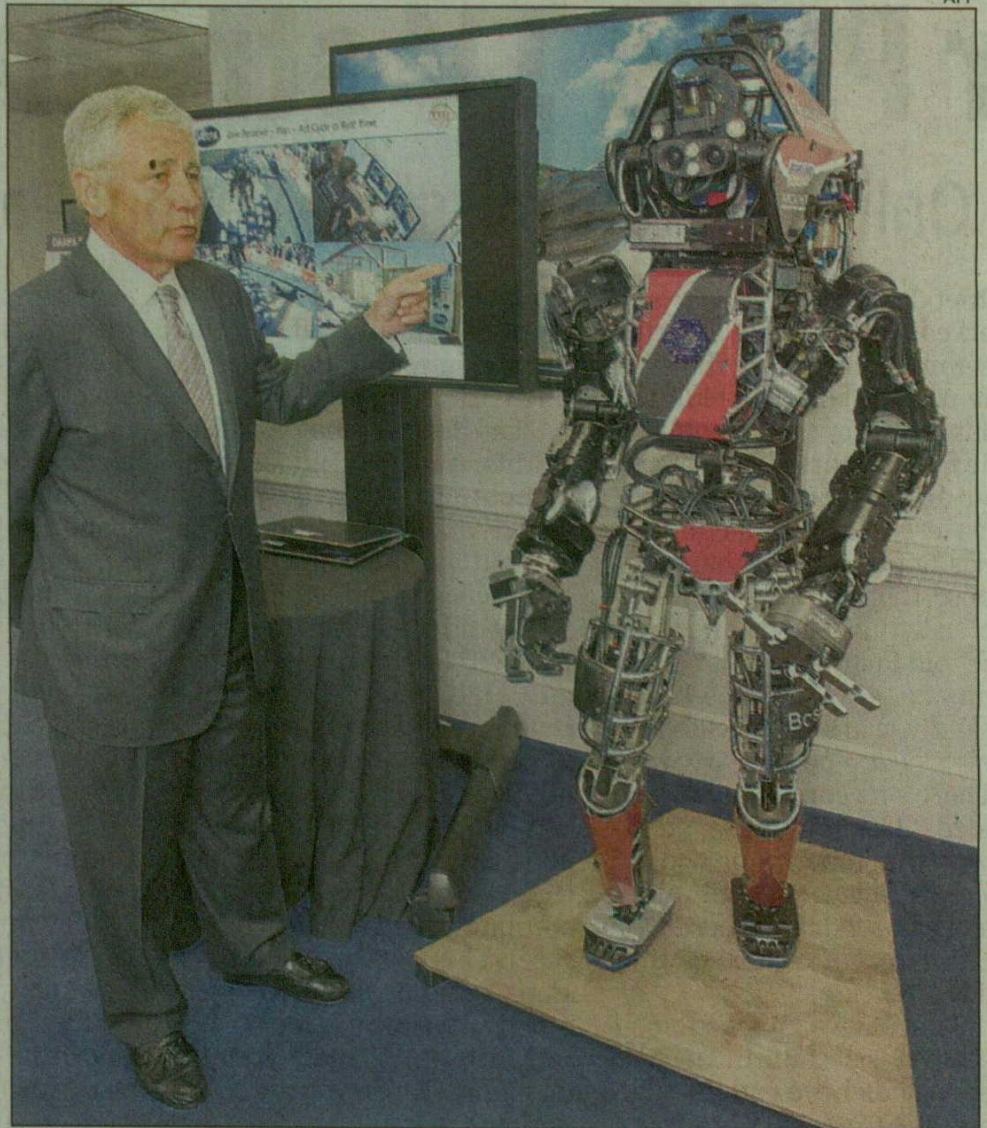
Pentagon's New Recruit To Help During Natural Disasters

Washington: US defence secretary Chuck Hagel got a first-hand look at a life-size robot on Tuesday that resembles Hollywood's "Terminator," the latest experiment by the Pentagon's hi-tech researchers. But unlike the cinematic version, the hulking Atlas robot is designed not as a warrior but as a humanitarian machine that would rescue victims in the rubble of a natural disaster, officials said.

The 6-foot-2-inch (187cm) Atlas is one of the entrants in a contest designed to produce a man-like life-saver machine, the brainchild of the Defense Advanced Research Projects Agency (Darpa). The competition, which will require the bots to navigate rough terrain and enter buildings, was created in the aftermath of Japan's Fukushima quake and tsunami disasters.

Darpa, the Pentagon's research arm known for futuristic projects often evoking science fiction, showed off the Atlas robot to Hagel, but except for LED lighting, the humanoid was apparently switched off on a "static" display.

Brad Tousley, head of Darpa's Tactical Technology Office, told Ha-



US secretary of defence Chuck Hagel with the Atlas robot at the Pentagon

gel that Hollywood has created unrealistic expectations of what real robots can do. Building robots that can climb ladders, open doors and carry objects requires daunting feats of engineering and computer

science, he said. Scientists also showed Hagel the latest technology for prosthetics, including a mechanical hand that responds to brain impulses and a prosthetic arm controlled by foot movements. AFP

AFP

CRUNCH TIME

High fees at IIM, ISB hit student loans

Himani Chandna Gurtoo
and Mahua Venkatesh

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NEW DELHI: Manoj Gupta, 30, a finance manager at a leading multinational bank took up his first job four years ago after completing his post graduation from Indian Institute of Management, (IIM) Indore. "I wanted to be an entrepreneur but decided against it since I had to repay my education loan," said Gupta. "Before I got the job, my father, a bank official, had used all his salary towards paying my fees, which was very stressful for our family," said Gupta, who now earns about ₹2 lakh per month.

Similarly, Kavita Iyer, 51, a senior official at a multinational IT firm, who wanted to quit her job because of health issues, could not do so due to an education loan



ILLUSTRATION: ABHIMANYU

payment for her son who studied management at the Indian School of Business Hyderabad.

Gupta and Iyer are not alone. Many students and parents are struggling to pay the steep education fees of management institutes and hence have to resort to loans.

Since 2010, fees at IIMs have gone up by over 30%. At IIM Bangalore, for example, the fees for the 2010-12 batch was ₹13 lakh, which has now gone up to ₹17 lakh. At the Gurgaon-based Management Development Institute, the average percentage increase in fees in the last 3 years has been over 7%. Others including XLRI, International Management Institute (IMI), SP Jain Institute of Management & Research, XIM-Bhubaneswar and IIM-Ranchi have also approved fee hikes this year.

While three years ago, number of educational loan accounts stood at 22,37,031 (2010-11), it rose to 25,09,465 in 2012-13 and 25,70,254 up to December 31, 2013-14.

"I decided to call off my admission at IIM, which was my dream, due to the fees burden of over ₹16 lakh. However, I decided to do my

management studies from IIT-Delhi, which was much cheaper, ₹4 lakh," said Nitin Bajaj, management student at IIT Delhi.

Institutes, however, said that fee hikes are essential to factor in fiscal inflation. "For a programme that draws its faculty from the best around the world, we strive hard to keep our fees affordable" said a spokesperson at ISB, which charges \$40,000 (₹24,00,000) for a post-graduate programme in management.

Management colleges are designing policies and scholarship programmes for students instead of lowering the basic fees structure. "IIM, Banaglore, extends financial aid in the form of part or full tuition waivers to students in need of financial assistance," said Devanath Tirupati, director in-charge, IIMB.

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Edu loans...

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ISB boasts of the availability of easier educational loans. "For the last five years, numbers of educational loans have been close to 70% of the total class size. The ISB has inked loan agreements with leading banks that provide collateral free loans of about ₹23 lakhs that covers up to 95% of the programme cost."

"The cost of education has gone up within India and outside... we have also increased our loan sizes," said M Narendra, CMD, Indian Overseas Bank.

"Fees play an important role at the time of final selection of an institute. However, students and parents know that when it comes to the management institutes, they have to take the burden," said Anil Agarwal, vice-president, Euderka Institute, a leading coaching chain.

Hindustan Times ND 24/04/2014 P-1

END OF LONDON DREAMS?

Indian doctors ditching Britain in droves

Prasun Sonwalkar

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LONDON: For the first time in recent decades, there has been a sharp drop in the numbers of Indian doctors coming to Britain, records show.

From 3,640 in 2004 to 340 in 2013—Indians, it seems, are increasingly keeping away from the healthcare system they were once the “mainstay” of. It is mainly due to a booming private health sector in India, immigration restrictions in the UK and a perception of

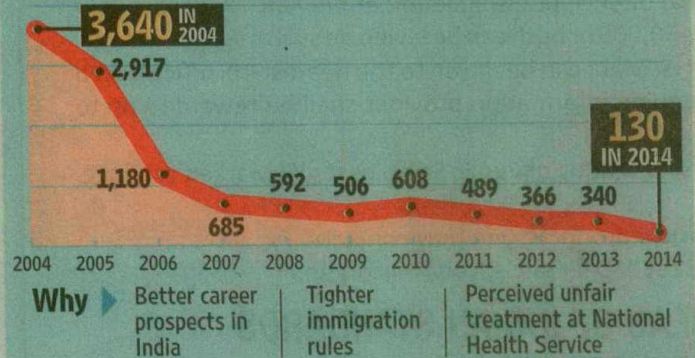
unfair treatment at work in the National Health Service (NHS). A new British study that questions the competence of foreign doctors hasn't helped.

From a trickle in the 1950s, a flood of Indian doctors hit the UK shores in the 1970s and early 2000s. But, the General Medical Council (GMC), which regulates doctors in the UK, has this year registered only 130 Indians who until recently preferred Britain for postgraduate qualifications and experience of working in the NHS.

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NOT ON CALL ANYMORE?

Number of new Indian doctors registered in UK



SOURCE: GENERAL MEDICAL COUNCIL

Indian doctors ditching...

“Several Indian doctors who came to the UK years ago told HT that conditions had become increasingly difficult. The number of those who have

returned to India, or moved to better conditions in the US, Canada or Australia, is said to be in the hundreds, and growing.

“There are lots of opportunities in the private health sector in India. New visa rules that restrict stay of overseas doctors to only two years has added to the drop,” said Ramesh Mehta, the president of the British Association of Physicians of Indian Origin.

“Another major issue is the way Indian doctors are treated... There is institutional racism in the NHS.” Unless the authorities improved the situation, the NHS, reeling under staff and fund crunch, would face another shortage of doctors.

Currently, of the 259,777 NHS doctors, 68,116 got their primary medical training in countries outside Britain and the European Union. They include 25,092 doctors who qualified in India and passed the mandatory test to register with GMC and work in the NHS.

Apollo, Reliance, Max Health, Fortis and Rainbow are among the leading private hospitals in India to have recently recruited Indian

doctors, particularly surgeons and cancer specialists, employed with NHS.

Birmingham-based Madhur Rao, who trained and practised in Pune, said several of his colleagues had returned to India or were about to, mainly due to better career prospects -- salaries were equal to or better than those paid by NHS -- and a chance to be with their aging parents.

Rao said: “It is a win-win situation. The salaries in India are exceedingly good. The quality of life is better – thanks to the availability of domestic helps.”

Times of India ND 24/04/2014 P-17

Now, you can control devices with tongue

London: Researchers have developed a device that can be installed in a helmet and senses the wearer's tongue pressure through the cheek to control their smartphones. "The tongue is a well-developed muscle capable of fine-grain movements — so we thought it should be good for control interactions," said Japanese scientist Kai Kunze at Osaka Prefecture University.

"My personal motivation here was skiing. I like to check factors like my speed while on the slope, yet it's quite cumbersome to take out a smartphone and use a touchscreen in the cold," he said. A helmet with the built-in device could allow motor-

cyclists and skiers to control their personal technology.

The team strapped a pad with 64 pressure-sensing elements to the cheeks of six volunteers to mimic a sensor installed in a helmet. They asked them to try five tongue gestures: swipe up, swipe down, swipe left, swipe right and a pushy "click", 'New Scientist' reported. In 300 attempts, recognition accuracy was 98%, according to the study results presented at the Augmented Human conference in Kobe, Japan, last month.

Kunze is also working on putting the sensor in face masks worn to keep out flu, so people can control phones without touching them. AGENCIES

SpaceX takes a step towards rocket reuse

SpaceX aims to bring both stages safely back to the ground after each use

N. GOPAL RAJ

Last week, the U.S. space company, Space Exploration Technologies (SpaceX), successfully launched its Falcon 9 rocket with an unmanned capsule carrying cargo for the International Space Station. The mission also took a step towards making the rocket reusable, with its spent first stage making a controlled descent into the Atlantic Ocean.

Much of the human conquest of space has been achieved with 'expendable launch vehicles,' rockets that are used just once. Such one-time use has made space travel exorbitantly expensive. Although it was hoped that reuse of the Space Shuttle would lower launch costs, this complex flying machine ended up being more expensive than expendable rockets.

SpaceX, a company established by Internet entrepreneur Elon Musk, is trying a different path for making its rockets capable of undertaking multiple launches.

"If one can figure out how to effectively reuse rockets just like airplanes, the cost of access to space will be reduced by as much as a factor of a hundred," Mr. Musk, the company's CEO and Chief Designer, is quoted as saying in a document about reusability published earlier this year on the SpaceX web site (www.spacex.com).

The Falcon 9 currently carries a price tag of about \$54 million (nearly Rs.330 crore), of which the cost of propellants account for just 0.4 per cent. "The majority of the launch cost comes from building the rocket, which flies only once. Compare that



SUCCESS: In a second attempt, Falcon 9 was launched last week carrying a Dragon cargo capsule. - PHOTO: REUTERS

to a commercial airliner. Each new plane costs about the same as Falcon 9, but can fly multiple times per day, and conduct tens of thousands of flights over its lifetime," the document noted.

The Falcon 9 is a two-stage rocket. SpaceX would like to bring both stages safely back to the ground after each use. But even returning the first stage is no easy task. The rocket is at a height of about 80 kilometres and travelling at 10 times the speed of sound when the first stage engines shut down and the stage itself separates from the upper stage. The first stage must then be slowed and brought down in a carefully controlled descent.

SpaceX carried out some preliminary testing for such descent using the 'Grasshopper,' a Falcon 9 first stage with just one liquid-propellant engine (instead of the usual nine) and equipped with four landing legs. In a series of test flights that began in September 2012, the Grasshopper lifted off from a launch pad, rose to a certain

height and then landed back on the pad. In October last year, the rocket went to a height of 744 metres before returning to the ground.

Earlier this month, the company tested the Falcon 9 Reusable (F9R), a first stage with the full complement of nine engines and landing legs, which rose to a height of about 250 metres before returning to the pad.

Last September, when the Falcon 9 took a satellite into orbit, an attempt was made to manoeuvre the first stage after its separation 'so that it slowed and descended vertically. However, the stage started spinning and its engines shut down prematurely.

A second attempt was made when the Falcon 9 was launched last week, carrying a Dragon cargo capsule. This time, the manoeuvre appears to have been successful.

"Data upload from tracking plane shows landing in Atlantic was good!" exulted Mr. Musk in a series of tweets. "Flight computers continued transmitting for eight seconds after reaching the water.

Stopped when booster went horizontal."

High seas and bad weather had hampered efforts to retrieve the stage, said Emily Shanklin, the company spokesperson, in an email.

The Falcon 9 first stage had been equipped with four legs intended for a future touchdown on land. The legs, folded against the sides of the stage at liftoff, would have deployed before it splashed down in the ocean. More ocean landings are likely before the SpaceX attempts to bring the booster down on land.

But, if a stage is brought back in this fashion, some of the propellant it carries must be set apart for manoeuvres leading to touchdown. That will reduce amount of payload the rocket can take.

The payload that a reusable version carried would be 40 per cent lower than an expendable one, Mr. Musk indicated in a 2012 interview with *Popular Mechanics*. But even with that penalty, reuse would greatly reduce drop launch costs, he argued.

Asteroids hit Earth with force of nuclear blasts

Kounteya Sinha | TNN

London: Findings released for the first time by the Nuclear Test Ban Treaty Organization — which operates a network of sensors that monitors Earth around the clock, listening for the infrasound signature of nuclear detonations — confirmed that between 2000 and 2013, 26 explosions on Earth's atmosphere were detected, ranging in energy from 1,600 kilotons — all caused by asteroid impacts.

To put it in perspective, the atomic bomb that destroyed Hiroshima in 1945, exploded with an energy impact of 15 kilotons. While most of these asteroids exploded too high in the atmosphere to do any serious damage on the ground, the evidence is important in estimating the frequency of a potential "city-killer-size" asteroid. The Earth is continuously colliding with fragments of asteroids, the largest in recent times exploding over Tunguska, Siberia in 1908 with an energy impact of 5-15 megatons.

More recently, scientists

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DEEP IMPACT

witnessed the 600-kiloton impact in Chelyabinsk, Russia in 2013 and asteroid impacts greater than 20 kilotons occurred in South Sulawesi, Indonesia in 2009, in the Southern Ocean in 2004, and in the Mediterranean Sea in 2002.

The data show "that asteroid impacts are not rare—but actually 3-10 times more common than we previously thought," said Ed Lu, co-founder and chief executive of the B612 Foundation. None of these 26 potentially-catastrophic asteroids were picked up or noticed in advance by any space- or Earth-based observatory. Experts used the data to point out how random perilous asteroids can be and what kind of threat they are to Earth.

Hindustan Times ND 24/04/2014 P-15

NO SECURITY

Google offers refund for fake anti-virus app

HT Correspondent

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NEW DELHI: Search engine giant Google recently had its oops! moment after the company discovered that an anti-virus app "Virus Shield" available for \$3.99 on its Play Store actually offered no security protection to users who had downloaded it. The internet giant has now sent e-mails to all those who had downloaded "Virus Shield", offering them a refund and an additional \$5 shopping credit for the Play Store.

The app was hosted on March 28 and pulled out on April 6.

WHEN THE PROTECTION LEAKED

- The app, Virus Shield, was available for \$3.99 on Google Play Store
- It was hosted on March 28 and pulled out on April 6
- The search giant has offered users refund for the flawed app and an additional credit of \$5



"We're reaching out to you because you recently purchased the 'Virus Shield' app on Google Play. This app made the false claim that it provided one-click virus protection; in reality, it did not," read an

e-mail sent out by Google Play Support to all those who had downloaded the app.

About 10,000 people had downloaded the app globally. It could not be ascertained how many did in India.

In the e-mail Google further said its "...policies strictly prohibit false claims like these, and in light of this, we're refunding you for your 'Virus Shield' purchase. Additionally we'd like to offer you \$5 promotional credit, which can be used to purchase digital content on Google Play such as apps, games, books etc."

Of late, the Google Play Store has been grappling with existence of some harmful apps. Last week, a security firm had discovered a malicious app on Play Store that took users to phishing sites after manipulating app icons.