Highlights of the Week@IITD

December 1, 2018   https://techcircle.vccircle.com/2018/11/30/after-iit-bombay-iit-delhi-joins-ibm-s-artificial-intelligence-consortium

After IIT-Bombay, IIT-Delhi joins IBM's artificial intelligence consortium

The Indian Institute of Technology (IIT), Delhi, has joined an International Business Machines' consortium that connects academic institutions across the world to researchers at IBM for developing new technologies in artificial intelligence (AI).

With this, IIT-Delhi becomes the second institution outside North America to join the firm's AI Horizons Network. In September, TechCircle reported that IIT-Bombay had become the first institution outside North America to join the consortium.

Now, the consortium has the following members: IIT-Delhi, IIT-Bombay, Massachusetts Institute of Technology (MIT), Renesselaer Polytechnic Institute, University of Illinois Urbana-Champaign, University of Michigan, Universite de Montreal, University of Maryland at Baltimore County, UC San Diego and University of Massachusetts at Amherst.

The latest partnership will see a collaboration between IBM researchers as well as students and teachers from IIT-Delhi on AI traits such as reasoning, comprehension and inferencing. The research will benefit sectors such as healthcare and medicine, finance, and customer support.

Focus areas in the AI Horizons Network include deep learning, natural language processing, computer vision as well as applications to aid education, cybersecurity and others.

"While working with AI systems, organisations require explicit reasoning and comprehension to reach a particular conclusion. We believe advances in AI can tackle such problems," said Michael Karasick, vice-president, global labs, IBM Research, in a statement.

IIT-Delhi built sensor could stop elephant deaths on rail tracks

December 1, 2018 http://www.newindianexpress.com/nation/2018/dec/01/iit-delhi-built-sensor-could-stop-elephant-deaths-on-rail-tracks-1905582.html

So far IIT professor Subrat Kar has tested the sensor only inside the IIT-Delhi campus and the results have been 'satisfactory'.

Elephant deaths on railway tracks may be averted when a sensor built by a professor at the Indian Institute of Technology-Delhi (IIT-D) is put to test. If all goes well, it may be installed along tracks frequented by elephants and prevent their cruel deaths.

"The sensors are yet to be installed. This was to be tested in the monsoon season. Since this monsoon has passed, we are waiting for the 2019 season. Our system is functional. We have tested it in a similar setting but not at the site. We have earmarked the Rajaji National Park as the test deployment site. It is the ideal place, kind of a controlled environment and good for experiments. It's where trains are known to travel at the correct speed," said Subrat Kar, a professor at the department of electrical engineering at IIT-Delhi.

According to the Wildlife Protection Society of India, India has lost nearly 100 elephants in train-related accidents in the last five years. Moving at a slow pace, along with their calves, they fail to respond quickly enough to avoid a train hurtling towards them. In 2018, 26 elephants have succumbed to such collisions so far, the most recent incident being in Odisha's Keonjhar, where an elephant was killed after being hit by a goods train.

Kar has been working on building a sensor for close to a decade in collaboration with the Wildlife Institute of India in Dehradun and funded by the Railways and the Department of Science and Technology. Though there has been a buzz around the apparatus for years, it is only now that it has been slated for testing in real-life conditions.

So far Kar has tested the sensor only inside the IIT-Delhi campus and the results have been "satisfactory".

The sensor detects from a distance the movement of elephants through a number of in-built devices. Once it detects the movement of elephants, it sends a radio signal to the nearest station, which conveys the message to the driver to either stop or slow down the train.

"We will install sensors at sensitive spots, and not everywhere. There are known paths along which the elephants move, so we install sensors on these paths. The sensors detect them through body rays, cameras and vibration. Then we convey the information to the nearest station, and from there we convey the information to the train driver.

"In the engine there's a box that signals the engine to stop. If this warning is given to the driver at least three kilometres before the train reaches the spot where elephants are expected to come in their way, he applies the brakes and slowly comes to a halt," Kar explained.

"The success of this preventive measure depends on detecting the elephants much before the train is there. Three kilometres before roughly translates to 3-4 minutes before," he added.

The various sensors in the device corroborate whether the moving animals are indeed elephants and not any other, like a tiger, which can cross the track without needing the train to be slowed down.

"A vibration detector, capturing heat rays coming from the animals, a camera to recognise the animals, and lasers—the sensor has these all. So we have several sensors to detect the presence of animals. We use one sensor to check the outcome of the other sensor to corroborate the result... We have our own radio network with the sensors," Kar said.

Although Kar has been working on the device since 2008, things picked up pace only in 2014, when the Railways came up with Rs 30 lakh in funding.

On its part, Indian Railways has employed a variety of methods to keep the elephant deaths in check.

"Various measures have been adopted, jointly by the Railways and the forest department, to prevent elephant deaths on the tracks. These include signage on the tracks to pre-warn train drivers, speed restrictions in elephant corridors and deputing forest officials in the control room," a senior Railways official said.

"All these measures are adopted at locations jointly identified by the forest department and railways in Assam, West Bengal, Uttarakhand, Kerala and Odisha," the official added.

Sumant Sinha Sustainability Leadership Award Winners Felicitated at IIT Delhi

December 3, 2018   https://www.theweek.in/wire-updates/business/2018/12/03/pwr14--renew%20power.html

The winners of the Sumant Sinha Sustainability Leadership Award, instituted jointly by the Sumant Sinha ReNew Centre of Excellence (CoE) for Energy & Environment and the Indian Institute of Technology, Delhi (IITD), were felicitated in a ceremony held at the IIT Delhi campus on Tuesday, 27th November, 2018. The CoE was set up in IIT Delhi in the year 2017 to promote clean energy-related research and foster regular exchange of ideas between industry, academia and policy makers

to accelerate adoption of renewable energy. The Sustainability Leadership Award was instituted earlier this year to recognize demonstrated action and exemplary leadership by students of IIT Delhi with respect to climate change/sustainability/ environmental issues - with a view to enhance awareness and interest amongst students about this key issue.

To mark this occasion, ReNew Power and IIT Delhi organized a Sustainability Leadership Dialogue wherein the Chief Guest, Mr. Sukhbir Singh Sandhu, Additional Secretary (Technical Education) and Chief Vigilance Officer, Ministry of Human Resource Development gave away the award to the winners. Post evaluation of a total 20 nominations, the selection committee comprising of senior Professors from IIT Delhi and representatives from ReNew Power Ltd., two teams of IITD students - the Green Warriors and the Climate Crusaders - were declared winners. The Green Warriors were chosen for excellent work done in the area of segregation, management and efficient use of waste while the Climate Crusaders were recognized for their efforts in raising awareness about different types of pollution and steps taken to curb this. The winners were felicitated with a cash prize of Rs. 75,000 and a trophy for their contributions.

Speaking at the event, Mr. Sandhu drew attention to the importance of protecting our environment against over exploitation and pointed out that the MHRD has been funding and driving a rising number of R&D projects to help preserve the environment. Prof. V. Ramgopal Rao, Director IITD, informed about his plans to make IITD a 'zero waste' campus by 2020 and also shared that the campus generates 2 MW of power from renewables with an additional 1 MW in the pipelines.

Mr. Sumant Sinha, Chairman & MD, ReNew Power Ltd, said, "Humanity will be doing itself a great disservice if it opts for a carbon heavy, fossil fuel dependent growth path as it harms the environment. It is now clear that renewables driven energy is the way forward for the world at large. The biggest challenge today is better grid management so it can absorb more renewable energy and hence, this is the current focus area of the CoE at IITD."

The ceremony concluded with an engaging panel discussion on the theme 'Strengthening and promoting industry - academia collaboration for sustainability', moderated by Ms. Vaishali Nigam Sinha - Chief Sustainability, Communication and CSR Officer, ReNew Power with panelists including Mr. Amit Jain - Renewable Energy Specialist with the World Bank, eminent professors from IITD and senior executives from ReNew Power. Varun Sivaram, CTO, ReNew Power, summarized the discussion and said, "Universities and industry are natural partners to conduct both basic and applied R&D, spanning from invention to commercialization. Leading universities like Stanford, Columbia, and IIT Delhi have pioneered innovative models to foster industry cooperation and harness interdisciplinarity to solve real-world problems."
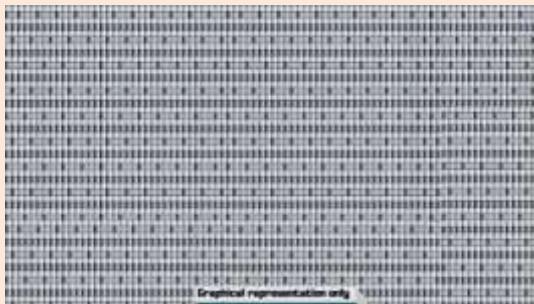
About ReNew Power

ReNew Power Limited is India's largest renewable energy IPP (Independent Power Producer) in terms of total energy generation capacity. *As of May 8, 2018, ReNew had a total capacity of over 5.85 GW of wind and solar power assets across the country, comprising 3.92 GW of operational capacity, 1.66 GW of under development capacity, and 0.27 GW of recently awarded SECI project. It develops, builds, owns and operates utility scale wind and solar energy projects as well as distributed*

solar energy projects that generate energy for commercial and industrial customers. ReNew has a strong track record of organic and inorganic growth having nearly doubled its operational capacity in each of the last three Fiscal Years. ReNew's broad base of equity investors include Goldman Sachs, JERA, ADIA, CPPIB, GEF SACEF India, and ADB.

Startup from IIT Delhi develops 'Pollution Net' to solve the city's pollution problem

December 4, 2018 https://www.researchmatters.in/news/startup-iit-delhi-develops-%E2%80%98pollution-net%E2%80%99-solve-city%E2%80%99s-pollution-problem

With nine of the ten most polluted cities in the world located in India, the country is grappling with increasing pollution that is affecting the health and wealth of its people. In Delhi, the national capital, the news of increased particulate matter in the air hits the headlines very often. Although anti-pollution masks and air purifiers have gained popularity, they are often expensive and inaccessible to the common man. Now, an innovative solution from Nasofilters, a startup founded by a team from the Indian Institute of Technology Delhi, could change it all!

The engineers at Nasofilters have developed a 'Pollution Net' that can filter out tiny, suspended particles in the air, called particulate matter, that are smaller than 2.5 micrometres (PM2.5). The net has nanofibres that can be attached to windows or doors, much like a mosquito net. The result— clean breeze enters the house minus all the pollutants that get filtered and stay out of the window!

"We use nanofibres, which are hundreds of times smaller than normal fabric. This allows us to get a higher pore density, or an increased number of holes in the mesh, per unit area", says Prateek Sharma, one of the founders of Nasofilters. The smaller pore size and higher density of pores per unit area mean the net can stop particles much smaller than 2.5 micrometres, while still allowing air to pass through without obstruction.

The Pollution Net has three layers. The outer layer is a hydrophobic mesh, which repels water and makes it water-resistant, providing protection against light-showers. The inner layer is a wire mesh that provides strength. "Sandwiched between these two layers is the nanofiber mesh that does the filtering", explains Tushar Vyas, Chief Technology Officer at Nasofilters. The company claims that the net protects from particulate matter, dust, smog and even a few bacteria. The net, however, will require regular maintenance and cleaning to avoid dust and other particles from clogging up its pores.

The team had earlier developed a nasal filter that can be stuck to your nose to prevent particulate matter from entering the nose while breathing. These filters are also made using nanofibers and cost INR 10/- a piece. They can be used for up to twelve hours. Supported by the Biotechnology Industry Research Assistance Council (BIRAC), the Hong Kong Science and Technology Park (HKSTP) and the Technology Development Board, Government of India, their invention has won several awards, including the Startup National Award in 2017 awarded by the Government of India.

Although the advanced filters from Nasofilters do not affect toxic gases like carbon monoxide or poisonous metals like mercury, which are present in the air we breathe, they can help you breathe a little easy by filtering out particulate matter, which are equally dangerous.

December 4, 2018 https://www.outlookindia.com/website/story/how-iit-delhi-fought-and-won-to-protect-itself-from-a-branding-war-at-delhi-metro/321174

How IIT Delhi Fought And Won To Protect Itself From 'Co-branding' At Delhi Metro

The college approached the Delhi High Court which ordered that disclaimers be put up to clearly establish that IIT has no association with FIITJEE.

OUTLOOK WEB BUREAU | 04 DECEMBER 2018

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The IIT brand in itself is enough to garner attention to anything remotely related to technical education and especially engineering studies. Moreover, the IIT name signifies inspiration and opportunity for the Indian middle class, who have seen the institutions grow as pillars of strength for technical education in India.

In this context when the naming rights of a metro station in South Delhi near the IIT campus were acquired by coaching institute chain FIIT JEE, the actual IIT stood up and felt that there was a need to make a clear distinction between the two.

The Delhi Metro and Rail Corporation (DMRC) in a bid to explore possible avenues for increasing revenues, started a practice to allow its metro station names to be prefixed with brand and company names. The marketing practice is known as "co-branding". For example, Vishwavidyala becomes Honda 2 Wheelers Vishvavidyalaya and Green Park becomes Indian Oil Green Park.

Similarly, a deal was struck to name IIT Delhi metro station as "FIITJEE IIT", after the coaching institute acquired naming rights of the station from an outdoor advertising agency, Pioneer Outdoor Advertising.

However, this did not go well with the administration at the prestigious engineering college.

Worried that the co-branding exercise of the Delhi metro and the coaching institute may create misleading impressions on prospective students and general public, the IIT geared up to counter the perceptive challenge.

The college approached the Delhi High Court which ordered that disclaimers be put up to clearly establish that IIT has no association with FIITJEE.

On the High court order, FIITJEE put up a disclaimer at the station, saying that it was in "no way connected with any IIT", according to a **report** in *Economic Times*.

However, this remedy seemed inadequate to the college authorities who further followed the matter and were unsatisfied with the efforts of FIITJEE and Delhi Metro.

According to a **report** in the *Indian Express*, the High Court had also reprimanded the DMRC for going ahead with such form of advertisement which can be deceptive. The DMRC, however, had steered clear of taking any responsibility saying the semi-naming rights are given through an open e-tendering process and whoever is awarded the rights accordingly manages the selection of brands on its own.

As the tussle intensified, Pioneer Outdoor Advertising which had entered into the agreement with FIITJEE for the IIT Delhi metro station for a 10 year period, scrapped the contract with FIITJEE altogether.

DMRC officials said work is underway to remove the FIITJEE brand name from all entry and exit points to the station, according to the report.

"The co-branding arrangement with FIITJEE for IIT Metro station was scrapped by Pioneer Advertising over some issues, and rights have now been given to the Bureau of Indian Standards. Delhi Metro's contract is with Pioneer Advertising and we have no direct involvement in this change," said DMRC executive director (corporate communications) Anuj Dayal according to the Indian Express report.

A DMRC official said the new co-branding contract has gone to the Bureau of Indian Standards (BIS).

December 7

IIT KGP researchers develop tools to diagnose lung diseases

https://www.business-standard.com/article/pti-stories/iit-kgp-researchers-develop-tools-to-diagnose-lung-diseases-118120700504_1.html

Researchers at IIT Kharagpur have developed a decision support system to diagnose malignant and other diseased tissues in the lungs.

The system has been developed by the researchers of the Department of Electronics and Electrical Communications engineering of the premier institute.

Lead researcher Sudipta Mukhopadhyay was quoted having said in an IIT KGP statement, "Biopsy especially in the lungs is a critical process, hence conducted only after initial medical analysis is done by expert radiologists.

"The developed system uses non-invasive and comparatively affordable methods of image analysis that would aid the radiologists to identify malignancy by reading growth in the lung nodules."

The other system will help identify interstitial disease patterns in HRCT (High-Resolution Computed Tomography) images depicting the lung tissue texture, Mukhopadhyay said.

Interstitial Lung Disease (ILD) broadly describes a diverse collection of more than 200 lung disorders while tomography is a method of producing a three-dimensional image of the internal structures of a solid object such as the human body.

The medical image scan database used for reference was taken from Indian patients and the IIT KGP researchers worked with a team from PGIMER Chandigarh for collecting data ground truth and clinical data.

"Foreign database have also been used but the biopsy cases were primarily taken from the PGIMER," researcher Shrikant Mehre said in the statement.

The ILD tool is developed by incorporating feedback from expert radiologists to make it easy to use for non-tech savvy clinicians.

The software is equipped with necessary modules such as automatic segmentation of lung boundary and pathological region within lung area and the mapping of disease is performed by doctors based on clinical inputs, the statement said.

"We have successfully tested both software systems at AIIMS Delhi....Currently our success rate is higher than 80 per cent in identifying both cases. We are working towards further improvements in order to conduct clinical trials on bigger sample sizes," another researcher Mandar Kale said.

The research has been reported in more than 13 international journals and 19 international conferences through its various stages of progress, the statement said.

December 6

IIT Mandi Professor Awarded For Path-Breaking Research on Zika Virus, Will Aid in Developing Low-Cost Medicine

https://swarajyamag.com/insta/iit-mandi-professor-awarded-for-path-breaking-research-on-zika-virus-will-aid-in-developing-low-cost-medicine

Indian Institute of Technology Mandi (IIT Mandi) Assistant professor Dr Rajanish Giri has been awarded the Innovative Young Biotechnologist Award (IYBA) for his breakthrough research on Zika Virus, India Today has reported.

He was credited with furthering the study about Zika virus's Capsid Folding, inhibitor discovery by the Department of Biotechnology and Ministry of Science and Technology.

He also showed expertise in solving the fundamental problems of protein folding in various structured and Intrinsically disordered proteins.

Giri was also awarded a research grant for three years, to aid him in finding more insight into the biophysical research on Zika Capsid protein system.

He started his work on understanding Zika virus proteome in 2016 after an international health emergency was declared against it.

The research gives insights about Intrinsically Disordered Proteins (IDPs) or dark proteome in Zika Virus system. He plans to research further in the mechanistic insights into Zika virus parthenogenesis and the biophysics of Zika virus.

The research can help in the development of drugs against Zika infection and low-cost medicines in future.

During his Zika virus research, Giri published several works in various reputed journals such as Journal of Molecular Biology, Frontiers in Cellular and Infection Microbiology etc.

Model study of animal 'GPS' cells developed in IIT Madras
http://www.newindianexpress.com/cities/chennai/2018/dec/06/model-study-of-animal-gps-cells-developed-1907746.html

The team's recent study has been published in the renowned journal 'Nature Communications', the statement said.

In a bid to understand the working principles of nerve cells that form the 'GPS' of the brain, a team of researchers from the Indian Institute of Technology Madras (IIT-M), have developed a modelling study, according to a statement issued by the Institute on Wednesday.

The team's recent study has been published in the renowned journal 'Nature Communications', the statement said. Karthik Soman, research student at the Computational Neuro Science (CNS) Laboratory at IIT-M and first author of the recently published paper, said, "Our modelling studies help in understanding the neural principles governing the formation of spatial maps formed by brains."

Professor V Srinivasa Chakravarthy, who heads the CNS Laboratory, used an interdisciplinary approach linking neuroscience, computer programming, physics and maths to develop theoretical models that explain the positions and functions of spatial cells in the rat brain.

IIT-M research scholars demand higher stipend
http://www.newindianexpress.com/cities/chennai/2018/dec/06/iit-m-research-scholars-demand-higher-stipend-1907745.html

Research scholars and Ph.D students of IIT Madras have written to the Central government seeking hike in stipend.

Research scholars and PhD students of IIT Madras have written to the Central government seeking hike in stipend. A total of 1,800 research students have signed a written petition addressed to the

Ministry of Human Resource Development (MHRD), University Grants Commission (UGC), Council of Scientific and Industrial Research (CSIR) and Ministry of Science and Technology and Earth Sciences.

In the petition, a copy of which was shared with the Express, research scholars have asked for nearly doubling the stipend for Junior Research Fellow (JRF) and Senior Research Fellow (SRF). Currently a JRF receives Rs 25,000 per month and a SRF is paid Rs 28,000. "This should be enhanced to Rs 45,000 and Rs 55,000, respectively."

"The economic development of a country has a strong correlation with the research and developmental efforts, which in turn, require more manpower. To increase manpower in research, the stipends given to students should be attractive. IIT Madras is ranked first in the NIRF ranking, but the salary of researchers has not been considered for regular revision as is the case in other top-ranked universities," the petition reads.

A senior research fellow of IIT Madras told the Express that current emoluments under MHRD, DST, DBT, CSIR and UGC and other government scholarships for PhD programme, were revised in 2014 after a request from students. For M.Tech/MS research scholars, the stipend paid is a paltry Rs 12,400.

"Due to inflation, the expenditure such as tuition fee, hostel and amenities charges, mess charges and logistics expenses borne by students, are increasing year by year. Research scholars have opted for research at the cost of their work life and family life to contribute to the research ecosystem of the country. But, it is unfortunate that the revision of PhD research scholarship is rarely taken as a serious matter.

Under Prime Minister Research Fellowship (PMRF), research is paid Rs 70,000. However, the beneficiaries under the scheme are few. The difference in the stipend under different schemes from the same PhD programme shows huge inequality," students allege. As per UNESCO Institute of Statistics, India has 216.2 researchers per million inhabitants as in 2015, raised from 152.5 in 1996. On the contrary, China's number has increased from 438.4 in 1996 to 1,200 in 2015.

The students also demanded that PhD personnel be included in the list of categories considered under the pay commission revision which ensures dearness allowance and annual salary revision hike. "A scholarship revision scheme which includes costs of living and inflation rates is required," they demanded.

December 5

IIT-K Creates 'Metamaterial' That Can Protect Soldiers From Detection by Enemy Radars!
https://www.thebetterindia.com/166010/iit-kanpur-india-innovation-invention-army-stealth-news/

Lightweight, ultra-thin and flexible, this stealth material can even be customised for different climates! #Innovation #IIT #DRDO

In a significant development, researchers at IIT-Kanpur have developed "textile-based metamaterials for radar absorption that can be used as uniforms for soldiers and skirtings or coverings for ground vehicles," according to the institution's Twitter post.

In other words, soldiers and armoured vehicles can use these textile-based metamaterials to avoid detection by enemy radar, motion-detecting ground sensors and thermal imaging systems.

Researchers at IITK have developed textile-based metamaterials for radar absorption that can be used as uniforms for personnel & skirtings or coverings for ground vehicles. Transparent metamaterial absorbers have been developed for vehicular windshields or canopy of slow aircraft.

Support for this indigenous endeavour comes from the Department of Science and Technology under the Defence Research Development Organisation (DRDO). Two leading professors at IIT-K—Kumar Vaibhav Srivastava from the Electrical Engineering Department, and J Ramkumar from the Mechanical Engineering Department—have carried out this endeavour.

"In a major achievement, we have designed and produced micro-structured infra-red metamaterials with processes that can be readily scaled for mass production to cover large area surfaces. These infra-red metamaterials are applied on any given surface to reduce the thermal emission to create infra-red stealth," said Dr S Anantha Ramakrishna from the Department of Physics at IIT-Kanpur, in a conversation with the Hindustan Times.

Additionally, the material is flexible with the potential for customisation depending on the climatic conditions that the armed forces personnel are working under.

Aside from soldier uniforms and cover for ground vehicles, researchers are also developing a more robust version of the metamaterial for high-speed aircraft and "switchable metamaterials for active camouflage applications."

"Stealth fighter aircraft were already in use, but they used very different concepts and heavy ceramic ferrites for achieving stealth. Metamaterial-based absorbers held the promise of lightweight, ultra-thin and flexible materials that could be applied literally on any surface to give the required properties at radar frequencies, infra-red frequencies or even optical frequencies," added IIT-Kanpur professor Dr Ramakrishna.

Researchers at IIT-Kanpur have been working on this material since 2010. The material has been lab-tested, now they will proceed towards field testing it.

What's particularly heartening is that these materials have been developed indigenously, which will allow India to hopefully stop depending heavily on imports or transfer of technology from abroad.

December 4

IIT Madras researchers developing chip for early, accurate diagnosis of dengue

https://www.deccanchronicle.com/nation/current-affairs/041218/iit-madras-researchers-developing-chip-for-early-accurate-diagnosis-o.html

If the chip is developed then it could detect the dengue in just fifteen minutes.

The researchers are developing a technique called Surface Plasmon Resonance (SPR) which is a very sensitive technique.

A team of researchers from IIT Madras is developing a 'lab-on-chip' device for early and accurate diagnosis of dengue antigen in the blood which can save thousands of lives every year.

Ashis Kumar Sen, associate professor, department of mechanical engineering, IIT Madras, who is working on the project said, "We have done some work and showed it is possible to reduce the detection time. The prototype chip will be ready by the end of 2019."

If the chip is developed then it could detect the dengue in just fifteen minutes. "Now, the detection time varies according to the diagnosis system. But, still, accuracy and sensitivity are the main issues in the diagnosis," he added.

"The present diagnosis system has a major limitation sometimes it can give false positive or false negative in the diagnosis," Mr Sen further said.

The researchers are developing a technique called Surface Plasmon Resonance (SPR) which is a very sensitive technique.

The research team will conduct the field tests in the coming months to improve the accuracy and sensitivity of the chip. Though there will not be much difference among the three professors to receive the prestigious "Swarnajayanti Fellowship" in engineering sciences discipline in the entire country. The support provided under this fellowship will cover all the requirements for performing research and will include a fellowship of `25,000/- per month for five years.

Scientists selected for this will be allowed to pursue unfettered research with freedom and flexibility. His team is also working to develop healthcare technology for early prediction of sepsis and improved prognosis or therapy for cancer.

After joining IIT Madras in 2010, he has secured more than 1 million US dollars of research funding from various agencies to establish a Microfluidics Research Facility to carry out cutting-edge research.

IIT Kanpur studies reveal raagas can help reduce tension
https://dbpost.com/iit-kanpur-studies-reveal-raagas-can-help-reduce-tension/

Professors of IIT Kanpur studied the effect of different raagas and found out that they play a positive role in curing various diseases

If you are tensed, then listen to Raag Darbari at night and you will immediately feel stress-free. Similarly, listening to Raag Bhimpalasi in the afternoon also helps to reduce tension. Besides these, various raagas are very helpful in management of various diseases like diabetes or ailments related to heart.

Raag Sahana is for short-tempered people

IIT Kanpur has studied the effect of various raagas on the heart and mind of people. According to the study, one should listen to Raag Sahana if they are short-tempered since this raag has a calming effect on listeners.

Listening to Raag Puriya Dhanashri is very helpful if you suffer from ailments related to stomach. Raag Deepak and Jaunpuri are helpful if you have acidity. Raag Kalyani and Charukesi are for those suffering from heart ailments.

Effect of various raagas on human brain was studied

A research was done at IIT Kanpur on the effect of various raagas on the human brain. The research team included Prof Brijbhushan of Humanities and Social Science Department, Prof Laxmidhar Behera of Electrical Engineering Department and research scholar Ashish Gupta. The study was done on some students of the institute who had not experienced Raag Darbari before.

Prof Behera said that there is neural firing between neurons, when we listen to a raag. When a neuron supplies current to another neuron it is called neural firing. When neural firing increases the brain becomes more active. After listening to a raag for sometime, neural firing peaks and the brain sends message to various body parts.

IITians mostly prefer domestic job offers
https://www.thehindubusinessline.com/news/iitians-mostly-prefer-domestic-job-offers/article25665216.ece

Students nowadays are looking at the profile of the job, possibility of growth and an opportunity to get into core functions of a firm   - SR Raghunathan

Wary of foreign job cllmate, visa hurdles
Uncertainty in the job scene in major economies such as the US and the UK has prompted many students from Indian Institutes of Technology (IITs) to spurn overseas offers as the latest round of placement drive gets under way in these premier institutes. Availability of better job profiles within the country and complexities in getting job visas in advanced economies have made many to look for jobs in the domestic market, a faculty member in charge of placement in one of the IITs said.

What students look for

"More than anything else, students nowadays are looking at the profile of the job, possibility of growth and an opportunity to get into core functions of a firm while gauging offers made to them," said Amit Acharyya, Acting Faculty-in-charge of Placements, IIT-Hyderabad.

"Students are doing their bit of evaluation of international offers. They do purchasing power parity calculations in addition to other factors. This has been the case with IIT-Delhi students for some time in the past," said Anishya Madan, Industry Liaison Offer (Training and Placements), IIT-Delhi.

Visible trends

Some of the visible trends of the current hiring drive, which began on December 1, are a rise in the number of companies visiting campuses, the offer of better work profiles, and increased stress on hiring students for jobs in the artificial intelligence domain. "This time companies such as Microsoft, which used to hire only for software engineering jobs, are also offering roles in data science, data analytics, artificial intelligence, etc, as there is growing scope in these areas," said Manu Santhanam, Advisor (Placements), IIT-Madras.

Campus offers

IIT-Madras has so far reported a total of 680 offers, while students of IIT-Roorkee and IIT-Delhi got 569 and 500 offer,s respectively. Students of IIT-Hyderabad got 133 offers, including 17 international placements , so far. Intel gave the maximum number of domestic offers to students in IIT-Delhi, while in IIT-Madras it was Microsoft, Intel and Micron that came up with most number of Indian offers. Other major companies that came to the IIT-Madras campus are Google, Apple, Airbus and McKinsey.

PSU recruiters

Among the public sector organisations, Indian Oil Corporation's R&D Centre, Solar Energy Corporation of India, and Indian Space Research Organisation (ISRO) have made offers in IIT-Delhi. ISRO and ONGC have recruited four and three candidates, respectively, at IIT-Madras, which is expecting more government companies by mid-January. An IIT-Hyderabad official said state-owned firms are scheduled to visit the campus in the coming days.

According to Santhanam, over 1,300 students are registered for placement across different streams of study at IIT-Madras this year. There are more than 490 profiles from nearly 326 companies that plan to visit the campus in the first phase of placements that lasts until December 8.

Alekhya Reddy from Computer Science and Engineering Department, who got an international offer, said it was an exhilarating experience to attend the interviews of software giants, answering the back-to-back nerve-wracking coding questions. "I am experiencing a sense of satisfaction that all my hard work has paid off on getting selected for Microsoft, Redmond Campus in the US."

Advaith Sridhar from Electrical Engineering Department, who got placed in Flipkart, said, "Placements have been a whirlwind process for me. Five months of work culminating in one day can be intensely stressful but the placement arrangements smoothened the way for us."

Micron Technology and Intel Technology India, with job offers of 26 each, were the top recruiters on the third day of campus placement at IIT-Madras. This was followed by Microsoft (25), Citibank (22) and Qualcomm (21), a press release from the institute said.

The institute saw a 30 per cent jump in offers this year at the end of Day 3, with 133 companies making 680 offers, taking the total, including pre-placement offers, to 816.

Analytics, consulting, and finance sectors accounted for 33 per cent of all job offers so far. The core and R&D sectors account for 37 per cent and the IT sector for 29 per cent. This reflects a big jump in the hiring of computer science majors.

"The participation of core sector companies has gone up significantly this year compared to the last couple of years. They are hiring in double digits," Syam Nair, chairman of student placement office at IIT-Kanpur, told *BusinessLine*.

The institute received confirmed offers for 450 students at the end of Day 4 of placement while the number of total offers would be much higher due to some getting multiple letters. Intel, Exxon Mobile, Bajaj Auto, GE, Taiwan Semi Conductors, are among the core companies hiring from IITs.

International job offers shoot up in IITs

https://economictimes.indiatimes.com/jobs/international-job-offers-shoot-up-in-iits/articleshow/66929852.cms

Job offers for foreign postings have shot up at the elite Indian Institutes of Technology (IITs) in the initial days of final placements this year, as global companies try to snap up the cream of the country's tech talent.

IITs including Delhi, Roorkee, Bombay and Hyderabad have reported a surge in international offers in the first couple of days of the final placements that started on December 1, with Kanpur and Guwahati saying their international offers have doubled.

This, along with the fact that Microsoft and Uber are offering Rs 1 crore-plus packages and there are more first-time recruiters, pushing up the overall number of offers, have given the country's premier tech campuses plenty to cheer.

"This is a market-driven phenomenon," said Syam Nair, chairman of student placement office at IIT Kanpur. "Industry is confident and coming forward and investing in top talent," he said.

IIT Kanpur received 10 international offers in the first two days, and students at the institute's placement cell expect the total number of international offers to rise to 18 this year, from seven last year.

Besides Microsoft and Uber, which lead in salary packages, others offering global roles include US-based Rubrik, Amsterdambased Optiver, California-headquartered Cohesity, Singapore's Dynamic Technology and Micron Semiconductor Asia, international hedge fund Squarepoint Capital, and Japanese companies such as Works Applications, Mercari and SMS Data Tech.

As reported by ET earlier, Microsoft is the top paymaster on campus offering Rs 1.5 crore ($214,600) including base salary, performance bonus, joining bonus and restricted stock units. Campus sources at top IITs told ET that Uber is paying approximately $150,000 (Rs 1.05 crore) all inclusive.

In the first couple of days of placements, IIT Guwahati students have bagged about six international offers: from Microsoft, Uber and Works Applications. That's twice the number of offers it got in the corresponding period last year.

At IIT Delhi, 25 international offers— 25% up from last year—were made to the students on Day 1 by companies from Japan, Singapore and US. Microsoft Redmond (US) and Squarepoint Capital, Singapore, made the maximum number of offers. Last year, Delhi IIT saw 20 international offers on Day 1.

In the first two days of placements, students at IIT Madras have bagged seven foreign offers from the likes of Microsoft, Uber, Halma and Rubrik in locations such as the US, Singapore and Dubai.

IIT Hyderabad has 11 international offers as of December 3, noon. Most of the international offers are from Japan, from the likes of SoftBank, Mercari, Toyota Research Institute-Advanced Development (TRIAD), Works Applications, Denso and SMS Data Tech.

Going Global

Besides **Microsoft** and Uber, which lead in salary packages, others offering global roles include Rubrik, Optiver, Cohesity, Dynamic Technology and Micron Semiconductor Asia, Squarepoint Capital, Works Applications, Mercari, SMS Data Tech

Microsoft is top paymaster on campus offering ₹1.5 crore ($214,600) including base salary, performance bonus, joining bonus and restricted stock units

More first-time recruiters and a greater number of overall offers is spelling good news for IIT placements

Days into the final placements, which started on December 1, top IITs, including Kanpur and Guwahati, say they have seen a doubling in international offers while at other institutes, such as Delhi, Bombay, Roorkee and Hyderabad, foreign offers are pouring in as well

IIT Roorkee confirmed that till now the institute had about 12 international offers in hand with postings in the US, Japan and Singapore.

Microsoft, Uber, Squarepoint Capital and Mercari are among those that have made offers; more are expected in the coming days.

IIT Kharagpur has seen 20 such offers so far; four each from Microsoft in the US and Taiwan Semiconductor Manufacturing Company.

Japanese corporations have been leading the show with six offers by Mercari, three by Bizreach and one by Yahoo Japan. Uber has made one offer.

IIT Kanpur students have so far received three international placement offers each from Microsoft and Graviton Research Capital, two from Uber, and one each from Rubrik and Yahoo Japan. Taiwan Semiconductor Manufacturing Company is yet to visit this campus.

"At Microsoft, we are always looking for smart people with a passion for creating things that change the world," said Ira Gupta, head HR at Microsoft India. "This is why each year we visit some of the best engineering schools around the world, including the IITs and other top

engineering colleges in India. The students we hire are placed both in India and internationally, based on the role, their preference, and where we think they would be empowered to do their best work," she said.

Rubrik—another international recruiter that placement teams say is paying a base salary of about $100,000—said it is visiting Madras, Delhi, Bombay and Kanpur IITs this year. "We have found engineers from IITs to have strong fundamentals in computer science," a Rubrik spokesperson said. "They are curious, always willing to learn and most importantly, willing to take risks."

 The company said it has no specific hiring cap. "Rubrik will hire as many well-qualified engineers as we can," the spokesperson said.

IIT placements begin, Microsoft offers highest salary at 1.5 crore
https://www.theindianwire.com/education/iit-placements-begin-microsoft-offers-highest-salary-1-5-crore-85070/

Come December and the season of placements begin for various campuses of the Indian Institute of Technology across India. The placements began from December 1 for the 2018-2019 placements and like every year, top notch companies from India and abroad came to recruit their future employees.

Students seem to be interested in the start-up offers as they are likely to help in the growth of their career trajectory. They are giving importance to the job profile rather than just the company name.

At the Indian Institute of Technology Bombay (IIT-B), app-based cab aggregator Uber is expected to offer an annual gross salary of Rs 1.04 crore.

However, at Rs 1.5 crore, sources claim that Microsoft is still offering the highest salary package.

Last year too, Microsoft had offered the highest package of ($2,14,600), which annually amounted to Rs 1.39 crore. This was followed by Uber which had offered a student Rs 99.87 lakh ($1,55,000) at IIT-B.

Here are some of the details of Placements for different IIT campuses. Take a look:

IIT Roorkee placements:

Phase 1 of IIT Roorkee placements on campus: December 1 to December 15, 2018.

No. of students registered for placements: 1354

Job offers received (midnight slot on December 1): 215 offers from 10 companies (including 150 pre-placement offers from other companies, and 7 international offers)

Highest salary: INR 47 lakhs (Domestic) and INR 1.5 crore (international package)

More about the companies at IIT Roorkee placements:

- Participant companies for midnight slot include AppDynamics India Pvt. Ltd., AQR Capital Management, DE Shaw India Pvt Ltd, Goldman Sachs Services Private Ltd, Google, JPMorgan Chase & Co – Quantitative Research, Microsoft, Nutanix Technologies, Tower Research Capital India Pvt Ltd, Uber India Systems Private Limited
- Microsoft gave the highest number of offers at the IIT Roorkee placements at 31 — 22 offers including 3 international offers, and 9 PPOs

IIT Kharagpur placements:

No. of companies registered: More than 362

No. of job profiles being hired for: More than 618

Job offers received (till 9 pm on December 1): Close to 400 (256 PPOs and close to 150 fresh offers)

More about the companies who came for IIT Kharagpur placements:

- Qualcomm and Microsoft made the highest number of offers standing at 21
- 12 international offers were received including 6 from Mercury Japan and 4 from Microsoft
- 33 start-up businesses participated in the IIT Kharagpur placements, including Zomato, Ola , Oyo, Flipkart and Innovacer
- More than sixteen new companies such as ARPWood Capital, AB InBev, Blackrock, Bidgely, MasterCard, and Bizreach Japan are participating in the first few days

IIT Madras placements:

No. of companies registered: Nearly 326

No. of job profiles being hired for: More than 490

No. of students registered for placements: More than 1300

IIT Madras placements Phase 1: December 1 to December 8, 2018

Companies recruiting on Day 1: Microsoft, Google, Apple, Airbus, McKinsey and others

More about the IIT Madras placements:

- The top recruiters in the first session were Microsoft, Google and Apple
- Bain and Company and Nutanix Technologies were among first-time recruiters
- IIT Madras is the only educational institute in India which had all the top three global consulting majors McKinsey, The Boston Consulting Group and Bain & Co. recruiting on campus they accounted for 13 offers in Session 1.1
- The Indian Space Research Organization (ISRO) and Oil and Natural Gas Corporation (ONGC) have already recruited four and three candidates

- Microsoft gave the highest number of offers 25 for three profiles. The other recruiters with large selections were Goldman Sachs (7) and Apple (8)
- 29 offers were made by finance/analytics firms in the first slot
- Airbus, Shell, JP Morgan, Star India, Intel, Qualcomm and General Electric participated in the second slot (4 pm to 11 pm) of IIT Madras placements on Day 1
- The Phase I of Placements at IIT Madras began at 7 am and concluded at 2 pm today (1st December 2018)
- Day 1 of IIT Madras placements Phase 1 saw 92 offers by 19 companies covering 32 job profiles, including 6 international offers
- Companies recruiting from IIT Madras on the first day included McKinsey, Microsoft, Google, Uber, Rubrik, The Boston Consulting Group, Texas Instruments, Goldman Sachs, ITC Ltd, Auctus Advisors and Qualcomm
- In the second slot of IIT Madras Placements that is held between 4 pm and 11 pm, 23 companies with 48 profiles are scheduled to participate

IIT Hyderabad placements:
No. of companies registered for Phase 1: 130
No. of students registered for placements: 418
IIT Hyderabad placements Phase 1: December 1 to December 22, 2018
IIT Hyderabad placement sessions: three sessions are being conducted (starting from 7 am to 12 midnight)
Companies coming for IIT Hyderabad placements: Traditional recruiters such as Flipkart, Amazon, Samsung, Xilinx, Qualcomm, Maruti, ISRO, GE, TCS; first time companies such as Softbank, Mercari, Toyota Research, Toshiba INC, TSMC (Taiwan semicondcutors), Yokogawa electric corporation, Annotation Inc., Denso Barclays, Oppo

More about the IIT Hyderabad placements:

- 14 offers were received from 3 companies during Session 1.1, made to students of Electrical, Computer Science and Design Departments
- 4 international offers were received from companies like Works applications , SMS datatech , Softbank, Mercari, Toyota Research , Toshiba INC. TSMC (Taiwan semicondcutors), Yokogawa electric corporation, Annotation Inc, Denso
- 20 pre-placement offers were made by companies like Amazon, Microsoft, Schlumberger, Qualcomm, Goldmansachs, Swiggy, Electronic Arts, and DeShaw
- The faculty-in-charge of IIT Hyderabad placements said that the institute was seeing increased participation from Japanese companies as a result of the collaboration with Japan and their institutes

IIT-BHU student bags Rs 1.04 crore placement offer by a US based company

https://www.theindianwire.com/education/iit-bhu-student-bags-rs-1-04-crore-placement-offer-us-based-company-85137/

A student of Indian Institute of Technology (IIT) Banaras Hindu University has secured a package of Rs 1.04 crore per annum from a US-based company in the ongoing placement session. The placement had started from December 1 in various IIT campuses across the country. As per a release by IIT-BHU, around 266 students have grabbed the job offer of the salary packages between Rs 47 to Rs 12 lakh.

Companies which offered the package of Rs. 26 lakh were Tesco, TCS, Citrix, SRIN, Myntra BDA, Morgan Stanley, Paypal, Fidelity Investments, Oyo Rooms, Flipkartwhile, Reliance Jio, Synopsis, Elastic Run, Sapient, Veritas, Tata Steel, Citi Pune, Fire Eye, Reliance Jio (SDE) offered posts between Rs 8 to 20 lakh.

A total of 150 students got jobs during the time of internship with 33 companies.

The Banaras Hindu University (BHU) has now resorted to newest technology to add a new dimension to their research efforts. This step will also help them improve the institute's ranking.

Meanwhile, a final year student from the Indian Institute of Technology (IIT), Roorkee has bagged an offer worth Rs 1.5 crore from Microsoft. This is thus far the highest placement offer across IITs. The highest salary made by an Indian company was Rs 47 lakh.

December 3

IISc makes it to the top 100 in Times ranking for subjects of Engineering &Technology, IIT-B in top 200

https://www.theindianwire.com/education/iisc-makes-top-100-times-ranking-subjects-engineering-technology-iit-b-top-200-84834/

2019 Times Higher Education World University Rankings list contains the name of two prestigious institutions from India, IISc and IIT-Bombay in the top 100 and top 200 respectively. These rankings are based on different faculties which vary for different subjects. While IISc is ranked at 95 position of the ranking, IIT-Bombay is in the band of 201-250.
Other IITs that made it to the list were IIT Delhi, IIT Roorkee, IIT Indore, IIT Kanpur among others. IIT-Delhi and IIT Roorkee are in the band of 201-250. While IIT-K, and IIT-I are in the band of 251-300 and 301-400 respectively.

In September this year, in the World University Rankings, the Indian Institute of Science (IISc) Bangalore had made it to the 251-300 rank band and was the highest ranked Indian University in the list.

The Indian Institute of Technology (IIT) Roorkee departments of Computer Science, Chemical, Civil, Electrical and Mechanical Engineering have been individually ranked 3rd nationally.

 "The Engineering ranking underscores IIT Roorkee's engineering legacy. Our excellent performance in all the main streams of Engineering is a testament to our focus on the future. The Institute has taken several initiatives to attract research scholars and exceptional faculty from around the world,"

said Prof Ajit K Chaturvedi, Director – IIT Roorkee, who was elated at the significant improvement in the Institute's global ranking.

"We hope to build on this performance by existing faculty and students to attract more outstanding talent from across the globe. We will continue to focus on our research output and further upgrade our research facilities to match the best in the world," he added.

Top 10 in THE World University Rankings table for engineering and technology subjects

1. University of Oxford, United Kingdom
2. Stanford University, United States
3. Harvard University, United States
4. California Institute of Technology, United States
5. Massachusetts Institute of Technology, United States
6. University of Cambridge, United Kingdom
7. Princeton University, United States
8. National University of Singapore, Singapore
9. ETH Zurich, Switzerland
10. Georgia Institute of Technology, United States