



NEWS CLIPS

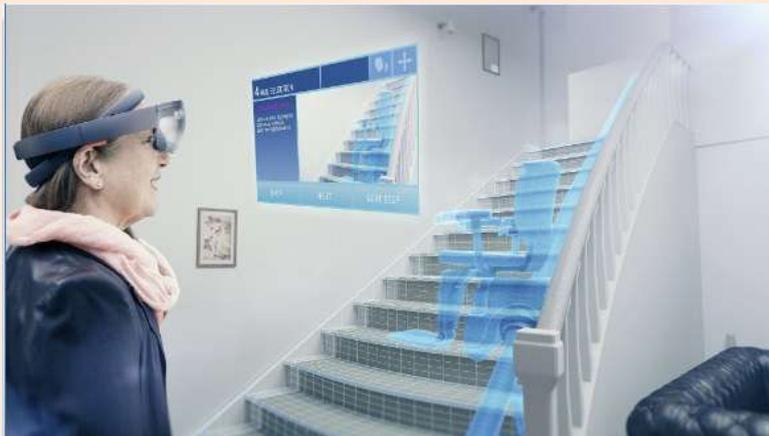
May 4-10, 2019

Highlights of the Week@IITD

PTC Launched Industry 4.0 Technology at IIT Delhi

May 10, 2019 <http://bweducation.businessworld.in/article/PTC-Launched-Industry-4-0-Technology-At-IIT-Delhi/09-05-2019-170306/>

IIT Delhi plays an important role in this collaboration as they are enabling students with the right skill set. Both discrete and process industries are assured that they have access to the right skill set that can enable them to become more innovative and efficient.



The event showcased live demonstrations of PTC's solutions – Industrial IoT (IIoT) and Augmented Reality (AR) technologies.

PTC launched its Industry 4.0 technology suite at IITD-AIA Foundation for Smart Manufacturing (FSM), at IIT Delhi, to the Manufacturing Industry. This marks the beginning of a strong relationship between private technology companies like PTC, academia (IIT & FSM) and government initiatives (SAMARTH UDYOG). The event showcased live demonstrations of PTC's solutions – Industrial IoT (IIoT) and Augmented Reality (AR) technologies.

To address the challenges that are faced by the Indian manufacturing industry due to disruptions caused by innovation in technologies, the Government of India initiative under SAMARTH (Smart Advanced Manufacturing & Rapid Transformation Hubs) UDYOG mission, Automation Industry Association has set up a fully integrated Smart Manufacturing and Learning Facility for SMEs at IIT Delhi.

V. Ramgopal Rao, Director, IIT Delhi, said, "IIT Delhi is a globally ranked Indian Institute of Eminence, well known for the quality of its faculty, alumni and students. We are now aggressively connecting with industries and working closely with startups in order to bring relevance to our research and impact the society that we are in. We hope to have a deep engagement with PTC involving our faculty and students".

The Foundation for Smart Manufacturing (FSM) lab set up (Cyber-Physical Lab), is supported by extensive skill building, MSME consultancy, multi-academia partnerships and research that will give a huge to the competitiveness of Indian Manufacturing. Its collaboration with PTC solutions ensures that the industry has access to the latest digital technologies to enable Indian manufacturing companies.

Sunil Jha the Director of FSM believes, "FSM is a unique partnership amongst Indian Industry-Academia-Government. We are building competency across several Industry 4.0 tools and services and developing affordable engagement services to accelerate the digital transformation and growth of Indian manufacturers".

IIT Delhi plays an important role in this collaboration as they are enabling students with the right skill set. Both discrete and process industries are assured that they have access to the right skill set that can enable them to become more innovative and efficient.

Anup Wadhwa, Director (AIA) outlined, "We have brought in best-in-class companies that serve both the discrete and process industries. We are well poised to integrate a full array of technologies; comprising of Smart Sensing, Factory Floor Actuators and Controllers, and Industrial Software and Communication platforms".

The collaboration between FSM and Automation Industry Association (AIA) has helped bridge the gap between the manufacturing industry and access to the technologies that will guide them in the right direction towards becoming globally competitive.

Stefano Rinaldi, SVP & GM of Western Europe and India, PTC understands how important this collaboration is to enable the manufacturing industry in one of the largest economies in the world. He stated, "IIT Delhi, being one of the most prestigious institutions for engineering and technology is perfectly suited to educate an upcoming generation of engineers. We hope this collaboration between IITD-AIA Foundation for Smart Manufacturing and PTC for a Transformation Centre will enable companies in India to realize their true potential and become a global powerhouse".

As the industries are embarking on their digital transformation journey, manufacturing excellence and workforce productivity will prove to be critical differentiators for companies. This is where PTC's IoT and AR solutions enable the manufacturing industry to be at the frontier of innovation.

Kalyan Sridhar, Vice President & Country Manager, PTC further corroborates, "This collaboration will ensure that India is set to be the 5th Largest Manufacturing Country by 2020. Embracing Industry 4.0 is crucial for Indian Manufacturing Companies and PTC is proud to be part of this initiative and thus enable companies to become globally competitive".

Ericsson 5G testbed suspends work due to unavailability of spectrum

May 9, 2019 <https://economictimes.indiatimes.com/industry/telecom/telecom-news/ericsson-closes-iit-lab-after-5g-spectrum-licence-expires/articleshow/69241422.cms>

Launched with much fanfare by telecom minister Manoj Sinha and Ericsson president and CEO Börje Ekholm last year, Ericsson's 5G innovation lab has stopped its 5G-related work around technology testing and use cases after its radiating spectrum license expired.

The lab was established in collaboration with the Indian Institute of Technology, Delhi, at the city campus in July 2018. The centre was set up with the aim to support the Indian government's plans to foster a robust and vibrant 5G ecosystem in India.

People familiar with the matter said that Ericsson initially got an approval to use radiating spectrum for three months, which it renewed a couple of times. However, Ericsson was asked to pay commercial fee for the usage of trial spectrum now, hence the company stopped the work at the lab.

"They are now awaiting the recommendations of the telecom ministry panel on the spectrum for the test run. It will cover both non-radiating and radiating spectrum for 5G trials," a person privy to the matter told ET.

The Department of Telecommunications (DoT) is yet to decide on stakeholders' demand that trial spectrum be given for at least a year, compared with the three-months under current rules.

An Ericsson India spokesperson confirmed the development and said that Ericsson expects the radiating spectrum to be made available soon when the company will restart 5G use case development again.

"In 2018, we developed a number of 5G use cases as part of our collaboration with IIT Delhi and with leading Indian operators. We are not currently carrying out use case testing at the 5G Center of Excellence, due to the expiration of our spectrum license," the spokesperson said in a statement.

In a separate statement to ET, IIT Delhi said that it is looking forward to collaborating with other institutes and evaluating requests from other institutes and organizations to use the testbed. "This period is being used to prepare the plan for using the testbed once license is available," IIT Delhi said.

It added, "One UE, the Base station & 3.5GHz MIMO RF head are fully operational. However, the radio head is kept powered off for the time being as the licence has expired, and extension of the same is awaited". It added that an application for license renewal is with the telecom department.

At the time of the launch, Sinha had urged the industry, academia, students and start-ups to leverage the Ericsson Innovation Lab to develop new 5G-based business models and applications in the field of agricultural, healthcare and smarter cities among others.

Ericsson's rival Huawei is also looking to establish its own test bed in India in partnership with institutes like IITs. It has started discussions with academia and telcos to set it up to test the technology and identify new use cases.

"Huawei is open to spectrum in both 28 GHz and C-band for 5G trials. For lab, it needs non-radiating spectrum for one year at least for successful trials... it is awaiting the recommendations of the 5G committed by the DoT," a person aware of Huawei's plan told ET.

IIT Delhi 3D prints human skin

May 4, 2019 <https://www.thehindu.com/sci-tech/science/iit-delhi-3d-prints-human-skin/article27033917.ece>



Commercialised: The bioprinted skin produced in the lab by the team is already being used by ITC Ltd for experiments, says Sourabh Ghosh

The model can reduce and even replace testing cosmetics on animals

Researchers at the Indian Institute of Technology (IIT) Delhi have successfully 3D bioprinted human skin models that have certain anatomically relevant structural, mechanical and biochemical features similar to native human skin. The bioprinted skin produced in the lab by the team is already being used by ITC Ltd for experiments.

The bioprinted skin model will have wide applications in testing cosmetics. It can also reduce and probably even replace testing on animals.

It can also be used for testing dermatology drugs on human skin and at a future date even help in testing drugs for personalised medicine.

Testing on animals

The European Commission has prohibited testing finished cosmetic products and cosmetic ingredients on animals. It even prohibits marketing of finished cosmetic products and ingredients in the European Union.

The skin is composed of two important layers — the inner dermis (made of fibroblasts) and the outer epidermis (keratinocytes, melanocytes). The junction between the two layers is not flat but is

undulatory or wavy. The undulatory morphology is important as it provides biochemical cues and mechanical support to the epidermis layer, provides structural stability to the skin by making the two layers adhere to each other, and not allow cells to cross the junction.

Unlike the currently available tissue-engineered skin equivalents, the team led by Sourabh Ghosh from the institute's Department of Textile Technology was successful in creating this wavy junction in the bioprinted skin model. The results were published in the journal *Bioprinting*. The study was funded by ITC Ltd.

The undulatory junction was designed using 3D CAD and 10 layers of dermis were constructed through bioprinting followed by eight layers of epidermis. "We designed the pattern so that both layers fit and the interface had a wavy pattern," says Prof. Ghosh. Silk bioink mixed with fibroblasts was used for growing the dermis, while bioink mixed with keratinocytes and melanocytes was used for growing the epidermis.

No shrinkage

The bioprinted skin also retained the original dimension without any shrinkage for up to three weeks. Traditionally, collagen used for developing skin constructs start shrinking within a few weeks thus affecting the morphology. Testing on such skin constructs therefore cannot be carried out beyond one week.

The bioink containing the cells are deposited in a criss-cross pattern leaving gaps in between. "The keratinocytes in the epidermis were seen migrating and filling the pores. This type of migration, which was very clear and striking, and cellular self-assembly recapitulate wound healing-like situation in native skin," says Prasad Admane from IIT Delhi and first author of the paper.

The keratinocytes in the epidermis differentiate and form into four distinct layers. "We studied three proteins — fibronectin, cytokeratin 1 and 14 — that are biomarkers of keratinocyte differentiation. They are produced in the bioprinted skin though the amount was comparatively less than native skin," he says.

Most importantly, gene and protein expression analysis showed 60% similarity in gene expression between bioprinted and native skin. "We identified 56 proteins expressed in bioprinted skin which play an important role in skin development, extracellular matrix organisation and keratinocyte differentiation," says Abhishak C. Gupta from IIT Delhi and co-author of the paper.

"We will now explore the possibility of growing hairs on the bioprinted skin," says Dr. Gupta.

Prof. Ghosh's team has already developed a 3D construct for hair follicle structure in collaboration with ITC Ltd.

"Our goal is set up a start-up to focus on developing different diseased skin conditions to test different drug molecules in patient-specific manner," he says.

May 10

CSIR BEGINS WORK TO PROBE QUALITY OF VOTING INK MARKER

<https://ewn.co.za/2019/05/09/csir-begins-work-to-probe-quality-of-voting-ink-marker>

The CSIR has a tight deadline to ensure that the quality assessment of the ink used in this year's elections is completed before the election results are released.



A citizen gets his thumb marked before casting his vote on 8 May 2019.

PRETORIA - The [Council for Scientific and Industrial Research \(CSIR\)](#) - which was asked to help the [Independent Electoral Commission \(IEC\)](#) investigate the quality of the supposedly indelible ink used in the 2019 elections - said it had begun its work by establishing whether the commission was sold what it had procured.

The CSIR had a tight deadline to ensure that the quality assessment of the ink used in this year's elections was completed before the election results are released.

The CSIR's Fulufhelo Nelwamondo told Eyewitness News that one of the areas they would look into was whether there was consistency in the quality of the pens used.

He further said they would test whether claims that the ink could be removed after a vote was cast were true.

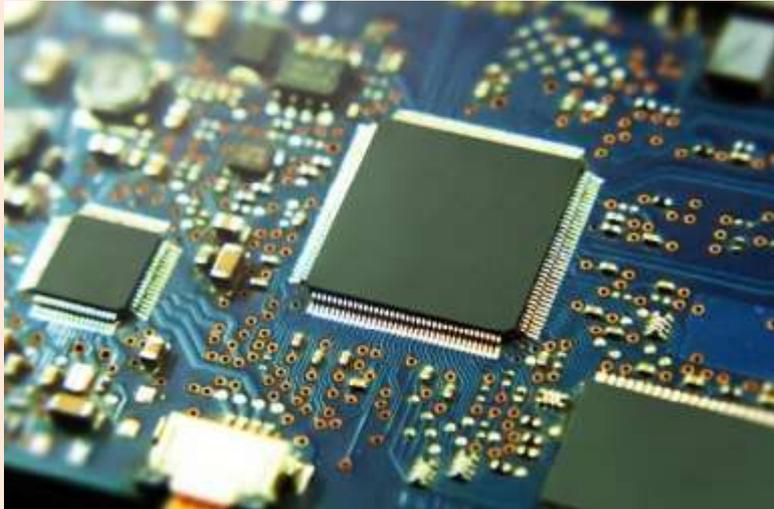
The CSIR anticipated that the work will take two days to complete.

May 9

Researchers at IITB develop first ever microprocessor, major boon for India's electronics

<https://www.mid-day.com/articles/researchers-at-iitb-develop-first-ever-microprocessor-major-boon-for-indias-electronics/20908161>

As per information provided by the Institute PRO, Akin to most microprocessors available today, AJIT comes with an arithmetic logic unit that can do basic arithmetic and logical operations like addition, subtraction and comparison



Researchers at Indian Institute of Technology (IIT) Bombay develop country's first indigenously designed and fabricated microprocessor - AJIT. A much integral part in any electronic item had to always be imported. With development of AJIT - India's electronics sector to see a major change as it is expected to make the country self-reliant in electronics.

As per information provided by the Institute PRO, Akin to most microprocessors available today, AJIT comes with an arithmetic logic unit that can do basic arithmetic and logical operations like addition, subtraction and comparison, and a memory management unit that stores and retrieves data from memory. There is also a floating point unit designed to handle calculations with non-integer numbers efficiently. For those who would like to program the microprocessor, there is a hardware debugger unit to help them monitor and control the processor. AJIT's features can be compared to many of the microprocessors of its size available in today's market.

Unlike the ones used in the desktops like the Intel's Xeon, AJIT is a medium-sized processor. It can be used inside a set-top box, as a control panel for automation systems, in a traffic light controller or even robotic systems. What's more, the researchers expect that AJIT will cost as less as Rs.100 when it is produced en-masse! AJIT can run one instruction per clock cycle and can operate at clock speeds between 70-120MHz, comparable to its competitors in the market.

A microprocessor which is considered brain of any electronics device; is an integrated circuit (IC) that contains a few millions of transistors (semiconductor-based electronic devices) fused on a semiconductor chip. It is just a few millimetres in dimension and is used in almost every electronic device—from the microwave and washing machine in homes to advanced supercomputers of a space station. However, developing and manufacturing a microprocessor is not easy—it is expensive, risky and needs much skill. Hence, only a handful of companies across the world have been able to manufacture and sell microprocessors successfully.

AJIT marks the first time in the country's history where the industry, academia and the government have come together. Prof. Madhav Desai and his team of about nine researchers from IIT Bombay have designed and developed the processor entirely at the institute. The project was funded by the Ministry of Electronics and Information Technology (MeitY) and IIT Bombay. Powai Labs, a Mumbai-based company, has also invested in the venture and will own, market and support the product. "We have been working on this processor design for more than two years now. The design has been tested on programmable semiconductor chips before we began our effort towards fabricating the processor," said Prof. Desai.

The researchers also offer to customise the processor for specific applications. "The design of the processor is modular, and at some extra cost, vendors can get a processor design with a feature set suitable for the system they are designing", said Prof. Desai.

Concrete deficiency damaged flyover in 2018: IIT-B report

<https://www.hindustantimes.com/gurugram/concrete-deficiency-damaged-flyover-in-2018-iit-b-report/story-ZV6qwx2LGVys9QIRJFSEJO.html>

The spot that was damaged on Wednesday is located around 10-15 feet from the spot where concrete had fallen off last year.



Workers repair a damaged portion of Hero Honda Chowk flyover.

Following damage to the Hero Honda Chowk flyover for the second time in 13 months, it has been revealed that a team of experts from the Indian Institute of Technology, Bombay (IIT-B) had blamed the "deficient strength of concrete" for the damage caused last April.

The spot that was damaged on Wednesday is located around 10-15 feet from the spot where concrete had fallen off last year.

Although the expert team had concluded last year that the problem with the quality of concrete was local, it had pointed out that any defect in other parts of the flyover is difficult to detect. "Based on core tests, it may be concluded that the problem of quality of concrete is local, though such problems are difficult to identify in other parts of the bridge, if they exist, and cannot be ruled out," wrote Ajay Goyal, a professor with the department of civil engineering, IIT-B, in a letter to the National Highways Authority of India (NHAI) project director on June 2, 2018.

“In our opinion, no immediate action is required in other parts of the bridge,” he had added.

The team of experts had found that extra water was added to the concrete mix used at the spot and this might have affected the strength of the material. “The concreting time-log of the suspect area indicates ‘extra’ waiting time of the dumper truck of the order of one- to one-and-half hours. Most probably, extra water was added to maintain the slump, and it may be the main reason for showing very low strength for samples C11, C12, C13 in the suspect patch area,” Goyal stated in the letter (a copy of which is with HT).

The committee had recommended that the concrete must be replaced with a higher-grade concrete and additional steel be added to the top and bottom for more strength. It was further mentioned that tests on other samples revealed that their strength was acceptable.

Goyal, who led the IIT-B team, declined to comment on the matter when contacted on Thursday. The NHAI is now constituting a team of experts again to look into the incident, which it has called “a matter of serious concern”.

K Madhusudan Rao, former general manager, Valecha Engineering, who oversaw the construction of the flyover, said that all the recommendations made by experts were followed in repairing the flyover. “The damage on Wednesday has also been caused in the same concrete span and is localised. The flyover has no structural fault and it was mentioned in the report. Further action would be initiated based on probe of the NHAI technical committee,” said Rao, who has since left the project.

A senior NHAI official in the Union transport ministry said that their intervention is limited at present due to the model code of conduct. “The NHAI has set up a technical committee of experts to study the matter in detail and prevent a repeat of such incidents in the future. A comprehensive check-up would be done and remedial action taken,” he said.

DD Sarode, an expert with the Institute of Chemical Technology, Mumbai, said that the pictures of the damaged surface portray a serious problem. “There is need to test the concrete strength to know the exact problem as iron bars have been exposed completely,” he said.

JEE (Advanced) 2019 Registration Date Extended To 14th May in Odisha

<https://www.ommcomnews.com/odisha-news/jee-advanced-2019-registration-date-extended-to-14th-may-in-odisha>



In the wake of severe cyclone Fani affecting Odisha severely, the Ministry of Human Resource Development has extended the last date of registration for JEE (Advanced) 2019 Examination from 9th May, 2019 to 14th May, 2019 for the qualified candidates from Odisha.

Communicating this announcement to Odisha's Special Relief Commissioner (SRC) Bishnupada Sethi, the HRD Ministry also stated that an on-line registration facility needs to be created at IIT Bhubaneswar for the benefit of the students, who do not have internet access due to the extreme cyclone.

"I am happy to mention that in honour of the same, the Institute has established a special help desk since yesterday (8th May) morning, at the Permanent Campus of IIT Bhubaneswar to facilitate on-line registration of the qualifying candidates" the letter stated.

Besides, the Institute arranged a special daily bus service from the city to IIT campus and back, from 8th May, 2019 to 14th May, 2019, for the convenience of the students.

IIT MANDI SCIENTISTS DEVELOP GLASS THAT REMOVES POLLUTANTS FROM WATER USING SUNLIGHT

<https://www.firstpost.com/tech/science/iit-mandi-scientists-develop-glass-that-removes-pollutants-from-water-using-sunlight-6603451.html>

This glass can be used by industries to de-contaminate wastewater and help curb air pollution.

Scientists at IIT Mandi have developed a self-cleaning glass that can remove microbes and organic pollutants — like dyes, detergent and drugs — from wastewater, using only sunlight.

Wastewater from pharmaceutical and textile industries are a major source of river pollution in India and abroad. While existing purification techniques can remove solid pollutants as well as dissolved inorganic compounds, removing dissolved organic compounds remain a challenge, said Rahul Vaish, associate professor at Indian Institute of Technology (IIT) Mandi in Himachal Pradesh.

"Industries do not clean their wastewater but simply dump it in the river. It is only after the river is contaminated completely that we think about taking action to clean the river," Vaish told PTI. Instead, he recommends the use of the process known as photocatalysis to treat the wastewater before the harmful contaminants make their way into our river streams.

The team, which includes Gurpreet Singh and Sandeep Kumar, have developed a transparent calcium borate glasses and TiO₂ crystallised glass nanocomposites which can kill microbes and break down organic chemicals in the presence of solar light.



"These glasses have photocatalytic and self-cleaning properties which help in destroying the bacteria and other microbes from wastewater in the presence of sunlight," said Vaish, the corresponding author of the study published in the Journal of the American Ceramic Society. "There is no extra cost or machinery involved. If the water is kept in this glass container it will treat the organic compounds in a few hours. You only need sunlight."

The technology has a range of applications, the researcher said. These easy to fabricate glasses can be made in the form of large panels which can have a wide range of applications from self-cleaning water bottles to large cleaning tanks for industrial discharge.

"The glass can also remove detergents from water. It could be used in washing machines to clean the water at the discharge point itself, rather than letting the contaminated water flow into our river systems," Vaish said.

Removal of such toxic chemicals from water is successfully demonstrated by many researchers at a laboratory scale. However, cost and efficiency associated with existing technologies are major hurdles in their commercial usage.

Vaish said that his fabrication process is cost-efficient. "This technology can also be used to clean air. It can remove NO_x (oxides of nitrogen) from the air. If we place these glasses in our windows, we can fight air pollution too," he said. "We are trying to improve transparency of the glasses so that they can be used to replace regular windows."

IIT-IIT Platform 'Grow to National Scale' Launched to Scale India's Social Sector Impact

https://www.indiawest.com/news/business/iit-iit-platform-grow-to-national-scale-launched-to-scale/article_31cddf52-71bd-11e9-8153-ab7610d3c541.html



Kartik Kilachand, CEO and co-founder of Magnus Gyan, a U.S.-based technology company, is also the co-founder of IIT-IIT.org. (IIT-IIT.org photo)

A nonprofit entity has been founded by a group of 100 IITians, called IIT-IIT.org (IITians Influencing India's Transformation), to accelerate scaling of India's social impact programs with its 'Grow To National Scale' (or GTNS) platform. The principles of the platform, according to a press release, are to first identify those social impact programs that are designed to serve a national need, including their having a financial sustainable model so that over a 3-5 year horizon will bring their operating losses down to zero.

IIT-IIT aims to do for NGOs what NASSCOM (National Association of Software and Services Companies) did for India's IT sector – an enabler that pulls resources, funds, connections, business skills and technology. Their focus will be to accelerate impact in the fieldw of primary/secondary education, healthcare (non-communicable diseases) and jobs/livelihoods, added the release.

Indian American technology company founder Kartik Kilachand and Joe Fernandes, both IITians and successful entrepreneurs, co-founded IIT-IIT to accelerate their independent efforts to address the widening gap between India's economic growth metrics versus its lagging social sector indicators. After many evenings of brainstorming, 'IIT-IIT' (<https://www.iit-iit.org/>) was conceived to garner the combined strength of its 300,000 strong global alumni – starting with 100 "founding members" of successful fellow entrepreneurs who wanted to give back to India and needed a scalable platform, noted the release.

IIT-IIT's leadership team also attracted some iconic IITians on its Advisory Board: Arjun Malhotra, co-founder HCL; Ganesh Natarajan, chair, SVP, India; PK Agarwal, former CTO of CA and former CEO of TiE Global); Som Mittal, former executive director of NASSCOM, to name a few.

The nonprofit held an event April 13 at the Netflix campus in Los Gatos, Calif., co-hosted by Indians for Collective Action and Bay Area IIT Network to showcase a prominent GTNS program – Sankara Eye Foundation. SEF was represented by its CEO, Murali Krishnamurthy, board member Sridhar K (also an IITian), and Sundar R (board member) along with two prominent SEF donors – Ram Reddy and Dilmohan Chadha.

Established in the San Francisco Bay Area, SEF is a non-profit organization that has been working for the past 20 years for the cause of eradicating curable blindness in India, and has currently established nine community hospitals and will soon embark on three new hospital projects.

UGC directs universities to have an online portal to receive grievances from students

<https://www.edexlive.com/news/2019/may/09/ugc-directs-universities-to-have-online-portal-to-receive-grievances-from-students-6088.html>

The regulation also has provision for penal action against institutions which violate the regulation



University Grants Commission, which has come up with a new regulation for redressal of student's grievances, has asked universities to set up an online portal within a period of three months, where students can submit their grievance. The UGC has notified Redressal of Grievances of Students Regulation, 2019 in the Government of India Gazette on May 6. The regulation listed out 16 types of grievances which included admission contrary to merit, non-publication of prospectus in accordance with the provisions of the regulations, withholding any document in the form of certificate, demanding money in excess, non-payment or delayed payment of scholarship, delay in conducting examination or declaration of result, non-transparent evaluation of students, denial of quality education, harassment or victimisation of student.

The regulation also mandates institutions to upload on its website prospectus containing information including list of programs, number of seats, conditions of educational qualification and eligibility, process of selections, each component of fee, deposit and other charges payable by students, details of teaching faculty with their educational qualification and information regarding physical and academic infrastructure. There will be four types of students grievance redressal committees, collegiate student grievance redressal committee, departmental student grievance redressal committee, institutional student grievance redressal committee and university student grievance redressal committee. Any student aggrieved by the decision of the University Student Grievance Redressal Committee may prefer an appeal to the Ombudsperson, who shall be a person of eminence in academics or research, who had been Vice-Chancellor of a University.

On receipt of an online complaint, the institution shall refer the complaint to the appropriate Student Grievance Redressal Committee, along with its comments within 15 days of receipt of the

complaint. The Student Grievance Redressal Committee shall fix a date for hearing the complaint which shall be communicated to the institution and the aggrieved student.

The regulation also has provision for penal action against institutions which violate the regulation. The UGC take action against institutions which wilfully contravenes these regulations or repeatedly fails to comply with the recommendation of the Ombudsperson or the Grievance Redressal Committees and punishments includes withdrawal of declaration of fitness to receive grants under section 12B of the Act, withholding any grant allocated to the Institution, etc.

May 8

‘Implement 10% quota for EWS in colleges in a phased manner’

<https://timesofindia.indiatimes.com/city/puducherry/implement-10-quota-for-ews-in-colleges-in-a-phased-manner/articleshow/69219466.cms>

Pondicherry University vice-chancellor Gurmeet Singh directed all colleges affiliated to the university to implement 10% reservation for the economically weaker sections (EWS) of the society in a phased manner in their institutions.

Addressing principals of the colleges at a meeting convened by the university’s college development council, Singh stressed the need to recruit qualified teaching faculty based on AICTE/UGC/NCTE norms. He directed them to hold governing body meetings with the nominees of the university and said experts have been nominated to help the colleges adopt good academic policies of reputed universities in the country.

Singh appealed to the colleges to create wi-fi facilities on their premises and set up digital libraries. He urged them to meet the requirements of the Union human resource ministry and UGC by establishing anti-ragging committees, students’ grievances redressal forums, rainwater harvesting and proper disposal of waste materials as well as adopting villages.

Singh regretted that only a few students from Puducherry clear national-level tests and stressed the need for improving the quality of teaching at the undergraduate level. He said reservation for the students from the Union territory alone has ensured them admission in courses offered by the university.

IIT Kharagpur professors behind life-saver shelters

<https://www.telegraphindia.com/states/west-bengal/iit-kharagpur-professors-behind-life-saver-shelters/cid/1690016>

Shelters that can function as a school or a vegetable market



One of the cyclone shelters developed by IIT Kharagpur professors Sriman Kumar Bhattacharyya and Gopal Chandra Mitra

Two IIT Kharagpur professors who have designed the shelters that saved thousands of lives after Cyclone Fani hit Odisha last Friday said the lessons of the 1999 supercyclone were the trigger behind their project.

Sriman Kumar Bhattacharyya, professor of civil engineering department at the institute, and Gopal Chandra Mitra, a visiting professor at the department, took one-and-a-half years to design the project and built a prototype structure in 2004.

The structure was built with reinforced concrete and had open spaces between the pillars on the ground floor.

The project, funded by the Prime Minister's relief, was taken up to prevent a recurrence of the 1999 tragedy, Bhattacharyya said. The supercyclone had claimed as many as 10,000 lives.

"The supercyclone that had ravaged Odisha was the trigger. The Odisha State Disaster Mitigation Authority, a wing of the state government, took up the project in association with the IIT. We are happy the facilities have succeeded in achieving what they were meant for," Bhattacharyya, also deputy director of the institute, told Metro.

An engineer with the public works department of Odisha said about 600 such shelters had been built since 2004 to accommodate people during cyclones. Each shelter can accommodate 1,000 people.

The two-storey structures stand on stilts and are built with reinforced concrete and masonry infill walls. An infill wall — a wall between two columns of reinforced concrete — increases the strength of the columns.

Bhattacharyya explained why they kept the ground floor of the storm shelters open.

"If we had designed an entirely closed structure, it would have suffered immense stress after being buffeted by wind. So, we have kept a lot of open space on the ground floor for the wind to pass without facing any resistance," Bhattacharyya said.

The shelter is housed on the first and second floors, which have some open space, too, to let air pass.

The buildings also have ramps for the benefit of disabled people.



Lunch being served at a cyclone shelter in Pakhar of Balasore district after Cyclone Fani made landfall in Odisha on Friday. Picture courtesy: Narayan Chandra Pal

Why did Bhattacharyya and Mitra choose concrete?

“If we had gone for steel, the structures would have weakened from corrosion. It is always advisable to build concrete structures in a coastal belt,” Bhattacharyya said.

The shelters had saved lives earlier, too, when cyclones Phailin and Titli had hit the state in 2014 and 2018, respectively.

“Those storms were not as severe as Phani. We have got to know from Narayan Chandra Pal, a student of ours who is now a superintending engineer in Odisha PWD, that the shelters had helped prevent casualty on a large scale,” Bhattacharyya said.

Pal, who did his MTech and PhD in civil engineering from the IIT, said the shelters had come up in Balasore, Kendrapara, Puri and Jagatsinghpur, among other places.

“As the Met department had alerted us in advance about the storm, the government had moved people from the coastal belt to the shelters three days before Fani made landfall,” Pal said.

Asked about the building technique, Pal said pile foundation was chosen to support the structure because of the abundance of slush in the coastal areas. Pile foundation involves erecting slender columns of concrete or steel from six feet under the ground level.

“Another unique feature of the cyclone shelters is that they can be put to many uses. For instance, a school or a vegetable market can function from such a shelter,” Pal said.

Bhattacharyya said they would like to assess the structures to find out whether they had suffered any damage after enduring a cyclone that clocked 205kmph during landfall.

“The shelters have been designed to withstand storms that can gust up to 280kmph. But still we want to ascertain whether there is any damage,” said Bhattacharyya.

Mitra, who assisted Bhattacharyya, is a former engineer-in-chief and secretary to the Odisha government who looked after the IIT's extension centre in Bhubaneswar till 2016.

IIT Kharagpur director Parthaprati Chakrabarti said the project had to overcome several hurdles, including audit objections. "IIT Kharagpur is proud to have implemented this project. May we get more such opportunities and have more selfless, capable people like Prof Mitra and Prof Bhattacharyya," he said.

IIT, Ropar, inks agreement with MIT

<https://www.tribuneindia.com/news/jobs-careers/iit-ropar-inks-agreement-with-mit/769618.html>



IIT Ropar has inked an agreement with the Abdul Latif Jameel Water and Food Systems Lab (J-WAFS) at the Massachusetts Institute of Technology (MIT) to establish the MIT-IIT Ropar Research Collaboration. The agreement was signed between Professor S. K.Das, Director, IIT Ropar and Prof. John H. Lienhard V, Director, J-WAFS. The agreement will support seed fund grants for early-stage collaborative research projects on topics primarily related to water, food, and/or agriculture, between faculty and research scientists at MIT and IIT Ropar. Under this agreement an annual call for proposals open to all MIT faculty, principal research scientists and senior research scientists. Faculty and research scientist at IIT Ropar will be co-applicants on proposal applications. The intended outcome also includes two-way students' mobility from IIT Ropar to the MIT and vice-versa. The Director, IIT Ropar had visited the US last week for forging linkages and collaborations with MIT.

Sunstone Eduversity ties up with NIET

Sunstone Eduversity, the unique academic institution creating industry-ready professionals, recently tied up with NIET (Noida Institute of Engineering and Technology), Greater Noida. Founded in 2011, Sunstone Eduversity partners with AICTE-approved colleges in a technology-led asset-light model to run their management programme. Sunstone creates industry-ready graduates by equipping students with the desired skill sets that are in sync with the industry requirements. The organisation takes complete ownership of its students' success and works only on a unique Pay-After-Placement Model.

Xebia ties-up with Ansal University

Xebia Academy Global, the Education Business unit of Xebia has recently signed an MoU with Ansal University, Gurgaon, to launch a BTech Computer Science Engineering programme specialisation in DevOps for the academic session 2019-20. Xebia will undertake the designing of course curriculum, creating study modules containing high quality industry-specific content, and strengthening the faculty through building a team of competent educators. The company will also support with the placement of the graduating students. Recently, Xebia had also tied up with SRM University (Sonepat) and Quantum University (Roorkee) on the same lines.

With the focus of the BTech programme on future-oriented field of DevOps, the course structure has been designed to addresses the talent gap by providing relevant knowledge and upskilling the students. The curriculum development, which comprises course materials, assignments, and training sessions, will be piloted under the specific guidelines and expertise of Xebia's DevOps practitioners.

Singapore-based cloud-services provider Deskera partners with IIT Kanpur

<https://www.thehindubusinessline.com/info-tech/singapore-based-deskera-partners-with-iit-kanpur-provide-smes-access-to-research-opportunities/article27065850.ece>



Shashank Dixit, CEO, Deskera, said, "SMEs in the emerging countries are going through a transformative phase. They need access to world-class research and analysis" - Website/Deskera

Aims to provide SMEs of south-east Asia and India access to research opportunities

Singapore-headquartered Deskera, a cloud-services provider, partnered with the Indian Institute of Technology (IIT) Kanpur to provide small and medium-sized enterprises (SMEs) of south-east Asia and India access to research opportunities.

According to the partnership deal, around 100,000 SMEs associated with Deskera will be able to benefit from modern facilities offered by IIT Kanpur for industries such as manufacturing, aviation, logistics, and supply chain.

"IIT Kanpur as a host to one of the largest innovation ecosystems in an academic setting and cutting edge state-of-the-art research in all disciplines of science, engineering and management is poised to

provide both technology and product intervention support to SMEs across India and Asia region making them globally competitive,” said Professor Abhay Karandikar, Director, IIT Kanpur.

IIT Kanpur is well-equipped with cutting-edge capabilities and will provide an additional layer of research to help enterprises in improved decision-making, added Karandikar.

According to a World Bank study, there are 365-445 million formal and informal micro, small and medium enterprises (MSMEs) in the emerging markets. Of which, the former contributes up to 60 per cent of total employment and 40 per cent of gross domestic product (GDP) in emerging economies.

Shashank Dixit, Chief Executive Officer (CEO), Deskera, also an IIT Kanpur alumni said, “SMEs in the emerging countries are going through a transformative phase. They need access to world-class research and analysis.”

“Further, the Deskera partnership would leverage the R&D effort of MSMEs and help them to grow faster in this competitive world,” said Professor S Ganesh, Dean, Research & Development, IIT Kanpur.

The governments of various nations especially India and south-east Asia are encouraging the growth of SMEs by introducing several initiatives and policies.

May 7

THE Asia Rankings 2019: Most Indian institutes go down

<https://timesofindia.indiatimes.com/home/education/news/the-asia-rankings-2019-most-indian-institutes-go-down/articleshow/69214392.cms>



IISc Bengaluru and IIT Indore are the only Indian institutes to appear in the list of top 50

Universities from China, Singapore and Hong Kong bagged the top ranks in the Times Higher Education (THE) Asia University Rankings 2019. Tsinghua University, China, National University of Singapore and Hong Kong University of Science and Technology secured the first, second and third positions, respectively. As many as 49 Indian institutes made it to the Asia University Rankings 2019.

Indian Institute of Science, Bengaluru, stood at 29th position followed by Indian Institute of Technology (IIT) Indore, at 50th rank. IIT Indore has scored 86.5 points in the 'citations' category, which is higher than all the Indian institutes. Pradeep Mathur, director of IIT Indore, says, "We are in top 10 globally, based on citations and it is one of our strongest parameters. Higher citation reflects the importance, value and dissemination of university's research work across the globe. Our efforts in research have rightly favoured us in the rankings."

Most of the Indian institutes have witnessed a downslide in their rankings this year. IIT Bombay slipped from 44th rank in 2018 to 54th in 2019. IIT Delhi and IIT Kharagpur have moved down 5 and sixteen notches, respectively. IIT Madras stood at 120th rank in the rankings. V Ramgopal Rao, director of IIT Delhi, expressed his discontent over the fall in rankings of several IITs. He added, "We have more focus on QS World University Rankings and NIRF rankings as we believe they have more transparent and inclusive processes." However, Mathur feels that the rankings of the older IITs have been affected due to the rigidity they witness while implementing new programmes. "Since they were established at a time when the research engagement was not given as much significance as it is today, that legacy hampers their overall progress," he adds.

"Rankings must be taken with a pinch of salt. Too much emphasis on rankings takes away the essence of learning and innovation," said UB Desai, director of IIT Hyderabad, which stood at 135th position.

PhD placements at IITs looking up

<https://economictimes.indiatimes.com/jobs/phd-placements-at-iits-looking-up/articleshow/69211103.cms>

Placements of PhD students at the Indian Institutes of Technology have been picking up even as the number of doctoral degrees in these premier tech institutes surges. Even with the inherent challenges, PhD scholars from these institutes have been landing jobs with universities, in research & development and in software and core engineering roles.

Recruiters absorbing IIT PhD students include Manipal Academy of Higher Education (formerly Manipal University), SRM University, Sandeep University, MathWorks and Taiwan Semiconductor.

However, unlike the rush during undergraduate placements, many companies give PhD recruitments a miss because of the lack of specialised roles, the institutes said.

Many PhD graduates thus look for jobs on their own off-campus while a growing number also goes abroad for post-doctoral stints to land faculty positions at top-tier institutes once they return.

Still, placements are looking up, said the top IITs. At IIT Kharagpur, the number has already crossed 22 for the 2018-19 session compared with 12 PhD students during campus placements in 2017-18.

“Unlike last year, when all students were absorbed in teaching roles, this year six have been placed in corporates, including two in PSUs,” said Raja Sekhar, chairman of the Career Development Centre. The average salary offered was Rs 9.23 lakh per annum.

Barely 20% of the PhD students register for campus placements, said Manu Santhanam, advisor, training & placement, at IIT Madras.

“Most of our students would like to work in top IITs and NITs. But because of increasing competition, as much as 50-60% of the batch end up seeking out post-doc positions in Europe and the US since that gives them an edge. Corporates are not creating enough positions challenging enough for PhDs,” said Santhanam.

At IIT Bombay, core engineering/IT software and analytics firms and universities have been recruiting PhDs.

“Out of all the PhD students passing out, not all register for placements since they use their own contacts to pursue jobs or postdoctorate studies. Many of these PhD students have further educational plans,” said an IIT Bombay placement cell executive.

Manipal Academy of Higher Education will be recruiting in May-June and said it has already received over 65 applications from PhDs in leading IITs. The institute, which recruited five faculty members from the IITs last year, said such students are mostly taken onboard as assistant professors and some are hired as post-doctoral fellows.

“We have plans to step up appointment of exceptional talent from premier institutes in India and abroad mainly because of the quality they bring in to the system with respect to academic and research output,” said deputy director HRD Jerry Joseph.

Newer IITs also see a jump

In 2018-19, 44 PhD students at IIT Hyderabad registered for placements, a significant increase over last year. “Companies are showing renewed interest in hiring PhDs for research positions,” said Pradeep Yemula, faculty-in-charge of placements at the institute.

Mathworks and Taiwan Semiconductor Manufacturing Company were among those that hired PhDs. “This year, artificial intelligence, data scientists and machine learning engineer profiles are popular,” said Yemula.

Graduates in material science and computer science, especially in machine learning, are more sought out due to rapid growth in these areas, said Varun Dutt, advisor of IIT Mandi’s career and placement cell.

The institute’s students have been absorbed in top universities/institutes in India and abroad, including Stanford University, Oxford University and Carnegie Mellon University.

Santhanam confirmed there is growing interest among companies in areas such as AI and machine learning. “Salaries at the high end could go up to Rs 25-30 lakh,” he said.

IIT Gandhinagar to collaborate with global institutions for SPARC projects worth Rs 6.63 crore

<https://indiaeducationdiary.in/iit-gandhinagar-collaborate-global-institutions-sparc-projects-worth-rs-6-63-crore/>

A team of faculty from the Indian Institute of Technology Gandhinagar (IITGN) is collaborating with Ecole Normale Supérieure de Cachan, France, in designing and developing energy efficient building materials for the Indian context.

The project is one of 10 IITGN international research projects approved by the Ministry of Human Resources Development (HRD), Government of India, as part of the ‘Scheme for Promotion of Academic and Research Collaboration’ (SPARC). Enlarging its global footprint, the Institute will collaborate with faculty and researchers at ten international institutions in seven countries, France, USA, New Zealand, South Africa, Israel, Canada, and Australia. SPARC awarded IITGN’s 10 research proposals Rs 6.63 crore to bring together IITGN faculty and world-class scholars to work on fundamental, action-oriented and innovation driven research in emerging areas of impact.

The IITGN projects cover green and renewable technologies; river, ocean, aviation and space management technologies; affordable health care; energy and water sustainability; advanced functional and meta materials; computational and mathematical science; humanities and social sciences; and robotics and embedded systems.

Under the SPARC projects, IITGN will collaborate with prestigious global universities/institutes, such as Ecole Normale Supérieure de Cachan, France; Duke University, USA; The University of Auckland, New Zealand; University at Buffalo Suny, USA; University of the Witwatersrand, South Africa; Technion – Israel Institute of Technology, Israel; Queen’s University at Kingston, Canada; Flinders University, Australia; University of Texas at Austin, USA; and Columbia University, USA.

Prof Sudhir K Jain, Director, IITGN, said, “IIT Gandhinagar has always put great emphasis on global academic exposure and partnerships for our faculty and students. SPARC projects and funding will give further impetus to our continuing efforts and open new opportunities to build alliances with researchers and institutes from across the globe.”

IIT Gandhinagar collaborates with scores of prestigious educational institutes from more than 20 countries across the globe on various faculty and students exchange programmes and research partnerships. Nearly 40 percent of its undergraduate students receive study abroad or other international opportunities, among the highest in India and almost three times the average of US universities. Almost 80% of its faculties have overseas degree or postdoc experience.

The SPARC initiative of the Ministry of HRD is aimed at improving the research environment in India's Higher Educational Institutions by facilitating academic and research collaborations between Indian Institutions and the top institutions in the world to jointly solve problems of national and/or international relevance.

May 6

IITGN to join hands with global institutions for SPARC projects worth Rs 6.63 crore

<https://www.indiatoday.in/education-today/news/story/iitgn-to-join-hands-with-global-institutions-for-sparc-projects-worth-rs-6-63-crore-1518038-2019-05-06>

The Indian Institute of Technology (IIT), Gandhinagar will work with prestigious universities from seven countries on as many as ten research projects on fundamental, action-oriented and innovation-driven research



The IITGN projects cover green and renewable technologies; river, ocean, aviation and space management technologies.

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About the project

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IITGN's collaboration



IIT Gandhinagar

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Aim of SPARC initiative

The SPARC initiative of the Ministry of HRD is aimed at improving the research environment in India's higher educational institutions by facilitating academic and research collaborations between Indian institutions and the top institutions in the world to jointly solve problems of national and/or international relevance.

About IIT Gandhinagar

The Indian Institute of Technology (IIT), Gandhinagar is one of the best educational institutes in India which offers unparalleled technical education with innovative curriculum and extra-curricular development opportunities. The institute puts a high emphasis on global exposure and research collaborations. IITGN is committed to promoting excellence in science, technology, as well as the humanities and social sciences and to the development of rounded and nuanced minds.

Lack of quality education cause of underemployment in engineering says Punjab Engineering College Director

<https://www.jagranjosh.com/news/lack-of-quality-education-cause-of-underemployment-in-engineering-says-punjab-engineering-college-director-148878>



The Director of Punjab Engineering College, Dheeraj Sanghi talks about the educational quality among institutes and the reforms to be brought about in PEC, various aspects that linger on the engineering field, the job opportunities, and the causes of underemployment in engineering.

Reforms to be brought about in Punjab Engineering College

Unlike other universities which have a law or Act in place, Chandigarh does not have an assembly which means that the law has to be approved by the parliament. The institute since the last 55 years has been trying to get recognized under the Institutes of Technology Act by the parliament. The director of Punjab Engineering College, Dheeraj Sanghi said, "When I joined the university I was not in favour of writing a letter to the ministry and requesting it to declare us under IIT because that is something which is not going to happen. So the question arises what kind of law or act should the parliament pass to help us establish ourselves as a deemed university?" The director pointed out that it is easy for them to request the parliament to declare the university under the National Institutes of Technology Act, Chandigarh but the university has its own history and they want to retain it with the institute's name – PEC.

Lack of initiative among graduates to set up companies in India

The director is of the opinion that engineering graduates not working in India is an exaggeration. He says, "If 10 Lakh students graduate as engineering every year, 5 to 7 percent of them are very good and at least 10,000-20,000 will head out of the country. The few people who go hold up big companies and hence are highlighted a lot more". He points out that companies like Infosys, Wipro, TCS, and other such companies are all run by Indians and yet they are not talked about. If you take up top 20 IT companies in India, only 2 or 3 will be MNC's and all of them will have Indian CEO's. People are doing really great in the country and don't really need to worry about this perspective he added.

Growing Trend of engineers opting for MBA

There is a trend in the number of students taking up MBA after engineering. The director points out that this trend is common because most of the students who took up engineering did not want to become engineers but were forced to. He said that when they realize that they do not want to do this they look for other options. The director added that the society has to really look into this factor and view two of its aspects. The whole concept of a single examination for admissions is not at all relevant in today's context he added. We have few examinations for admissions into so many courses. The institutions really need to come up with an admission strategy which encourages those students who are actually interested in pursuing engineering. He was also of the opinion that parents must realize that everyone can avail good job opportunity with quality education.

Underemployment among engineering graduates

Dheeraj Sanghi points out that the reason behind the underemployment in the engineering sector is not the fault of the engineering graduates but the lack of quality education. Out of 10 lakh engineering students, only 2 lakh get real engineering jobs even though there are more job opportunities available. He said that the focus must be on how to improve the quality of education in the institutions.

He advises students to be stress-free and keep their minds healthy. He says, "the only difference between someone doing extremely well while some do not even though both have prepared equally is a healthy mind. He adds that hard work and practice is an important factor as it keeps the mind stress free and prevents students from performing under pressure.

IIT Kanpur to set up dedicated AI research unit, fortify undergrad courses

https://www.business-standard.com/article/economy-policy/iit-kanpur-to-set-up-dedicated-ai-research-unit-fortify-undergrad-courses-119050600660_1.html

India has been ranked third globally in terms of quality AI research papers, but is way behind top-ranked China and second-ranked US

The Indian Institute of Technology, Kanpur (IIT-K) is mulling setting up a research centre for artificial intelligence (AI) and Internet of Things (IoT), which dedicated for conducting research and teaching in modern concepts of these and other technologies, IIT-K deputy director Manindra Agrawal told Business Standard.

Agarwal, who is also a professor in the IIT-K Department of Computer Science and Engineering, said the proposal was at the discussion stage and would materialise soon. He said the institute already offered a few courses in AI and related topics at the undergraduate level, which were quite popular with the students. He added that these streams would be further fortified.

Last year, IIT-K was engaged by a central cyber security agency to develop an indigenous blockchain architecture. The project was commissioned by the Office of the National Cyber Security Coordinator to create a blockchain platform for application in e-governance. Agrawal and fellow IIT-K faculty member Sandeep Shukla were the principal executors of the prestigious project.

India has been ranked third globally in terms of quality AI research publications, although it is way behind top ranked China and second-ranked US, according to an analysis by research firm Itihaasa.

The agency, founded by Infosys co-founder and former CEO Kris Gopalakrishnan, had computed the number of 'citable documents' on AI during 2013-17 as listed out by Scimago, a compendium that collates trends in the scientific research publications.

India was placed third with 12,135 documents, behind China and the US with 37,918 and 32,421 documents respectively.

However, when analysed on the basis of 'citations' parameter, India was ranked 5th behind the United Kingdom, Canada, USA and China, thus suggesting the country needed to upgrade the quality of AI research and output.

Last year, federal think-tank NITI Aayog had also floated a discussion paper on the transformative potential of AI in India, which mentioned that the country could add almost US\$ 1 trillion to the Gross Domestic Product (GDP) by integrating AI applications with its economy.

Besides, IIT-K had been working on new age semiconductor devices, which could be used by Indian Space Research Organisation (ISRO) in indigenous space exploration. The Institute also worked with Defence Research and Development Organisation (DRDO) for similar cutting edge projects.

IIT-K had even developed Integrated Circuit design simulation software, which was approved as a standard model by Compact Model Coalition (CMC), a global R&D group formed by the semiconductor industry to develop simulation programmes for Integrated Circuits.

The research had received annual grant of \$70,000 towards further R&D on semiconductors. A team helmed by Prof Yogesh Chauhan of IIT-K Department of Electrical Engineering and his Australian collaborator had evolved the technology after 5 years of research.

IIT Kanpur researchers develop a cost-effective, natural bio-fertiliser

<https://researchmatters.in/news/iit-kanpur-researchers-develop-cost-effective-natural-bio-fertiliser>



IIT Kanpur researchers develop a cost-effective, natural bio-fertiliser

India's agricultural yield has seen a steady increase over the years, thanks to the use of science and technology in crop practices. One such method is the use of chemical fertilisers, which momentarily improved crop yields. However, their reckless use has resulted in the severe degradation of the environment and economic losses to farmers as they run off with water or are unavailable to crops. In a recent study, researchers at the Indian Institute of Technology, Kanpur, led by Prof. Nishith Verma, have developed a biomolecule-based fertiliser that can help address the drawbacks of chemical fertilisers.

Many species of bacteria, fungi and algae act as natural fertilisers as they increase the soil nutrients and make it readily available for plants to absorb. As they are biological in origin, these 'bio-fertilisers' do not harm the plants or the environment. Rhizobacteria are one such bio-fertilisers that live in the roots of plants and promote their growth. They secrete biomolecules like N-acetyl homoserine lactones, which act as signals for communication among the bacteria living in the roots of the plants. They also regulate plant growth and increase the ability of plants to withstand diseases.

On the flip side, these biomolecules are unstable in the soil and quickly degrade, becoming unavailable to plants. In the current study, the researchers have attempted to develop a stable substrate, using iron-carbon nanofibres, to help deliver these biomolecules. The combination of the substrate and the biomolecules were found to be conducive to plant growth and its ability to fight infections. The study was published in the journal *Environmental Science: Nano* and was funded by the Council for Scientific and Industrial Research (CSIR).

The researchers grew the iron-carbon nanofibres by infusing iron on activated carbon fiber (a highly porous material with excellent absorbing properties) and powdering it. They then allowed this powder to interact with the biomolecule N-acetyl homoserine lactone, resulting in the nano bio-composite. The researchers tested the stability and the role of the bio-composite in plant growth by studying germination and growth of chickpea seeds, on which the bio-composite was used.

“The iron-carbon nanofibers in the nanocomposite serves dual roles. It acts as a substrate for the biomolecule N-acetyl homoserine lactones, thereby protecting them from enzymatic degradation, and as a carrier of these biomolecules to plant cells via roots and shoots”, says Mr. Arun Kumar from IIT Kanpur, who is an author of the study.

The study found a massive 116% increase per day in the germination rate of seeds and almost a four-fold increase in the length of the seedlings that were grown using the bio-composite. This increase was also seen when the plants were subjected to oxidative stress and salinity. Besides,

there was also a substantial increase in the length of the root hairs, the extent of the outer layers of the leaf or leaf canopy, wet biomass, chlorophyll levels and protein content of the plant.

“The plant growth increased because of the increase in the moisture carried from the roots to the pores in the leaves, where it is released as water vapour. This increased transpiration resulted in increased chlorophyll and protein contents of the plant. Increase in chlorophyll indicated the growth of plant cells by increased photosynthetic activity”, explains Prof. Verma on the findings.

The researchers also found that the iron-carbon bio-composite protected the plants from fungal infections like rusts and anthracnose. Plants treated with the bio-composite had shiny green leaves, which otherwise would have turned into yellow and curled up due to the disease.

The findings of the study show that the bio-composite can successfully replace chemical fertilisers. Although the researchers have not analysed its cost benefits, they estimate that the production cost of the bio-composite could be ten times less than chemical fertilisers. Besides, it takes only a small amount of the bio-composite, applied just once, for a good yield, while chemical fertilisers need to be used at least thrice in the life cycle of the plant. Since the bio-composite is organic in nature, it does not pose any threat to the environment or other plants.

As a next step, the researchers are now testing the efficiency of the bio-composite, outside the controlled atmosphere of a lab, on a small plot in the gardens of their institute.

“We are now testing the material in the garden of IITK, where a small plot is prepared and cultivation of chickpeas are being done in natural environment. During this pilot level of the project grains yield will also be recorded. After getting positive results of this pilot level projects, we have plans to test the material for wheat crop”, concludes Mr. Kumar.

IIT Mandi's Self-cleaning Glass Can Purify Water Using Sunlight

<https://www.republicworld.com/india-news/general-news/iit-mandis-self-cleaning-glass-can-purify-water-using-sunlight>

Hack:

- Scientists at IIT Mandi have developed a self-cleaning glass that can remove microbes and organic pollutants -- like dyes, detergent and drugs -- from waste water, using only sunlight
- Waste water from pharmaceutical and textile industries are a major source of river pollution in India and abroad

Scientists at IIT Mandi have developed a self-cleaning glass that can remove microbes and organic pollutants -- like dyes, detergent and drugs -- from waste water, using only sunlight.

Waste water from pharmaceutical and textile industries are a major source of river pollution in India and abroad.

While existing purification techniques can remove solid pollutants as well as dissolved inorganic compounds, removing dissolved organic compounds remain a challenge, said Rahul Vaish, associate professor at Indian Institute of Technology (IIT) Mandi in Himachal Pradesh.

"Industries do not clean their waste water but simply dump it in the river. It is only after the river is contaminated completely that we think about taking action to clean the river," Vaish told PTI.

Instead, Vaish recommends the use of the process known as photocatalysis to treat the waste water before the harmful contaminants make their way into our river streams.

The team, which includes Gurpreet Singh and Sandeep Kumar, have developed a transparent calcium borate glasses and TiO₂ crystallised glass nanocomposites which can kill microbes and break down organic chemicals in the presence of solar light.

"These glasses have photocatalytic and self-cleaning properties which help in destroying the bacteria and other microbes from wastewater in the presence of sunlight," said Vaish, corresponding author of the study published in the Journal of the American Ceramic Society.

"There is not extra cost or machinery involved. If the water is kept in this glass container it will treat the organic compounds in a few hours. You only need sunlight," he said.

The technology has a range of applications, the researcher said.

These easy to fabricate glasses can be made in the form of large panels which can have a wide range of applications from self-cleaning water bottles to large cleaning tanks for industrial discharge.

"The glass can also remove detergents from water. It could be used in washing machines to clean the water at the discharge point itself, rather than letting the contaminated water flow into our river systems," Vaish said.

Removal of such toxic chemicals from water is successfully demonstrated by many researchers at a laboratory scale.

However, cost and efficiency associated with existing technologies are major hurdles in their commercial usage.

Vaish said that his fabrication process is cost-efficient.

"This technology can also be used to clean air. It can remove NO_x (oxides of nitrogen) from the air. If we place these glasses in our windows, we can fight air pollution too," he said.

"We are trying to improve transparency of the glasses so that they can be used to replace regular windows," Vaish added.

Hike partners with IIT-Delhi: Here are the details,

<https://www.gizbot.com/apps/news/hike-partners-with-iit-delhi-here-are-the-details-059689.html>

Hike already has over 30,000 stickers across 40 + languages & dialects and aims to have almost 100,000 stickers by the end of the year covering a large chunk of popular local languages & dialects.

Homegrown messaging app Hike has announced that its research collaboration with Indraprastha Institute of Information Technology, Delhi (IIIT-D) for developing artificial intelligence (AI) and machine learning (ML) in the country.

This collaboration is in line with the company's goal to facilitate research collaboration with Indian universities & research institutions, Hike said.

By facilitating this research opportunity, we want to help enable the Indian academia to connect to early-stage research and support the translation of that research to fuel advancement in the AI and ML ecosystem, Anshuman Misra, Vice-President (VP) Operations, Hike said.

The company is currently building one of the largest repositories of AI & ML enabled stickers for its recently announced local messaging platform, Hike Sticker Chat.

"Hike has created India's only local, homegrown messaging platform that is working towards helping solve India's input problem and reduce dependency on the keyboard. This puts us in a unique position to not only improve the communication experience for millions of users but also provide Indian academics great opportunities to apply their research on hard real-world problems," added Anshuman.

"We are extremely proud to be beginning this partnership with Hike. A project of this depth is one of the first in the AI & ML ecosystems, and we hope this encourages more Indian academia to partner with Hike. We believe this will play a huge role in facilitating our students to help create a future shaped by open research," said Tanmoy Chakraborty, Director, Laboratory for Computational Social Systems (LCS2), Indraprastha Institute of Information Technology, Delhi.

To recall, Hike already has over 30,000 stickers across 40 + languages & dialects and aims to have almost 100,000 stickers by the end of the year covering a large chunk of popular local languages & dialects. The company is currently working on a range of White papers, projects, and initiatives. It is also looking to collaborate with more academia, details of which can be attained on its recently launched website - <https://ai.hike.in/>

Highlights

Hike has announced that its research collaboration with Indraprastha Institute of Information Technology, Delhi (IIIT-D).

Hike and IIT to develop artificial intelligence (AI) and machine learning (ML) in the country.

This collaboration is in line with the company's goal to facilitate research collaboration with Indian universities & research institutions.

May 4

Times Higher Education Asia University Rankings 2019: Here's where Indian institutions stand

<https://www.indiatoday.in/education-today/news/story/times-higher-education-asia-university-rankings-2019-here-s-where-indian-institutions-stand-1517009-2019-05-04>

Indian Institute of Science (IISc) Bengaluru and Indian Institute of Technology (IIT) Indore are below 50, Jamia Millia Islamia improved its position at 188 from 201-250 last year.



Times Higher Education (THE) Asia University Rankings has been released recently, with several Indian Universities making a mark for themselves.

Here's a list of Indian universities and their positions in Times Higher Education

Indian Institute of Science (IISc) Bengaluru - 29

Indian Institute of Technology (IIT) Indore - 50

IIT Bombay - 54

IIT Roorkee - 54

JSS Academy of Higher Education and Research - 62

IIT Kharagpur - 76

IIT Kanpur - 82

IIT Delhi – 91

Jamia Millia Islamia has made yet another improvement in international rankings. This time it has been placed at 188 rank by the London-based Times Higher Education (THE) Asia University Rankings- 2019, improving its position from 201-250 last year. THE gives specific rank to the university which comes under 200 rank.

THE's Asia University Ranking 2019 rank universities based on five broad parameters as used in the overall World University Rankings although weightage is calibrated and standardised.

Out of 5 parameters, teaching carries a weightage of 25 per cent, while research and citations each carry weightage of 30 per cent, followed by international outreach and industry income carrying 7.5 per cent weightage each.

China also emerged as the Asian rankings leader for the first time this year, with its Tsinghua University pushing the National University of Singapore to second place.

Overall India's universities delivered a mixed performance due to significant changes at individual institutions in the 2019 Asia University Rankings released in London on Thursday.

Phil Baty, chief knowledge officer at 'Times Higher Education', said, "This year's table shows that the People's Republic of China is far from the only Asian country to make real higher education progress. Leading universities in Japan and South Korea have made significant gains, many institutions in Malaysia are soaring up the list and there are pockets of excellence in India and Indonesia."

The 2019 ranking comprises 417 universities, expanded from 359 last year, covering 27 countries and regions. Japan is the most-represented nation, with 103 institutions, and Malaysia makes its debut in the top 40 with the University of Malaya rising eight places to joint 38.

IIT BHU's Team Averera wins at Shell Eco-Marathon in Malaysia; comes in 2nd in battery electric category

<https://www.financialexpress.com/auto/electric-vehicles/iit-bhus-team-averera-wins-at-shell-eco-marathon-in-malaysia-comes-in-2nd-in-battery-electric-category/1567809/>

Team Averera from IIT-BHU represented India with five other teams in the Shell Eco-marathon 2019 in Malaysia. Team Averera bagged two awards at the event along with a cash prize.



At the Shell Eco-marathon 2019 in Malaysia, Team Averera from the Indian Institute of Technology-Banaras Hindu University (IIT-BHU) has bagged the second position in the battery electric prototype category. The team also won the Vehicle Design (Prototype) Award and a cash prize of USD 3000 for their innovative design research and execution.

Six Indian teams participated in the Make the Future Live Malaysia festival which is a part of the four-day annual event that showcases innovative energy ideas, Shell Eco-marathon Asia 2019. The event challenged bright students to design and build ultra-energy-efficient cars and then put them

to test in the competition. Team Averera clocked 465 kilometres on 1-kilowatt energy per hour in the Battery Electric prototype category which awarded them the runner-up spot in the category. Out of the six teams, five participated in the battery electric category and one competed in the gasoline category. A total of 108 teams across Asia participated in the event that saw with 53 teams compete in the battery electric prototype category.

The team issued a statement which said: “We are delighted to be the first ever Indian team to win these accolades at Make the Future Live Malaysia. We see this victory as a culmination of all our hard work and perseverance. We have seen continued improvement over years of participation at Shell Eco-marathon Asia thanks to the combined efforts of our Director IIT (BHU) Varanasi, Coordinator (CERD), seniors, teachers and Shell. Participating at Shell Eco-marathon has been an immensely enriching experience where we got to learn from the brightest young minds from across the region. We accept this honour with humility and hope that we continue to do the country proud over years to come.”