



NEWS CLIPS

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Highlights of the Week@IITD

November 16, 2018 <http://www.uniindia.com/ranking-is-a-reflection-of-high-quality-training-at-iit-delhi-ramgopal-rao/india/news/1406864.html>

Ranking is a reflection of high quality training at IIT Delhi : Ramgopal Rao



New Delhi, Nov 16 (UNI) IIT Delhi Director Prof V Ramgopal Rao on Friday expressed happiness on being placed among top 100 institutions in the Global University Employability Ranking 2018 and said this ranking is a reflection of the high quality training IIT Delhi provides to its students.

"We do understand that learning happens even outside of the classroom and institute makes all efforts to provide students opportunities and platforms to excel in co-curricular and extra-curricular activities," he said in a statement.

As per the latest ranking published by the United Kingdom's publication Times Higher Education, IIT Delhi secured a place at 53rd position, a phenomenal jump this year from a 145th rank last year.

"The goal is to make students all rounded and teach them the ability to learn, and not just focus on class room learning. We have also initiated multiple immersion programmes for students so that they can get a direct exposure to problems in the society, which inspires them to look for technology solutions to these problems. Our motto is to develop human potential to its fullest extent so that intellectually capable and imaginatively gifted leaders can emerge in a range of professions," Mr Rao added.

At the top is Indian Institute of Sciences, IISc Bangalore. Ranked at 28, the institute has gotten a total score of 726. Indian Institute of Technology, IIT Delhi has scored 523 to be placed at 58th rank. Failing the top 100 slot is Indian Institute of Ahmedabad which was ranked at 144 with 154 points. IIT Bombay dropped out of the list.

As for the top 5, 4 places continue to be with US Universities with Harvard right at the top followed by CalTech, MIT and then Stanford at ranks 2,3 and 5 respectively.

University of Cambridge has risen one spot to number 4 this year.

TU Munich was ranked at no. 6, which is an improvement of 2 spots from last year. Interestingly, Harvard University scored a total of 2,243 points.

Overall, Chinese Universities are leading in the Asian Universities, which overall have increased.

IIT Delhi, IISc among Top 100 in Global University Employability Ranking

November 15, 2018 <https://www.brainbuxa.com/education-news/iisc-and-iit-delhi-ranked-among-top-100-in-the-global-university-rankings-8859>

Two Indian institutions have made it to the top 100 list of the Global University Employability Ranking 2018, said reports on Thursday. The two to make the cut are Indian Institute of Science (IISc), Bangalore, and Indian Institute of Technology (IIT), Delhi. IISc improved upon its last year's ranking with its 48th position while IIT-Delhi broke into the elite list at 55. According to the Times of India report, IIT-Bombay dropped out of the list this year.

The global employability ranking, designed by an HR consultancy, lists the top 150 institutions worldwide for employability, based on a global survey of around 7,000 recruitment and international managers from major businesses. However, India hasn't been able to match the progress made by other nations of the region.

Harvard is on the #1 spot in the 2018 listing, overtaking the California Institute of Technology (Caltech). The Massachusetts Institute of Technology and the University of Cambridge both rose one place to third and fourth, while Stanford University climbed up two spots this year to reach the fifth place.

South Korea's performance has outperformed any other Asian nation. In 2011, it had just one representative in the top 150. This year, it has six – just one less than mainland China. The overall performance of its institutions in the 2018 table is up about two-fold. Hong Kong and Taiwan have also improved. Even as the US continues to dominate the ranking, the data analysis reveals a narrowing global employability gap.

The UK has managed to hold its position in this year's ranking by retaining ten institutions. However, in 2011 it was the second-best represented nation globally, with 15 in the top 150. The country's overall performance has declined since; more than any other European nation. Meanwhile, Germany has done well to become the second-most represented nation globally, after the US.

Prof Amit Kumar from IIT Delhi awarded the Shanti Swarup Bhatnagar Prize 2018 for his work on theoretical computer science

November 16, 2018 <https://researchmatters.in/news/prof-amit-kumar-iit-delhi-awarded-shanti-swarup-bhatnagar-prize-2018-his-work-theoretical>



Prof. Amit Kumar, Jaswinder and Tarvinder Chadha Chair Professor in the Department of Computer Science and Engineering at the Indian Institute of Technology Delhi, has been awarded the prestigious Shanti Swarup Bhatnagar Prize for Science and Technology 2018. He is recognised for his outstanding research in the field of Combinatorial Optimisation and Graph-Theoretic Algorithms under the Mathematical Sciences category.

The Shanti Swarup Bhatnagar Prize (SSB), awarded by the Council of Scientific and Industrial Research (CSIR), is the most prestigious recognition in Science and Technology in the country. It is named after the founder Director of CSIR, Shanti Swarup Bhatnagar and consists of Rs 5,00,000 prize money and a citation plaque. The Prize is awarded to researchers in the field of Biological Sciences, Chemical Sciences, Earth, Atmosphere, Ocean and Planetary Science, Engineering Sciences, Mathematical Sciences, Medical Sciences, and Physical Sciences.

Prof. Kumar said that the award would motivate him to work with even more enthusiasm in his research area.

“Looking forward, we want to motivate more undergraduate students to take up research as a career. Any research area needs a critical mass of researchers. This change is slowly happening in theoretical computer science in India”, he says.

Prof. Kumar’s research interest lies in the area of theoretical computer science, with emphasis on problems arising in scheduling, resource allocation, graph theory and clustering. “Many of these problems are fundamental in nature and have been studied for many years (or decades). Often one needs to design algorithms which use novel heuristics, and formally prove that they give good solutions”, he explains.

One such example is the scheduling of tasks in large data centres, which have immense computing resources and billions of jobs lined up. How does one schedule tasks such that the resources are used optimally? “Optimality could mean minimising the overall delay of tasks, or energy consumed by the processors, or some combination of the two”, explains Prof. Kumar.

Sometimes, these tasks may not be known in advance, and scheduling algorithms need to make decisions after considering other adversarial factors. These algorithms are called on-line algorithms. “My research focuses on resource allocation problems in graph theory where we want to connect a set of users or computers in a network optimally”, adds Prof. Kumar, talking about his work.

Also a recipient of the Indian National Academy of Engineer (INAE) Young Engineer Award, Indian National Science Academy (INSA) Young Scientist Award and the IBM Faculty Award. Prof. Kumar has broad industry and academic experience in India and abroad.

This bot invented by two IIT Delhi students can be controlled with music and voice commands

<http://www.edexlive.com/happening/2018/nov/16/this-bot-invented-by-two-iit-delhi-students-can-be-controlled-with-music-and-voice-commands-4457.html>

The bot named Jamoora has a beak attached to its head and can make movements that imply the mood based on the music that's being played or the story being told

Jamoora, the bot can be used by story tellers to make their performances more effective

If you love the age-old Indian tradition of story-telling with puppets and music, you're going to love this new robot, designed by two IIT Delhi students. Varnith Jain and Anant Sharma have designed a bot that can be controlled using music and voice commands, instead of the usual manual command.

"Our problem statement was to use robots that can be controlled without using hands. In the context of Indian puppetry, something very unique to our culture, there's usually one guy controlling the puppet and two or three others playing the music. But what if there's just one person? With the help of this puppet, what happens is, we play live music and tell a story, and the robot reacts accordingly," says Varnith.

The puppet has a head and a beak and can move around, pick up objects and drop it off. "The innovation is not the object itself, but the way it is controlled," says Varnith, and adds, "For example, when we tell it to walk forward, it can either walk briskly with its head raised or in a slow and gloomy manner. That is determined by the music that is being played."



Expressive bot: The innovation is based on the concept of Animatronics

In order to introduce the puppet to the world, the duo staged a play centred around an animal named Jamoora. Jamoora belonged to the great Indian desert in Rajasthan. One summer, all the oases in the desert dried up, and Jamoora was searching for water everywhere. As the story unfolded, the music in the background was that of a slow Indian classical raga. Jamoora, the puppet instantly moved according to the mood.

"This can be a great story-telling tool. Children can write their own stories and even learn to play an instrument and then use the puppet to make their story more effective," says Varnith.

Talking about the process behind this unique innovation, Varnith says, "We had to do a lot of research on animatronics, which is essentially the art of depicting emotions using a robot. We don't have complex robots that proper facial features like Sofia, so we had to make do with limb movements. We also had to separate audio and music signals, which was quite a task."

November 16

IIT Mandi researchers identify 'dark proteins' of chikungunya virus

<https://www.timesnownews.com/health/article/iit-mandi-researchers-identify-dark-proteins-of-chikungunya-virus/315308>

Researchers from the IIT Mandi have identified the 'dark' regions in the proteins of Chikungunya virus.



Deciphering the 'dark proteins' of chikungunya virus

At a time when mosquito-borne diseases are creating health havoc in the country, a study done by the researchers from the Indian Institute of Technology (IIT) Mandi claimed to have discovered a technique that could help design improved drugs to treat chikungunya. The study led by Rajanish Giri, assistant professor at IIT Mandi in Himachal Pradesh, identified the 'dark' regions in the proteins of Chikungunya virus. According to the researchers, the findings may help doctors make progress in the treatment of the vector-borne viral infection.

Basically, their research is aimed at understanding the structure and action of the Chikungunya virus (CHIKV) through computational studies. The researchers defined the dark proteome as proteins with structures that can not be determined by conventional methods, such as X-ray crystallography and electron microscopy. The dark proteome, unlike conventional proteins, are unable to fold spontaneously into single, well-defined 3D structures, making it difficult for scientists to understand their properties, said the study.

“The pathogenic mechanism of mosquito-borne Chikungunya is not fully understood as yet because of the scarcity of information about the structure and non-structure of the viral proteins,” said Giri. “Our research seeks to fill this gap in knowledge,” he said.

The team used multiple computational tools to identify the molecular recognition features of the virus (MoRF) in the proteins of the chikungunya virus. They found that all Chikungunya virus proteins have at least one MoRF crucial for signalling events during survival and pathogenesis of the virus.

More than 1.5 million deaths worldwide are caused by viral infections every year, said the researchers quoting WHO reports. However, the researchers are now hopeful that there would be a better path

towards the design of specific drug molecules that can act against this virus once all the molecular mechanisms of CHIKV proteins are deciphered and protein-protein interactions are understood.

The research, which was done in collaboration with Vladimir Uversky from the University of South Florida, was published in the journal RSC Advances.

IIT-Ropar inks pact with Canadian university

<https://www.tribuneindia.com/news/punjab/iit-ropar-inks-pact-with-canadian-university/684381.html>

The IIT-Ropar has signed an MoU with the Concordia University, Montreal, of Canada, to support research collaboration, capacity-building and other forms of academic partnerships. Under the MoU, both institutions will focus on opportunities in student exchange, faculty exchange and professional development programmes.

IIT-Ropar Director SK Das said the Ministry of Human Resource Development had identified various countries to explore possibilities of collaborations and bringing foreign faculty. The IIT-Ropar is the first institute to initiate steps on collaborating with Canadian universities and hold walk-in interviews in various parts of Canada for many years, he said.

The two institutions will also explore possibilities of collaborative Master's programmes and to jointly supervise PhD students. The MoU will cover the scope of interaction among members of faculty relating to joint research projects, research visits and when necessary, joint applications for research funding from external funding agencies.

Brilliant! Big IIT boost for LPG connections for BPL households via Pradhan Mantri Ujjwala Yojana

<https://www.zeebiz.com/india/news-brilliant-big-iit-boost-for-lpg-connections-for-bpl-households-via-pradhan-mantri-ujjwala-yojana-71810>

The DSS mathematical model devised at IIT KGP has found the optimum number of total (BPL) connections required in a region and the number of dealerships that need to be commissioned in a region over the policy time frame, the statement said.



IIT, Kharagpur have devised a computer programme that will help maximise LPG connections in BPL households in the 'Pradhan Mantri Ujjwala Yojana',

Researchers at the Indian Institute of Technology (IIT), Kharagpur have devised a computer programme that will help maximise LPG connections in BPL households in the 'Pradhan Mantri Ujjwala Yojana', a statement issued by the institute said Thursday.

An IIT Kharagpur team of researchers, led by Prof Manoj Kumar Tiwari of the Department of Industrial and Systems Engineering, have devised the 'Decision Support System' (DSS) focusing on the 'Pradhan Mantri Ujjwala Yojana' for maximising (optimizing) the number of LPG connections, particularly in below poverty level (BPL) households, it said.

A decision support system (DSS) is a computer programme that helps in making sound rational decisions using mathematical programming and operation research techniques.

The DSS mathematical model devised at IIT KGP has found the optimum number of total (BPL) connections required in a region and the number of dealerships that need to be commissioned in a region over the policy time frame, the statement said.

This type of mathematical modeling of a policy (LPG) can be used as a reference for mathematical modeling of other policies, the statement said.

"This kind of DSS can be developed for various federal and state level policies for various commodities like solar panels distributions, agricultural commodities and so on," it said.

This model can not only predict how the number of household connections can be increased but also the region that contributes most in each zone of LPG distribution.

The PMUY, launched in May 2016, aimed at providing 5 crore LPG connections by 2019 to BPL families with the support of Rs 1,600 to each family. The government has recently revised the target to 8 crore LPG connections by 2020.

While certain areas such as Maharashtra, Tamil Nadu, Bihar, Rajasthan and West Bengal have been well covered, the government needs to pay special attention to regions critical to LPG penetration, such as Assam in the North-East to achieve 100 per cent BPL household penetration, the statement said.

November 15

Air quality improves in Delhi as rainfall washes away pollutants

https://www.business-standard.com/article/pti-stories/air-quality-improves-in-delhi-as-rainfall-washes-away-pollutants-118111501276_1.html

For the first time since Diwali, Delhi's air quality was registered in the 'poor' category on Thursday, an improvement from 'very poor' the day before, after rains lashed the city washing away the pollutants.

However, authorities warned that the condition may slip back to the "very poor" range from Saturday.

The overall air quality index (AQI) in the national capital on Thursday was recorded at 213 which falls in the 'poor' category, according to data provided by the Central Pollution Control Board (CPCB).

The EPCA has recommended curbs on non-CNG private vehicles to tackle rising air pollution, but experts say banning all private vehicles without a proper strategy and alternatives "is bound to create issues".

Delhi's air quality has been oscillating between 'very poor' and 'severe' after Diwali, on November 7, due to explosion of firecrackers.

According to pollution watchdog the CPCB, 25 areas in the national capital registered poor air quality and 11 registered moderate air quality on Thursday.

The PM2.5 (particles in the air with a diameter of less than 2.5 micrometres) level was recorded at 95, while the PM10 (particles in the air with a diameter of less than 10 micrometres) was recorded at 177.

An AQI between 0 and 50 is considered 'good', 51 and 100 'satisfactory', 101 and 200 'moderate', 201 and 300 'poor', 301 and 400 'very poor', and 401 and 500 'severe'.

The Centre-run System of Air Quality and Weather Forecasting (SAFAR) said air quality improved significantly following sufficient rainfall on Wednesday night due to wash-away effect.

"Surface wind speed moderately increased but pollution level declined faster than expected. Still weather conditions are not completely favourable except sporadic rain. This implies that the air is lighter and free path increased to allow faster dispersion," it said.

"In addition to cleaning of air by rain, it also tend to suggest that accumulative emission loading is relatively less. Stubble fire is almost negligible. The AQI is likely to remain in the 'poor' range on Friday but slip back to the 'very poor' range thereafter," SAFAR said.

According to the Indian Institute of Tropical Meteorology, PM2.5 concentration will improve in the next two days.

"The air quality index is likely to improve in the next two days. But will still remain in the 'poor' and 'very poor' categories in Delhi-NCR. Also, the impact of biomass burning in northwest India is marginal over Delhi," it said.

Meanwhile, the AIIMS is conducting a study on air pollution exposure among school-going asthmatic children in the national capital, for which wearable sensors would be provided to them which will consistently monitor their exposure to air pollution, both indoor and outdoor.

Assistant professor in the pulmonology department, AIIMS, Dr Karan Madan said these pollution sensors are lightweight, easy to strap around the waist and will generate a comprehensive data on their air pollution exposure throughout the day.

As a part of the study, being conducted in collaboration with IIT-Delhi, University of Edinburgh, Imperial College of London, and Sri Ramachandra University in Chennai, these wearable sensors will be given to the children for a week.

The study is funded by the Department of Biotechnology (DBT), Ministry of Science and Technology, and the Medical Research Centre, the United Kingdom.

The chairman of the Supreme Court-appointed Environment Pollution (Prevention and Control) Authority (EPCA), Bhure Lal, wrote to the CPCB on Wednesday recommending implementation of either the odd-even scheme or a complete ban on non-CNG private vehicles if the air pollution level in Delhi rises again.

However, experts maintained that last time when the odd-even scheme was implemented there was no substantial effect on air quality level, while there was not enough clean public transport to fall back on.

"Banning all diesel vehicles and disincentivising privatised modes of transport has to be done but in a phased, coordinated and systematic manner, with alternative infrastructure availability for maximum public acceptability of the move," said Greenpeace India's senior campaigner Sunil Dahiya.

"The first step in that direction can be stopping registration of new diesel vehicles in polluted geographies," he said.

Aishwarya Sudhir, senior researcher, Climate Trends, said any move to ban or limit vehicles is will be successful only if there are alternate means of transport available.

Lal had said all cities, which have similar emergency plans, such as Paris and Beijing, include restrictions on private vehicles, which is done by either number plate or by fuel type or its age.

He had said vehicles contribute as much as 40 per cent of the total emission load in Delhi and roughly 30 per cent in the region.

IIT Madras & Japanese firms to set up jt research centre

<https://newstodaynet.com/index.php/2018/11/15/iit-madras-japanese-firms-to-set-up-jt-research-centre/>



Indian Institute of Technology Madras has announced that is going to establish a joint research cell with leading Japanese manufacturing firms.

A Memorandum of Understanding (MoU) was signed yesterday (14 November) with Japanese firms alfaTKG Co Ltd and OKABE Manufacturing Co Ltd, for collaborating in core areas of manufacturing sector including Research and Development (R&D).

The MoU will pave way for the cooperation between alfaTKG, IIT Madras and Okabe on areas related to joint research, sponsorship programs, usage of facilities of alfaTKG, OKABE and IIT Madras by each other and exchange of employees between them.

Speaking about the collaboration, director, IIT Madras, Bhaskar Ramamurthi, said, “There is a lot of potential for this kind of collaboration with IIT Madras. This collaboration can also pave way for our students to intern in the partner firms in Japan. IIT Madras has incubated startups that are doing amazing work based in IoT and AI that surpass even the big corporates in their technological innovation.”

The MoU will help the stakeholders to work on paperless manufacturing technology, cyber-powered technology innovation in the field of industrial operations, among others.

November 14

NIT Karnataka to Get Rs 80 Crore for Setting up ‘Central Research Facility’, Becomes Sole NIT To Get HEFA Funding

<https://swarajyamag.com/insta/nit-karnataka-to-get-rs-80-crore-for-setting-up-central-research-facility-becomes-sole-nit-to-get-hefa-funding>



National Institute of Technology Karnataka (NITK) will be receiving Rs 80 crore to set up a ‘Central Research Facility’, Times of India has reported. The project will be funded by Phase I of Higher Education Funding Agency (HEFA). HEFA is a joint venture of the Ministry of Human Resource Development (MHRD) and Canara Bank.

The agency has been set up to create high-quality capital infrastructure in educational institutions and enable them to gain global higher rankings. NITK is the lone NIT which has been chosen for the funding. Other institutes will receive funding from HEFA are IIT Bombay, IIT Delhi, IIT Madras, IIT Kharagpur and IIT Kanpur.

The funds given to institutions will have to be repaid by the institution. Director of NITK, Karnam Uma Maheshwar Rao said that the institute will repay the amount to HEFA through the money the institute earns through services provided to customers by the lab facility. He added that the CRF was required as department wise funding to the institute was dwindling in recent times.

November 12

No perfect solution to address fake news, says Twitter CEO Jack Dorsey at IIT Delhi

<https://www.hindustantimes.com/tech/no-perfect-solution-to-address-fake-news-says-twitter-ceo-jack-dorsey-at-iit-delhi/story-82CQb79DwKqDktgtKs40HL.html>

Twitter CEO Jack Dorsey on his maiden visit to India said that Artificial Intelligence may help build a solution which may be near perfect.

Twitter CEO Jack Dorsey on Monday said that there's no perfect solution to address the problem of misinformation on social networking platforms.

Addressing a town hall meet at IIT Delhi during his first visit to India, Dorsey said that it was important to understand the context of information in order to address the problem of fake news and misinformation.

Responding to a question about the preparedness of social networking giants to curb the spread of fake news ahead of elections in India, Dorsey said companies need to narrow down the real and critical problem on misinformation.

He said that the company's job is to prevent users from taking action based on misinformation. For instance, a joke can also be misinformation. Therefore it is important to understand the context, he explained.

Describing the issue as a "multi-variable problem", Dorsey said we need to build a better mechanism to stay ahead of those spreading misinformation on the social networking platform.

He also said that Artificial Intelligence may help build a solution which may be near perfect.

Dorsey's comments come after Twitter took down more than removed 10 million tweets from accounts suspected to be linked with misinformation campaigns.

These datasets included more than 3,800 accounts related to the IRA, originating in Russia and some 770 accounts from Iran. The datasets included 2 million photos, videos and even Periscope broadcasts. The company has also been purging accounts involved in spreading fake news and rumours.

Appearing before a senate committee in the US, Dorsey acknowledged that the micro-blogging platform was "underprepared and ill-equipped" for misuse of social media. He said that Twitter was built to function as a "public square" but failed address the problem of "abuse, harassment, troll armies, propaganda through bots."

“We aren’t proud of how that free and open exchange has been weaponised and used to distract and divide people, and our nation,” he told senators. “We found ourselves unprepared and ill-equipped for the immensity of the problems we’ve acknowledged.”

IIT teachers, pensioners kept waiting

<https://www.telegraphindia.com/india/iit-teachers-pensioners-kept-waiting/cid/1674896>

Disappointed faculty members, retirees blame the HRD ministry for confusion and delay

IIT teachers have been kept waiting for an upgrade in academic allowances while pension revision has been erratic in these institutes.

Disappointed faculty members and retirees blame the human resource development ministry for the confusion and delay.

In October last year, the ministry had ordered a revision of the basic teacher salaries at the IITs and other centrally funded technical institutions. It took the IITs almost 10 months to revise just the house rent allowance and travelling allowance.

A key allowance for academic pursuits, the Cumulative Professional Development Allowance (CPDA), has not been revised yet. Teachers are entitled to an annual CPDA of Rs 1 lakh towards research and development projects.

“The CPDA was supposed to be doubled following the recommendation of an expert panel but the government has not implemented it yet. The delay is hampering the teachers’ professional work,” an IIT Bombay teacher said.

In June this year, the ministry had directed the tech schools to revise the teacher pensions and start paying the revised sums by August 31. Individual IITs have interpreted the revision table sent by the ministry in their own way, leading to intra-institute variations.

For example, IIT Madras and IIT Kharagpur have increased the pensions by a factor of 2.72 while IIT Bombay and IIT Delhi have used a factor of 2.57.

“When we ask the IITs about the discrepancies, they say the ministry has not clarified the exact formula. The ministry as an advisory body on financial issues should not put the ball in the court of the institutes,” said A.L. Agarwal, secretary of the Pan-IITs Retired Faculties Association, which represents the nearly 2,000 retired IIT teachers.

He said that retired IIT teachers were entitled to a certain grade pay over and above the pension, and that the revised grade pay varied from one institute to the other.

S.N. Majhi, who retired from IIT Madras, said the institute had implemented the most satisfactory pension revision. It is also paying nine per cent dearness relief while most other IITs are still paying seven per cent.

“In our case it is satisfactory. We have been receiving the expected revised pension since June 2018 and are now waiting just for the arrears. Our IIT has also been giving us the revised dearness relief from July 1,” Majhi said.

A ministry official said the issue of CPDA revision was under consideration.

Practical knowledge must for tech students: AICTE

<https://www.tribuneindia.com/news/punjab/practical-knowledge-must-for-tech-students-aicte/681730.html>

The All-India Council for Technical Education (AICTE) has made it mandatory for the students of technical courses to undergo six-month internship with industrial houses.

A study conducted by the council revealed that lack of practical knowledge was affecting the students passing out of the technical institutes.

The higher focus on industrial training is part of the changes being introduced by the council in the curriculum of technical courses across the country. The council has allowed 350 technical institutes across the country to introduce 11 new diploma and degree courses such as printing, packing, electronics, artificial intelligence and mobile technology.

“More hours spent in practical training will bridge the skill gap and increase employability of the students in over 10,000 technical institutes across the country,” Dr MP Poonia, Vice-Chairman, AICTE, told The Tribune. The council has already held meetings with the Federation of Self-Financing Technical Institutions (FSFTI) on the issue.

Apart from bringing industry-oriented changes in courses like BCA, MCA, M.Tech, MBA etc, the council is making changes in the examination pattern to test conceptual knowledge of the students. The number of credits points required for theory has been cut to 160 from 220. It means that the students will not to have study irrelevant subjects that were mandatory till now. At least 14 of 160 credit points will be for summer internship.

The council has also decided to utilise the infrastructure of technical institutes for two lakh school dropouts who could not pursue technical education. Such students are being enrolled in short-term 450 skill courses and the institute imparting training would be given Rs 12,000 each. This year, 15,000 such students had been enrolled in Punjab, said Dr Poonia.

To promote startups, the council is coming out with a training programme to enable the students set up their own businesses.

Induction programme

On the pattern of the Indian Institutes of Technology (IITs), the AICTE has decided to run a 21-day induction programme in technical institutes. At the beginning of the academic session, the students would spend the first 21 days in interacting with other students. The programme has been designed by the IIT, Varanasi.

From nose filters to charcoal bags, bad air is good business

<https://timesofindia.indiatimes.com/india/from-nose-filters-to-charcoal-bags-bad-air-is-good-business/articleshow/66583083.cms>



An air quality index between 0 and 50 is considered good. A day after Diwali the AQI in Delhi stood at 390, which means very polluted air. But Lavanshi Jain, an asthma patient residing in Rohini in north Delhi, was not too worried. Every day she steps out of her house wearing a pair of thin mesh-like nostril filters. "It has helped me breathe better, and my asthma attacks have reduced," believes Jain.

Jain is using a product called Nasofilters, developed by Nanoclean Global, a startup based in Delhi, in collaboration with researchers from IIT-Delhi. These filters are made with a special cellulose-based fibre and claim to trap microscopic pollutants like PM 2.5 and 10. "It's use-and-throw. Each pair costs Rs 10 and can be worn for 10-12 hours daily," says Jatin Kewlani, COO, Nanoclean Global.

Rising air pollution levels have spawned a mini industry of anti-pollution products that go beyond air purifiers and face masks. From small bags of activated charcoal that clean up indoor air to bigger outdoor devices, the catalogue of anti-pollution merchandise is growing. Bengaluru-based startup Devic Earth has developed a device, Pure Skies, which uses radio waves to scatter pollutants like PM 2.5 and 10, nitrogen oxide and sulphur dioxide.

Just like a billiards player clears up the table by hitting the cue ball that further hits other balls, this device emits waves that scatter these pollutants and clean up the air over an area," explains Dr Srikanth Sola, chief executive officer and founder, Devic Earth.

The Delhi government used this device to control air quality during the Delhi Half Marathon in October. It is available in two variants, one for indoors and the other for outdoors. The device claims to improve the air quality index in the community in which it is placed, typically, by 33%.

Even international and domestic beauty brands (Clinique, L'Oreal, Shiseido, Kama Ayurveda, etc) have added 'pollution-fighting' ingredients to market their products. According to marketing and research firm Mintel, the Asia-Pacific region (which includes India) recorded a 40% rise in the number of beauty and personalcare products claiming to be anti-polluting between 2011 and 2013.

Startups are also targeting indoor pollution. BreatheFresh in Delhi has sold 30,000 units of its air-purifying bags in the past one and a half years. Called Vayu Natural, the bag is the size of a desk calendar and contains activated charcoal that absorbs indoor pollutants and allergens. The bag can last up to six months and then be recharged by letting it sit in the sun for an hour.

Bonphul Air Products in Gurugram has expanded its range of purifiers to include oxygen optimisers. "ACs and poor ventilation leave indoor air deficient in oxygen, which can lead to health issues like fatigue and breathing problems. Our product optimises oxygen to the desired 21% level," says Saloni Lohia, a sales consultant. While the smog is there for everyone to see and breathe, rushing in to buy each and every 'anti-pollution' product may not be a good idea.

"Technology can be useful but it cannot stand alone," reasons Anumita Roychowdhury, a senior expert on air pollution at the Centre for Science and Environment. In an article in Down to Earth, Roychowdhury writes: "More than the technology prowess, it is important to follow the basic principles of public health protection which demand control of pollution sources and reduction of direct exposure for millions..."

Till that happens, you can always take a whiff of fresh air from a can and feel better.

November 11

IIT Dhanbad student bags Marie Curie, ERC Fellowship in Norway

<https://www.dailypioneer.com/2018/state-editions/iit-dhanbad-student-bags-marie-curie--erc-fellowship-in-norway.html>

There was a chapter in standard III about Marie Curie. That was the first time I realised that someone can grow up to become a scientist. And that is what inspired me to be where I am today," reminisces Krishna Agarwal.

A B-Tech graduate in electronic engineering from the Indian Institute of Technology (IIT) Dhanbad formerly known as the Indian School of Mines (ISM) Dhanbad, Agarwal (37) has come a long way at a young age.

Upon completing her graduation from IIT Dhanbad in 2003, Krishna joined the Defence Research and Development Organisation (DRDO) as a scientist. After a three year stint with DRDO, she joined the National University of Singapore (NUS) where she pursued her doctoral studies. She completed her PhD in electromagnetic inverse scattering i.e. use of microwave signals for penetrating biological tissue or seeing through the walls. Following that she did her post docs from NUS and Singapore MIT Alliance for Research and Technology (SMART, the only MIT lab outside Boston, USA). She was awarded the prestigious President Fellowship of Singapore and the Young Scientist Award from the International Union of Radio Science (URSI).

Recipient of the Marie Curie Individual Fellowship from the European Union (EU) with a fellowship fund of €241000, Agrwal is now based in Norway. At UiT- The Arctic University of Noway, she is furthering her work on developing new nanoscopy technology for biomedical research, Krishna has graduated to the role of an Associate Professor and is currently building her team of PhD students and post docs. She has also received the European Research Council starting grant (ERC- the most prestigious research funding of EU) from the Union amounting to € 1.5 million. UiT has extended further support of €0.5 million for boosting the research activity.

A researcher on electromagnetics and optics, her role is to propose new technology solutions that are founded in physics and mathematics and simultaneously play an important part in determining how much can be known about the human body and how better treatment solutions can be designed for treating diseases such as cancer.

According to Agarwal, to study the interior conditions of cancer cells versus normal cells, presently the proteins inside the cells are artificially colored using fluorescent molecules of different colors and extremely high quality microscopes are used which makes the sub cellular structure size as small as 200 nm visible. Though the technique is great, it has two drawbacks. Trying to obtain a resolution smaller than 200 nm destroys the cells and coloring the proteins using fluorescent labels hampers their normal functioning. “My Marie Curie project is about achieving 50 nm resolution using fluorescent coloring but while being able to keep the cells alive. My ERC project is about reaching the currently unprecedented goal of 50 nm resolution without using fluorescent proteins. This is an immense challenge and I am glad that EU considered me capable of solving such a challenging problem,” she added.

Through these technologies the medical biologists will be able to observe the functioning of living cells like live telecast of events. Biologists can also design more effective and targeted treatment for not only cancer but a gamut of other conditions such as cardiac health, diabetes rate of aging, women’s health, liver functioning etc.

Sharing her experience at UiT- The Arctic University of Norway located in Tromsø, Krishna believes that people don’t choose Tromsø, rather Tromsø chooses its people. Her life at Tromsø is very thrilling and exciting with the Aurora (northern lights), midnight sun and skiing in winters. “UiT is providing a very constructive and supportive environment to nurture young leaders and their ambitions.

It has a constant flow of internationally placed scientists and is a great place to pursue research,” she said.

Coming from a middle class family, Krishna was brought up across Odisha, Madhya Pradesh, Maharashtra and Karnataka, She got married right after her graduation but that did not deter her from achieving her dreams. Instead it was her husband and in-laws who motivated her to continue with her education.

“I and my husband are a very good team. Since he is also a scientist, we understand the highs and lows of our chosen profession and research. This helps us in motivating and supporting each other in an effective manner,” emphasizes Agarwal. Married to Dr. Dilip K. Prasad, a PhD in the field of artificial intelligence and computer vision from Nanyang Technological University, Singapore, Agarwal feels that her husband is her biggest supporter. He will be joining her at UiT in 2019 as an associate professor in the department of computer science.

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IIT-Madras develops portable cold storage device

<https://www.thehindubusinessline.com/news/education/iit-madras-develops-portable-cold-storage-device/article25456160.ece>

The Indian Institute of Technology-Madras has developed a portable solar-powered cold storage device with a 500 kg capacity for storing vegetables, and fruits, among other items.

The device will help farmers store their produce for sufficient time so that it does not get spoilt before it is sold, thereby preventing wastage of agricultural produce.

The first unit of the device, which provides storage facility with temperature ranging between four and 10 degree celsius, was deployed at a farm in Madurantakam in Kancheepuram district, around 80 km from Chennai, recently.

“Vegetables, leaves, flowers and fruits can be stored for 24 hours in the device. Each device would be enough for 5 or 6 acres of land or for a group of three to four farmers,” professor Satyanarayanan Seshadri, who developed the system, told PTI.

Each unit would cost between Rs 5.5 to Rs 6 lakh and storage capacity could be scaled down based on requirement.

“The unit uses thermal energy storage... The photovoltaic-powered refrigeration system is used to charge the indoor thermal battery in the form of latent heat during day time and used to maintain temperature (10 C) for 20-24 hours,” Seshadri said.

The project has been funded by Department of Science and Technology (Ministry of Science and Technology) and IIT-M.

“We are trying to look at online retailers who can deploy these devices in their aggregation centres,” he said.

A startup called Tan90, initiated by IIT-M students, aims to commercialise the technology and take it to individual farmers with even smaller devices at affordable prices.

Three years ago, students of IIT-Kharagpur developed a similar system which works at almost zero running cost.

Startup Saturday: A helping hand gadget for diabetic foot cure

<https://www.hindustantimes.com/pune-news/startup-saturday-a-helping-hand-gadget-for-diabetic-foot-cure/story-C1pJJ7GuUUPeASOZ9n48TP.html>

Whap is a cost-effective tissue imaging technology that can tell doctors about the micro vessels supplying blood to the wound in case of injury in a diabetic patient



Deepak Kumar (L), founder, Epocare private limited and Kumar Kalika, co-founder, with the wound healing assessment and prediction (Whap) tissue imaging technology gadget. The duo intend on using it on 200 or more patients with foot injury.

The seeds of innovation for a tissue imaging technology known as the ‘wound healing assessment and prediction’ (WHAP) gadget were sown in a workshop for Deepak Kumar, founder of Epocare private limited. He, says, “After completing engineering I had attended a workshop on imaging technologies at the Indian Institute of Technology (IIT) Bombay. It was when I was playing around with different imaging devices, an idea struck me. So I thought why not see if the same technology can be used to ‘look’ inside a wound or a diabetic foot to know the vascular status of tissues in a wound?”

So Deepak, an electronics engineer and his co-founder Kumar Kalika, a software engineer decided to use their skills to figure out a system for tissue imaging technology. But before getting down to work the duo did their homework to test their ideas with several people before surging on.

“On our visits we saw that a lot of doctors who worked with diabetic foot injuries would take pictures on their mobile phones. When we would ask they would say that this would help them gauge the success of their treatment. We asked about 30 doctors and 90 per cent of them indicated that such a gadget would be of great use to them. And 10 per cent felt that they would continue to use their conventional methods,” said, Deepak.

He pointed out that traditionally, a person with an injury, whether a burn or a diabetic foot will go see a consultant. The consultant will see the wound, examine it for size of wound, colour and odour and clinically arrive at a treatment module.

“But all these are subjective, as in complicated cases, symptoms like size and depth of wound does not address the cause for non-healing. Such assessment techniques become ineffective and may end up with a foot amputation,” he said.

There is, however, no quantification of the blood supply or oxygenation to the wound which is vital for healing. In many cases there is a need to determine the availability of fresh blood supply in the wounded tissue such as visualisation of the vessel with poor circulation and oxygen demand and supply within the wound surface to know its progress.

The entrepreneurs studied literature that also pointed in the same direction. “Mistakes made in treatment of wounds amount to 50 per cent. These may be treated by juniors in the medical fraternity,” said, Deepak.

Armed with this information, the team decided to develop a technology to quantify the blood supply and oxygenation to a wound. This way a treating doctor could gauge how well or not his treatment was working. “Often people with diabetes have their foot injuries get smaller and look like it has healed. But after a few months, many will return with greater complications on the same wound,” said, Deepak.

How it all started

Luckily for the duo, Deepak was doing his internship at IIT Bombay and had started work with a start-up there. A mentor Amaldev Venugopal guided them and got them incubation at society for innovation and entrepreneurship (SINE) hosted by IIT Bombay. SINE offers start-to-end support to innovators and entrepreneurs in the form of prototyping grants, incubation and also runs accelerator programmes.

Deepak is also mentored by biomedical engineering and technology incubation centre (BETiC) at IIT Bombay that focuses on bringing doctors, researchers, entrepreneurs and investors together for indigenous and affordable medical device innovation. BETiC helps in developing proof-of-concept, patent filling, product validation, device certification and regulation.

From January 2017 to June 2018 the two partners worked on their gadget and filed for a patent.

The technology involves the use of a laser camera and (light-emitting diode) LEDs. When blood flows, the laser lights will get reflected in a certain way indicating how much blood is flowing in the tissue which is being examined. Their start-up is now working with InfraRed technology to find a way to get a reading of oxygenation to the tissues.

Challenges ahead

By June they had their beta product ready for testing and some hospitals in India and Switzerland have been approached for using the gadget on patients with diabetic wounds.

“Dr Dhananjay Kelkar from Deenanath Mangeshkar hospital has agreed to let us use our WHAP. We intend to use it on 200 or even more patients with foot injuries,” said Deepak.

The advantage WHAP aims to offer is to provide a gadget that will cost about one hundredth of a laser doppler which costs upwards of Rs one crore. “Our WHAP currently costs Rs two lakh and we aim to bring the costs down to Rs one lakh.” WHAP is currently being sent to Indian certification for medical devices 13485 (ICMED) and for a CE (a global standard for electronic products) for approval.

Funding

Given that Epocare was being incubated at SINE, they received seed funding of a few lakhs from them, but now they are looking for more money.

According to Kumar, the company needs about Rs 5 crore to Rs 6 crore to develop the technology to assess oxygenation as WHAP currently gives only blood supply readings. “We want to do more clinical trials and find cheaper and better alternatives so we can bring down cost. We are planning to apply for a government grant or get an ‘understanding’ equity investor.”

An ‘understanding investor’ will be one who does not look at his returns only. “If he wants us to turn in profits it will have to wait till we complete our clinical trials and until we find ways to further reduce costs. The investor should understand our issues rather than focus only on profits,” says, Kumar.

The company plans to tie up with a medical devices distributor to be able to sell their product across hospitals and doctors. Diabetic foot may get legs up with this WHAP!

Functioning of WHAP

- Gives instant diagnosis of a wound: the image can tell how much blood is being supplied to the wound
- Can forecast healing time: based on blood supply and oxygenation
- Can determine the effectiveness of different medical interventions like hyperbaric, laser treatments
- Gives an objective assessment (is not influenced by a doctor’s bias)
- Can track he

Immune cells trigger OCD-like behaviour in multiple sclerosis, IISc study finds

<https://bangaloremirror.indiatimes.com/opinion/you/immune-cells-trigger-ocd-like-behaviour-in-multiple-sclerosis-iisc-study-finds/articleshow/66558403.cms>



A class of cells that defends the body against invaders also triggers obsessive-compulsive behaviour that appears in autoimmune disorders such as multiple sclerosis (MS), a new study from the Indian Institute of Science (IISc) has found.

According to an IISc report, Autoimmune disorders, where the body's immune system goes rogue and attacks healthy cells, are difficult to treat. MS, for example, is a debilitating autoimmune disorder that affects over two million people worldwide and has no known cure. Patients with these disorders are also known to suffer from illnesses such as depression, anxiety or Obsessive Compulsive Disorder (OCD). However, the relationship between such illnesses and the immune system has not been clear.

An IISc team has now uncovered a direct link. In mice exhibiting MS-like conditions, the team found that immune cells called Th17 lymphocytes induce behaviour similar to OCD, such as excessive grooming. Th17 cells were found to infiltrate the mouse brain and likely disrupted nerve circuits involved in controlling obsessive behaviour, the team suggests.

The study, published in *Frontiers in Immunology*, was carried out by Avadhesh Surolia, Honorary Professor at the Molecular Biophysics Unit, IISc, and his former research associates, Ravi Kant and Shweta Pasi.

“For the first time, we are reporting a likely link between OCD and an important arm of cell-mediated immunity,” says Surolia. “Till now we have looked at neuropsychiatric diseases as purely a neurological problem, ignoring, rather completely, the immunologic contribution,” he added.

Surolia and his team induced MS-like conditions in mice and looked closely at their behaviour. The diseased mice spent 60-70 per cent more time grooming themselves compared to healthy ones. They also buried a greater number of glass marbles and shredded more of their bedding to make nests — signs that are suggestive of OCD, which is typified by uncontrollable, repetitive behaviour.

To identify the trigger for such behaviour, Surolia's team zeroed in on Th17 cells because previous studies have shown that these cells are capable of penetrating the blood-brain barrier, and that they play a key role in the progression of MS. The researchers infused diseased mice with Th17 cells and found that these mice spent more time grooming themselves, burying glass marbles and shredding their bedding. Moreover, brain tissue analysis in these mice showed that large numbers of Th17 cells were found lodged in the brainstem and cortex, which are involved in regulating grooming.

When the mice were given an antidepressant that boosts the uptake of serotonin, an important chemical messenger, their obsessive grooming reduced. This suggests that Th17 cells eventually disrupt serotonin uptake, giving rise to OCD-like symptoms, “although other neurotransmitters such as glutamate may be involved in the initial stages,” says Kant, the lead author.

The team also gave the diseased mice digoxin, a molecule that inhibits Th17 development, and found that the time spent on grooming and the number of grooming bouts were almost halved. Targeting the development of Th17 cells using drugs could therefore offer a novel method to correct such obsessive-compulsive behaviour in autoimmune disorders. “In this way, we will be able to treat the root cause of the malady rather than targeting its manifestation and the symptoms,” says Surolia.