

Newspaper Clips
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January 19

Insider Leaks Biggest Threat to Aadhaar Data Protection: IIT Profs

<http://www.news18.com/news/india/insider-leaks-and-attacks-biggest-threat-to-aadhaar-data-protection-iit-professors-1636213.html>

The experts are of the opinion that with a large fraction of the population lacking necessary cultural capital to self-manage Virtual IDs, it may cause distress to many.

New Delhi: All of our private data submitted with the UIDAI for Aadhaar have been stored in a system that is “too open to abuse”. This is what three IIT professors have concluded in their study on Aadhaar, which is now lying with the UIDAI.

IIT-Delhi professor, Subhashis Banerjee said, “We have identified insider leaks and attacks as the biggest threat to data security and recommended a complete overhaul of the access control architecture.”

The three professors had earlier suggested the introduction of an additional 16-digit Virtual ID along with the Aadhaar number for added security, soon after which the UIDAI introduced the 12-digit security cover.

In a bid to address privacy concerns, the UIDAI had on January 10 introduced the Virtual ID, which Aadhaar-card holders can generate from its website and submit for various purposes, including SIM verification, instead of sharing the actual 12-digit biometric ID.

The IIT professors have now identified other security flaws in Aadhaar and have presented their observations as “Privacy and Security of Aadhaar: A Computer Science Perspective”.

Surprised to see how receptive UIDAI may have been to their suggestions on Virtual IDs; the experts have now suggested that these new IDs should not become effective instruments only for the privileged ones and a cause of distress for others.

Shweta Agrawal from IIT-Madras, Subhashis Banerjee and Subodh Sharma from IIT-Delhi presented their paper to UIDAI last year.

The three believe the infrastructure looks strong against external attacks but perhaps would be inadequate against insider leaks.

Moreover, according to the study, in the system used to store all symmetric and private keys and hashes within the UIDAI, “perhaps obfuscated, but trust is implicitly assumed and this is a design flaw.”

The presentation further talks about how there is “no well-defined approval procedure for data inspection for investigation or for analytics. No audit, certification of codes and programs.”

The entire system of Aadhaar has been seen as “too open to abuse” where “insider leaks and unauthorized inspection by personnel and organizations with access are the biggest security risks.”



PRESENTATION TO UIDAI

Speaking to News18, Banerjee said that they completed their paper in August 2016 and submitted it to the UIDAI in September 2017.

“We had suggested the option of Virtual IDs in our paper and their initial reaction to the paper was that it was too theoretical. But on the whole UIDAI have been receptive to the suggestions,” said Banerjee. He is working on data protection law and would like to send the recommendations to the government-appointed Srikrishna Committee which has invited suggestions on data protection, portability and consent etc.

Banerjee has been engaging with UIDAI officials since summer 2017 on several issues. The three professors have identified three major architectural flaws in UIDAI’s design of Aadhaar.

THE THREE FLAWS

Listing the three flaws, Banerjee said, “The use of biometrics should be limited to only identity verification instead of making it the sole factor for authentication and authorization.

“The second flaw is the use of a single global identifier such as Aadhaar in different unrelated application domains. We have suggested that local virtual identifiers should be issued for each silo and that UIDAI should securely maintain the mapping between them.”

And, thirdly, it is the big risk of insider leaks and threats, which is a severe program design flaw.

The three professors have recommended that data should be accessed only through pre-approved and tamper-proof computer programs, and that an online and independent regulatory authority should authorize, facilitate and monitor all data accesses.



THE DILEMMA OF VIRTUAL ID

Professor Banerjee explained, “Virtual IDs prevent unauthorized linking of databases using a global ID, thus preventing illegal profiling of individuals. Information theft, however, can happen in other ways as well — both due to architectural flaws and due to incorrect implementation.”

Since virtual IDs are being introduced post-facto, the professor believes it’ll be crucial to ensure that all services that use Aadhaar irrespective of whether it is by the state or private companies, should only use Virtual IDs.

“Ensure that there is an effective migration plan to replace the Aadhaar IDs with Virtual IDs. This should preferably be done by the authorities themselves without causing distress to people or making them run around.”

“Considering the complex demographics of our country, with a large fraction of the population lacking the necessary cultural capital to self-manage Virtual IDs, it may cause distress to many. Otherwise, the Virtual ID will end up becoming an effective instrument only for the privileged and a cause of distress for the others.”

CRITICS AND DATA PROTECTION LAW

The IIT professors are of the notion that criticism around Aadhaar is essential. Banerjee said, “Dissent and debate are essential for working out effective solutions and critics and the civil society have done a great job in pointing out the exclusion and disruption that Aadhaar has caused. It would only put a much-required emphasis on data privacy and brought in the scholarly privacy judgment.”

He added, “The chances of an effective data protection law being worked out are now high. I, however, wish that there were more rigorous and causal analyses and even more alternative design suggestions.”

Banerjee is currently working on data protection law and would like to send the recommendations to the Srikrishna Committee.

HRD Ministry wants other IITs to follow Madras research park model

<http://www.dnaindia.com/india/report-hrd-ministry-wants-other-iits-to-follow-madras-research-park-model-2576564>



PRAKASH_JAVADEKAR-IIT-Madras HRD Minister Prakash Javadekar speaks at IIT-Madras

With increased focus on research and innovation, Ministry of Human Resource Development will form a committee to review the progress of research parks underway at various Indian Institutes of Technology (IITs). HRD Minister Prakash Javadekar who visited the research park in IIT Madras, the first of its kind, on Thursday said that he will urge other IITs to develop their research parks on the lines of IIT Madras, which has more than 70 companies in the research park and have incubated more than 140 start-ups.

The other institutes that are developing a research park include IIT Delhi, Hyderabad, Gandhinagar, Kanpur, Guwahati and Indian Institute of Science, Bangalore. IIT Bombay and Kharagpur also have research parks but they are not as old as IIT-Madras. The idea of a research park is to bring together

industry and academia, wherein the institutes will provide the infrastructure and manpower to ideas and companies that want to work in the field of research and innovation. Some amount of funding, which is the initial cost of set-up to these research parks is given by the ministry, after that, most of the money has to be generated on their own.

Urging technical institutes to focus on research and innovation, Javadekar, while addressing the techies at IIT Madras Research Park in Chennai said, "We lack innovation, therefore this research park is a new way forward. After going to Delhi, I will review the process of setting up research facilities in all IITs, specially the progress of all the research parks. We will also make a committee to make concentrated efforts towards developing these research parks and make sure that IIT Madras is replicated everywhere."

In an operational area of 0.4 mn sq ft, IIT-Madras Research Park has more than 70 companies, including 57 R&D companies. The research park here is the first of its kind in the country and the government now wants other institutes to also have similar research facility.

"These companies that are working out of the research park have learnt to work with the professors, students and best brains here, this is what the concept of a research park is, it really mutually benefits everyone. Incubation is the real make in India, which is what is happening in this research park. Now even foreign companies have gained confidence in Indian students, that they can also provide solution to their problems, so the world has started looking towards India now," he added.

Javadekar took a review of the research park and inspected many projects, which were developed in the incubation centre of the research park. He particularly praised a mosquito killer machine that uses pheromone technology to attract mosquitoes and kill them in an eco-friendly manner. Electric cars, one of the major projects of the research facility, was also appreciated by the minister.

Young IITians to design UAVs for Armed Forces

<http://www.asianage.com/technology/in-other-news/180118/young-itiations-to-design-uavs-for-armed-forces.html>

Many IITs have submitted UAV designs as well as designs for other military products including innovations.



Make II programme is meant for only smaller projects of up to about Rs 150 crores.

New Delhi: With the premier IITs, NITs, IISc and other top institutions flush with proven talent when it comes to designing innovative products, the defence ministry has decided to dig deep into the rich intellectual resource base of these institutes that has been enabled after simplification of laid-down procedures under the Make II sub-category of the Make in India programme.

“Many IITs have submitted UAV designs as well as designs for other military products including innovations. While earlier it was not possible to take them into consideration due to procedural issues, an enabling situation has been created now so that the country’s abundant intellectual talent can be properly harnessed to further the country’s military preparedness,” a source familiar with the development told this newspaper on condition of anonymity.

While India has been the world’s biggest arms importer over the past five years and the fifth largest spender globally, such a move would greatly help import substitution and promote innovative solutions.

“The process of utilising our talent from IITs, NITs, IISc and other top institutions to design military products was kick-started during the tenure of former defence minister Manohar Parrikar ,” the source said.

Himself an IIT product, Mr Parrikar had expressed strong concern on many bright young engineering minds leaving for foreign countries and had said that the government would support them fully in making them entrepreneurs.

Under the simplified Make II which was okayed by the defence ministry on Tuesday, start-ups or individuals can also suggest proposals that will be vetted by a collegiate comprising DRDO and HQ (IDS) that will be headed by the secretary (defence production).

The prototype will have to be submitted within 12-30 weeks. Once a request for proposal (RFP) is issued is shall not be retracted and the industry that wins the bid will be assured of an order, thus guaranteeing a captive market especially for young entrepreneurs.

The minimum qualification criteria to participate in Make II projects has also been relaxed by removing conditions related to credit rating and reducing financial net worth criteria. However, the Make II programme is meant for only smaller projects of up to about Rs 150 crores.

Researchers working on new technology for memory devices of the future

<https://researchmatters.in/news/researchers-working-new-technology-memory-devices-future>



As conventional memory devices like the hard drives and flash drives, generally made of semiconductor materials reaching limit in terms of their size and storage capacity a new emerging technology- Resistive Random Access Memory (RRAM)- holds the promise of cheaper and efficient replacement to existing technologies.

Researchers at Indian Institute of Technology (IIT), Hyderabad have now studied the effect of a magnetic field on the behavior of an RRAM, to enable remote control of RRAMs, without any physical connections to the device.

RRAM is a type of non-volatile Random Access Memory (RAM) which means the data on the memory device is not wiped out once the power to the device is turned off. Hard drives on a computer, flash drives, and memory cards in a phone are all types of non-volatile memory devices. The RAM on a computer and smartphones, on the other hand, is a volatile memory device, meaning the data on the device gets cleared every time the device is shut down.

RRAMs work is based on a phenomenon called resistive switching, wherein data is stored on the device by switching between a high resistance state (HRS) and a low resistance state (LRS) to store the 0s and 1s, the two components of a binary language which computers use to communicate. The switching between HRS and LRS is controlled using a voltage applied to the device.

In their new study, the researchers studied the effect of a magnetic field on the resistive switching ability of an RRAM made of Silver/ Titanium Dioxide/Fluorine doped Tin oxide (Ag/TiO₂/FTO). The study revealed an ability to control the resistance switching on such an RRAM, by varying an applied magnetic field. The researchers have hypothesized that Lorentz force, a force arising due to the presence of electric and magnetic fields may be playing a significant role in switching the resistance states.

Conventional RRAMs achieve resistance switching by varying the voltage applied to the device, which requires a physical connection to the device. Using magnetic fields to alter the resistance states allows a remote switching of the resistance states, without the need for a physical connection. The researchers believe that the present study would be useful in designing RRAM devices that could be operated with a magnetic field, increasing their efficiency.

IIT Roorkee exchanged MOU with Norwegian University of Science and Technology (NTNU) of Norway for research and education

<https://indiaeducationdiary.in/iit-roorkee-exchanged-mou-norwegian-university-science-technology-ntnu-norway-research-education/>



New Delh: Indian Institute of Technology Roorkee has exchanged the Memorandum of Understanding (MoU) documents with Norwegian University of Science and Technology (NTNU) Norway during roundtable meeting organized at New Delhi today on “Leveraging Norwegian Experience for Hydropower Development in Indian Subcontinent”. The MoU shall provide the **opportunity to strengthen and promote the research collaboration including areas of water, energy, and environment** through exchange of students, faculty, staff, joint academic supervision of students and publications. The MoU will also include development and participation in collaborative research projects & programmes, participation in seminars, workshops, academic meetings and short-term academic programmes.

In the presence of His Excellency Mr. Nils Ragnar Kamsvåg, Ambassador, Royal Norwegian Embassy, Mr. Balraj Joshi, Chairman and Managing Director, NHPC Limited, Mr. Pradeep Yadav of Statkraft, Norwegian Hydropower Company, Ms. Hege Brende, Director, Norway Norwegian Research Centre for Hydropower Technology (HydroCen) of NTNU and Prof. Arun Kumar, Alternate Hydropower Energy Centre (AHEC) and Prof. BK Gandhi, Mechanical and Industrial Engineering Department (MIED) from IIT Roorkee exchanged the MOU document.

Prof. Leif Lia, Prof Nils Ruther, Dr. Chirag Trivedi from NTNU along with Ms. Inger Midkandal, Science and Technology counsellor of Royal Norwegian embassy; Mr. N.K. Mathur, Member CWC; Mr. H.R. Khan, Advisor MNRE; Mr. S.N. Verma, MD UJVNL and many leaders from Indian, Bhutan and Nepal hydropower stakeholders were also present during the occasion .

January 18

Why simply wearing a helmet is not enough and what IIT Delhi is doing about it

<http://www.thehindu.com/life-and-style/motoring/why-simply-wearing-a-helmet-is-not-enough-and-what-iit-delhi-is-doing-about-it/article22450396.ece>



When Amar Srivastava, an IIT student, lost a group of seniors who were out celebrating their job placements in prestigious companies, he decided to dedicate his life to road safety. And thus was born the Indian Road Safety Campaign (IRSC), a trust with the objective of doing just that. Today, Srivastava has graduated, but he continues his work, along with a team of students across the country, to work towards safer roads. The Delhi team is 150-strong, with 1,700 volunteers working in the rest of India.

A recent survey done by IRSC, in tandem with the Transportation Research and Injury Prevention Programme (TRIPP), IIT Delhi, threw up some startling facts. Amongst two-wheeler riders in Delhi-NCR, 75% to 80% wore helmets. Before you ask about the rest, there's some bad news that negates the good: almost half don't strap it on. The survey, with over 87,000 participants, was conducted over two months.



Prof Puneet Mahajan, an IIT professor and a member of TRIPP, puts the actual buying and wearing of helmets down to "strong enforcement of the law in Delhi." However, "it is the fear of *challans* and of being caught by the traffic police that pushes people into wearing one, not a concern for safety". And there lies the nub: that the traffic police don't penalise those who don't put on the buckle. "There's just too much traffic to put the onus solely on them to uphold the law," he says. It's upto us too.

Dr Sushma Sagar, a senior surgeon in the Department of Trauma Surgery in AIIMS, Delhi, says that "the whole point of wearing the helmet is nullified and all minor injuries are eventually converted to major ones". Concussion, severe brain damage, seizures, maxillofacial injury, cervical spine injuries are some of the major injuries caused if the helmet is not worn the way it should be. Especially affected

are pillion riders, 50% of whom don't wear helmets at all. "Seizures are common with those who ride pillion, as they have no clue even a few seconds earlier, that a collision is about to happen," she says.

Then there's the problem of quality. "In India, a large number of people use helmets sold on the pavement. These usually do not go through any sort of testing; that is, they are not approved by the Bureau of Indian Standards (BIS) that certifies products safe for use," says Prof Mahajan. Their material and design are often suspect. Which means there's no way of knowing how they will fare in an accident.

Typically, a helmet must have a 20-25 mm thickness and have quality foam. "This is what cushions the head, on impact," says Prof Mahajan. To change the way things are, IIT, in tandem with AIIMS and IRSC, is working on a Helmet Designing Project. Most riders revealed in the survey that they disliked the heaviness of the helmet.

The aim is to solve many problems together: to design a helmet that is light-weight, has self-strapping technology and is as safe as possible in case of a crash. The initial design is ready and being tested, and Srivastava hopes to be able to keep it low-cost for maximum access. Next up: a project to design children's helmets that don't feature anywhere on the road or in stores.

STARTUP

Nanoclean by IIT Delhi alumni has launched a respiratory filter priced less than Rs 10

<https://yourstory.com/2018/01/nanoclean-iit-delhi-alumni-launched-respiratory-filter-priced-less-rs-10/>

Founded by IIT-Delhi alumni and faculty, Nanoclean with *its breakthrough nanotechnology-based application, wants to disrupt the pollution mask and filters market.*

Startup: Nanoclean

Founders: Prateek Sharma, Tushar Vyas, Jatin Kewlani

Year it was founded: 2016

Where is it based: New Delhi

The problem it solves: Manufacture affordable pollution filters

Sector: Health/Lifestyle

Funding raised: Undisclosed

Prateek Sharma saw his mother's asthma deteriorate due to increasing air pollution. This affected her everyday lifestyle and she was reluctant to use any face masks or nose buds filters because of the discomfort they cause. This got Prateek to think about developing a filter that doesn't go inside your nose (like nose buds filters) and doesn't cover your face (like a face mask). After joining IIT Delhi and learning about various technologies, Prateek got together with his fellow IIT-Delhi students Tushar Vyas and Jatin Kewlani to start Nanoclean.



Nanoclean team

The 25-year-old co-founders graduated from college in 2015-2016. Manjeet Jassal and Ashwini Agrawal, both professors at IIT-Delhi, are also part of the team, along with IIT-Delhi alumnus Sanjeev Jain, who is an angel investor in the company. The device, 'Nasofilter', looks and feels like a small strip of paper that one sticks just outside the nostrils, and it can eliminate 95 percent of PM 2.5 pollutants. Nasofilters can be used while sleeping as well.

The startup has received Government of India grants under the schemes of Department of Biotechnology (DBT) and Department of Science and Technology (DST). It was also presented with the 'Startup National Award 2017' conferred by Ex-President, Shri Pranab Mukherjee, and an award money of Rs 15 lakh from Technology Development Board.

Nasofilters are made by accumulating millions of pores on a unit area of a fabric. The team created Nanofibers by reducing thread diameter of a usual fabric by 100 times to achieve higher efficiencies to filter out pollutants, PM2.5, PM10, smallest bacteria (nearly 200 nm), dust mites, and pollen allergens. There is a minimal pressure drop while using this nanotechnology, and it means that Nasofilters do not give any breathing discomfort to the users.



Nanoclean collaborated with IIT Delhi for advancing the technology. The startup now holds lifelong exclusive rights to commercialise this technology. It can be used in many other applications in various domains of air and water filtration. The technology can also be used in various conventional and non-conventional applications in the domain of air filtration. The team is working on making appliances reduce indoor air pollution. Using the nanofilter membrane, the startup plans to produce room curtains, window shields and door nets which would only allow pure air to come inside. Besides, the nanofilter membrane can be used in water filtration applications.

Nanoclean has two manufacturing units in Ahmedabad and Noida, which are being used to manufacture and assemble Nasofilters. Setting up another facility in South Korea is in the pipeline with support from the South Korean Government. Last year, the South Korean government recognised Nanoclean as one of the 'Top 25 technical startups of the world'.

In a short span of making Nasofilters available for sale, the startup has received pre-orders of nearly half a million Nasofilters. The filters are available on the startup's website in packs of 10 which cost Rs 98.2; they come small, medium, and large sizes. The demand is high for such affordable products especially in a polluted city like Delhi. The company is also receiving online orders from various parts of India on its website and the filters are available on e-commerce platforms such as Amazon. They will soon be available on online grocery and daily essentials company Bigbasket.

Nanoclean ran a campaign called "GiftPureAir", in the month of November (peak of pollution season in North India), and gifted around 50,000 Nasofilters to Delhiites. The campaign created a lot of buzz on social media and the team received valuable user feedback for the product. The team has also donated the filters in economically-backward areas of Delhi.

Many North Indian cities and towns have been ranked as some of the most polluted in the world. Most of India's urban population is subjected to poor air quality which might result in long-term implications, especially among children. While long-term efforts to reduce pollution might take time, products such as Nasofilter hold promise for providing affordable solutions.

IIT Madras offers summer fellowship programme for non-IIT students

<http://www.hindustantimes.com/education/iit-madras-offers-summer-fellowship-programme-for-non-iit-students/story-Xgc7sZ74ab9KVhICs7LkdP.html>

The Indian Institute of Technology, Madras will offer a two-month summer fellowship programme from May 16 for students from outside the premier engineering institutes.

The Indian Institute of Technology, Madras will offer a two-month summer fellowship programme from May 16 for students from outside the premier engineering institutes.

The institute said in a press release that the deadline for submitting the applications is 5pm on February 28, 2018. A sum of Rs 6,000 would be provided every month as a stipend, it added.

"The internship is designed to enhance awareness and interest in high-quality academic research among young engineering, management, sciences and humanities students through a goal oriented summer mini-project undertaken at IIT Madras," the press release said.

Candidates pursuing the third year of BE, BTech, BSc (English), integrated ME and MTech, first year of ME, MTech, MSc, MA and MBA are eligible to apply for the programme. Candidates with an outstanding academic background in terms of good ranks in university examinations are encouraged to apply.

Students should highlight their academic performance and achievement, including papers presented at seminars, projects executed, participation in design contests, score or rank in mathematics Olympiad if any and any other awards or distinctions.

“This an opportunity for students to work with leading researchers on problems that are current and forefront of technology,” Prof V Jagadeesh Kumar, dean of academic courses, said.

Departments offering the programme include:

- Ø Aerospace engineering
- Ø Applied mechanics
- Ø Biotechnology
- Ø Chemical engineering
- Ø Civil engineering
- Ø Computer science engineering
- Ø Engineering design
- Ø Electrical engineering
- Ø Mechanical engineering.
- Ø Metallurgical and materials engineering
- Ø Ocean engineering
- Ø Physics
- Ø Chemistry
- Ø Mathematics
- Ø Humanities and social sciences
- Ø Management studies

Candidates, who wish to apply, can visit following link: <https://sfp.iitm.ac.in/howtoapply>.

IIT Kharagpur Alumni Announces Faculty Excellence Awards, Chairs

<https://www.ndtv.com/education/iit-kharagpur-alumni-announces-faculty-excellence-awards-chairs-1800614>

The alumni of IIT Kharagpur have instituted several Chair Professorship Awards and Faculty Excellence Awards for senior, mid-level and new faculty members.

KOLKATA: The alumni of IIT Kharagpur have instituted several Chair Professorship Awards and Faculty Excellence Awards for senior, mid-level and new faculty members. The awards were conferred on the occasion of the Annual Alumni Meet which ended on January 14, 2018. The awards are based on student feedback on teaching, peer recognition through national and international awards, research output such as papers and citations, doctoral guidance, research and development activities in terms of sponsored research and industrial consultancy, patents and technologies developed.

Nominations received by the institute were thoroughly screened, reviewed by experts at multiple levels and the final selection was made by an apex committee, an IITKGP press release said.

The awards were instituted by alumnus Ranbir (Ron) Singh Gupta on behalf of alumnus Avinash Gupta, alumnus Prof Vijay Madiseti in the name of his parents M A Ramulu, former deputy director

of IIT Kharagpur and Saroja Ramulu and alumna Shyamal Ghosh and his wife Sunanda Ghosh and the IIT Kharagpur Alumni Foundation India.

The award recipients were Dr Subrata Chattopadhyay, Professor, Department of Architecture & Regional Planning for the Avinash Gupta Chair Professorship, Dr Jayanta Bhattacharya, Professor, Department of Mining Engineering for the M. A. Ramulu and Saroja Ramulu Chair Professorship.

Dr Amiya Ranjan Mohanty, Professor, Department of Mechanical Engineering was awarded the Shyamal Ghosh and Sunanda Ghosh Chair Professorship and Dr Basab Chakraborty, Assistant Professor, Rajendra Mishra School of Engineering Entrepreneurship was conferred the Excellent Young Teacher Award.

Ranbir (Ron) Singh Gupta, President of the IIT Kharagpur Foundation US and patron of one of the Chair Professorship Awards spoke on the efforts being made by the Foundation in US to encourage senior alumni in the academia and industry to teach on a part-time basis at IIT KGP.

"Firstly, many IIT KGP alumni in academia are interested in coming back. We work with our alumni in academia to identify possible candidates," he was quoted in the press release.

The Foundation is also facilitating faculty from IIT KGP to collaborate for unique and South Asia-centric courses for American students.

"This is already happening with many universities where we have collaboration. In cases, like UC Berkeley, GWU Law School, Columbia, MIT, you will see their students on our campus and our students in those universities doing joint research with professors from both institutions as co-investigators," said alumna and Co-Founder of HCL Technologies Arjun Malhotra.

January 17

The truth about security: Here's why Aadhaar's greatest threat lies within

http://www.business-standard.com/article/economy-policy/the-truth-about-security-here-s-why-aadhaar-s-greatest-threat-lies-within-118011700061_1.html

An individual's activities across multiple domains of service could potentially be tracked using their global Aadhaar IDs which are valid across these domains



The second part of the series examines data security issues, which, if left unaddressed, could make Aadhaar the largest, and the leakiest database in the world.

In the garage of a DDA apartment in South Delhi, activists of the Satark Nagarik Sangathan, an NGO that uses the RTI law to enforce transparency in government functioning, explain the latest in the Aadhaar saga to Sumitra Devi, a worried pensioner in a slum. “Now, you can apply online for a Virtual ID, or VID, which you can use in place of your Aadhaar card to keep it safe,” they say. “It took me so long to get the Aadhaar card,” says the illiterate slum dweller nervously. “Is this new number compulsory? Will my pension be stopped again if I don’t get it?” They struggle vainly to allay the old lady’s fears. “If this number is only available online, how will someone like me get it?” she asks. “I have no access to a computer ... Why is the government imposing such difficult rules on people like me who can barely make ends meet?”

Not far away, the middle-class Kapoors worry about Aadhaar-linked data breaches, wondering how the hastily introduced VID will help people like them, who have already seeded their UID with their bank accounts, mutual fund investments, and phone numbers. Having read how easy it was for journalists to “buy” Aadhaar data, they wonder what other fraud their data is vulnerable to. Plenty, it seems. In December last year, Airtel Payments Bank had its eKYC (electronic know-your-customer) licence temporarily suspended by the Unique Identification Authority of India (UIDAI) for allegedly opening bank accounts and force-seeding them with Aadhaar numbers without the informed consent of the customers in question. In September last year, the Uttar Pradesh police busted a Lucknow-based gang which cloned the fingerprints of authorised Aadhaar enrolment operators to create ‘fake’ Aadhaar numbers.

“First, using biometrics as passwords is a flawed concept,” says Subhashis Banerjee of IIT Delhi. “Hackers the world over have shown how easy it is to clone biometrics — without the victim even getting to know!”

In 2016, he co-authored a paper with IIT Delhi colleagues Shweta Agrawal and Subodh Sharma, *Privacy and Security of Aadhaar: A Computer Science Perspective*, which was the first to suggest VIDs as a means of protecting an individual’s Aadhaar number. The UIDAI hasn’t yet disclosed how this will pan out, and how the country’s vast majority of illiterate poor like Sumitra Devi will generate this number. Meanwhile, the computer science researcher is raising serious questions regarding the design framework upon which rests the *aadhaar*(foundation) of Aadhaar.

Banerjee questions the idea of obtaining “informed consent” from a citizen before using his/her data.

“People like me, sitting in IIT, can’t fully comprehend the consequences of sharing data — so even if a villager in Jharkhand agrees to let their data be used, we can’t call their consent informed,” he explains. Further, there are, today, secure technologies to protect access to data and prevent manual inspection of it by the agency that holds it — which the Aadhaar framework doesn’t seem to have incorporated yet.

This has immense consequences for data protection and privacy: Banerjee points out that these structural flaws afflict all the government-held databases — income tax, driving licence and banks included. If the UIDAI is able to set up adequate data protection measures, then the VID could be a

useful measure (think of it as being akin to Uber routing mobile calls between drivers and customers through a special line so that drivers have no access to the customer's real number).

This discussion, many activists believe, is more academic than practical. Today, as data has become more valuable than gold and oil, Aadhaar, the largest database of information in the world, risks becoming a sitting duck for hackers.

"The single biggest concern is the use of a unique ID everywhere, making it possible to build tradeable databases of individual information," says the Internet.

Freedom Foundation's Kiran Jonnalagadda. "The law lacks teeth to regulate such trade..." Along with other activists, Jonnalagadda started a website www.speakforme.in, for citizens to complain to their MPs, banks, mobile operators, and other government service providers about repeated calls and messages from various entities exhorting them to link their Aadhaar numbers with various services. Since its launch in December last year, over 34,000 emails have gone out. "VIDs would have helped if they were present from the start, but they were not," says he. "The most vulnerable sections of the population, individuals with no access to the internet or an Aadhaar centre in their neighbourhood, will suffer the most as they will be unable to obtain the benefits of VIDs..."

"Bhardwaj and her cohorts in the Satark Nagarik Sangathan echo these sentiments. "The introduction of the VID seems to be a knee-jerk reaction of the UIDAI to the recent debate on threats to privacy in the Aadhaar database," says she. "We're at a loss to explain to the slum community, where we work, now totally dependent on Aadhaar to access government welfare benefits, how to go about getting this new number!"

To Banerjee, the greatest threat to data is from within the system, which is why it is imperative for the UIDAI to set up tamper-proof access control mechanisms.

"This would entail a cryptographically signed proof of authority to access data in the system, with a well-protected authorisation trail," he suggests. The January 2018 breach of Aadhaar data suggests such mechanisms aren't in place yet. As Jonnalagadda recently tweeted: "Aadhaar is designed to protect the state from citizen fraud. Nothing in Aadhaar's design protects the citizen from state fraud..." The insecurity this has led to is exacerbated by the notions of the VID and "informed consent" — which suggest that the onus of protecting one's own data lies not on the agency which has been entrusted with it, but on the individual himself...

The need of the hour, as the Supreme Court readies to rule on the constitutionality of Aadhaar this week, is for the UIDAI to fix these bugs. Otherwise, the largest biometric database in the world could also earn the dubious distinction of also being its leakiest.

Possible ways of breach of privacy

Identification without consent using UID An individual's activities across multiple domains of service could potentially be tracked using their global Aadhaar IDs which are valid across these domains

Identification without consent using biometric data There may be unauthorised use of biometrics to illegally identify people by matching fingerprints, iris scans or facial photographs stored in the aadhaar

database, or using the demographic data to identify people without their consent and beyond legal provisions

Illegal tracking of individuals Individuals could be tracked or put under surveillance without proper authorisation or legal sanction using the authentication and identification records and trails in the aadhaar database, which would typically also contain information on the precise location, time and context of the authentication or identification, and the services availed

Illegal profiling of individuals This could be done using the centralised database, either through external hacks or through insider leaks and collusion

3 Big Questions

Why was a world standard data protection law and mechanism not set in place before making Aadhaar mandatory?

If UIDAI's data security measures have been analysed with respect to perceived threat levels and potential privacy breaches, why has this information not been made public to allay the fears of citizens regarding issues of privacy?

What redress measures are going to be given to the citizens whose Aadhaar data has been breached?

अब प्याज के छिलकों से बनेगी बिजली

<https://www.livehindustan.com/career/story-now-the-electricity-will-be-made-from-onion-peels-1753749.html>

आईआईटी खड़गपुर के छात्रों ने प्याज के छिलकों से एक ऐसी डिवाइस बनाई है, जो ग्रीन इलेक्ट्रिसिटी बनाएगी। इन छात्रों ने पाया कि प्याज के बेकार छिलकों में पाइजोइलेक्ट्रिक गुण होते हैं। पाइजोइलेक्ट्रिक तत्व में यह खूबी होती है कि वह मैकेनिकल मोशन से बिजली पैदा कर सकते हैं। इन छात्रों ने यह डिवाइस बनाने के लिए दक्षिण कोरिया की पोहांग यूनिवर्सिटी ऑफ साइंस एंड टेक्नोलॉजी के शोधकर्ताओं से हाथ मिलाया और एक पीजोइलेक्ट्रिक नैनो-जेनरेटर बनाया, जो न तो आपके लिए नुकसानदेह है और ना ही पर्यावरण के लिए।

Indore: IIT students march to campus to protest substandard transport facility

<http://www.freepressjournal.in/indore/indore-iit-students-march-to-campus-to-protest-substandard-transport-facility/1205063>



Indore: In a bizarre protest, students of Indian Institute of Technology Indore on Tuesday gave a miss to institute buses and staged a march from their hostels in Silver Springs towards the academic campus over the problems of transportation they have been facing for quite some time.

In the morning, the students gathered outside Silver Springs and walked towards their institute campus, located about 35 km away from their residential premises. Institute bus drivers and conductors requested them to board vehicles but they refused. On learning about the incident, some college staffers approached protesting students and tried in vain to pacify them.

The students told reporters that they were protesting against non-availability of transportation facility. "We are not being provided with adequate number of buses. Each bus carries students almost the double of its capacity," the students claimed. They also stated that the institute has come up with new bus schedule which is difficult to adhere to.

On reaching the institute, the students staged a demonstration forcing authorities to immediately hold talks with them and work out a solution. "We have found solutions to all the problems of the students. So there is no issue now," claimed IIM Indore media in charge Nirmala Menon. Menon stated that the students had staged protest as they had some problems with new schedule of the buses. "We heard their grievances and found solutions for them," Menon said.

She also stated that the transportation problem occurred due to sale of old buses. "The number of buses with the institute reduced as we sold our old buses," she said. IIT Indore campus is located at Simrol. As its residential campus is not fully constructed, many students have to reside in a rented accommodation at Silver Spring and shuttle between Simrol and Indore.

Course on sustainable urban planning launched at IIT Kanpur

http://www.business-standard.com/article/news-ians/course-on-sustainable-urban-planning-launched-at-iit-kanpur-118011700006_1.html

A new course on Sustainable Urban planning using remote sensing and Geographic Information System (GIS) has been launched at Indian Institute of Technology (IIT) Kanpur's outreach centre here, NITI Aayog said on Tuesday.

Ratan P. Watal, Principal Adviser, NITI Aayog, inaugurated the course on Monday.

"This course is being conducted under the Global Initiative on Academic Network (GIAN) Program of the Ministry of Human Resource Development and actively supported by NITI Aayog and Ministry of Housing and Urban Affairs," an official statement said.

The course focuses on issues such as water resource management, water pollution and strategic emplacements for water treatment facilities, through remote sensing and GIS skills.

January 16

Tata Trusts set up healthcare impact lab

<http://www.thehindu.com/business/Industry/tata-trusts-set-up-healthcare-impact-lab/article22451391.ece>

Aim to help build affordable devices

Tata Trusts said on Tuesday that they have opened a healthcare impact lab in IIT Delhi, with a U.S.-based international non-governmental organisation, PATH, to focus on building affordable medical devices for use by grass-roots health workers.

"We will bring our expertise on research and they will bring in global expertise in the healthcare domain," Manoj Kumar, head of Entrepreneurship and Innovation, Tata Trusts, said in a telephone interview from New Delhi. "We will incubate start-ups and ideas, especially meant for people at the bottom of the pyramid and underserved communities." The lab will work on areas such as nutrition, child health, paternal health and communicable diseases, Mr. Kumar said.

"India's public healthcare is struggling in most areas. We will create a curated list of big problems that we have in this country in the lab, which can be solved, and then run grand challenges to bring various stakeholders to run those grand challenges in the areas of tuberculosis and other communicable diseases," he said.

The lab will incubate start-ups with science and technology-based ideas.

"Today we are announcing the intent and the expertise that the two organisations bring together. We are basing it out of IIT Delhi as we have access to their research ecosystem. PATH brings global experience in public health. It will give us a little more strength in terms of expertise so that we can make our incubators much more impactful."

Tata Trusts, headed by Rata Tata, consists of Ratan Tata and Allied Trusts and Dorabji Tata Trust and Allied Trusts.

New projects launched for real-time monitoring of air and water quality

<http://www.thehindubusinessline.com/news/science/new-projects-launched-for-realtime-monitoring-of-air-and-water-quality/article10035682.ece>

Four new research and development projects for real time monitoring of air and water quality were today launched jointly by Department of Science and Technology (DST) and Corporate Research Council of Intel.

Among the proposed projects is an air quality monitoring test bed that would be able to report and visualise scientifically validated PM 2.5 and gas measurements from 40 locations in real time. After upscaling to 60 locations, the monitoring technology is expected to cover 500 cities and towns across India.

The project aims to collect air quality information to allow policy makers and citizens to deploy data-driven control and preventive mechanisms. The focus would be on low-cost PM2.5, Ozone, nitrogen oxide and sulfur oxide sensors. The idea is to integrate hardware, communication and software stack, from local sensing to distributed analytics. For this, Indian Institute of Technology, Kanpur would work in collaboration with Indian Institute of Science, Bangalore, IIT-Bombay and Duke University, Durham.

The second group would work on high resolution air quality monitoring and air pollutant data analytics. It would be led by Indian Institute of Science, Bangalore with Central Electronics Engineering Research Institute, Pilani and University of Southern California. The researchers would aim to develop sensors as well as new techniques of sampling and calibrations to develop air quality index.

The third team would work on developing an aquatic autonomous observatory. This project is also led by IIT-Kanpur, but with Woods Hole Oceanographic Institution (WHOI). The team aims to design and develop low-cost, multi-parameter, water quality platforms with auto-sampling capabilities.

The system would measure parameters like dissolved oxygen, conductivity, temperature, nutrients, carbon-dioxide and select heavy metals. A novel energy harvesting system integrating solar panel, piezo electric system and micro wind turbine is envisaged.

The fourth team would work towards developing sensors for real- time river water monitoring and decision making. The project is co-led led by IIT-Delhi and University of California (UCR), Riverside, along with other Indian and American partners. They would develop sensors for chemical oxygen demand, microbial indicators and water flow for determining water quality.

Launching the projects, Minister for Science and Technology, Dr. Harsh Vardhan, expressed hope that they would help strengthen the government's efforts to address the problem of air and water quality through missions like Namami Gange.

DST Secretary Dr Ashutosh Sharma said the projects would be conducted over a period of five years. DST and Intel Corporate Research Council would provide a total Rs. 30 crore to the four teams on 50:50 sharing basis. The programme will be administered by the Indo-US Science and Technology Forum.

IIT Delhi , Hansraj , Amity get top honours in IAA India Education Awards & Summit 2018

<http://www.prnewswire.co.in/news-releases/iit-delhi--hansraj--amity-get-top-honours-in-iaa-india-education-awards--summit-2018-669491513.html>

The first edition of the IAA Education India Awards & Summit 2018 kicked off at the Leela Palace in New Delhi on 13th January. IIT Delhi was chosen as the Best Technical institution of India, Hansraj as the Prominent Higher Education Institution and Amity University as the Best Private University of India from among the 2022 nominations.

International Accrediting Authority is the world's premier quality accrediting agency based in Seattle. It has decided to start Asia Pacific Operations with India as its base. The IAA India Education Awards & Summit 2018 is the first event in this direction. In a long-drawn process of nomination and scrutiny from among 2022 applications, 58 made it to the final stage.

The grand gala event started off with the lamp-lighting and then the first panel discussion on k12 segment in which the panellist's discussion on whether 'the Indian Education is too rigid or not'. Then eminent psychologist and educationist Dr. Jawahar Suriseti made his speech on the 'little things that could make Education better in India both for parents as well as schools'. The second panel discussion was on the higher education and the topic was 'Skills in higher and Technical Education'. The whole audience of Education leaders from across the country participated in the discussions. Post lunch, Major Surendra Poonia, President Awardee and Indian Sportsman, shared his experience on the Education in terror stricken areas and the need for it. The Chief Guest and Ambassador Deepak Vohra shared his views on the emerging trends in the world in the coming years and the increasing role of India in the future scenario.

Ambassador Deepak Vohra, Dr. Jawahar Suriseti and Major Poonia were felicitated and the awardees were presented with the awards by the guests.

What makes IAA awards unique is that most of the awardees were lesser known institutions which were doing quality work in their field of education and were handpicked after a rigorous process of scrutiny. The institutions awarded were also given a candidacy certification of accreditation by International Accrediting Authority.

प्रधानमंत्री ने आईआईटी के नए हेलीकॉप्टर डिजाइन को सराहा

<https://www.livehindustan.com/uttar-pradesh/kanpur/story-pm-modi-praises-helicopter-designed-by-iit-kanpur-1753150.html>

आईआईटी के 'विभरम' का उत्कृष्ट प्रदर्शन देख प्रधानमंत्री नरेंद्र मोदी ने जमकर सराहा। विभरम ने 15 जनवरी को मनाए गए सेना दिवस में हिस्सा लिया। विभरम एक गेम चेंजिंग हेलीकॉप्टर डिजाइन है। इसने पहले भी कई अवार्ड जीते हैं।

नई दिल्ली में मनाए गए सेवा दिवस कार्यक्रम में विभिन्न हेलीकॉप्टर, लड़ाकू विमान समेत हथियारों का प्रदर्शन किया गया। इसमें प्रधानमंत्री नरेंद्र मोदी भी मौजूद रहे। कार्यक्रम में आईआईटी के एयरोस्पेस इंजीनियरिंग विभाग के डॉ. अभिषेक की देखरेख में छात्रों की ओर से तैयार हेलीकॉप्टर के मॉडल विभरम ने भी हिस्सा लिया। विभरम का प्रदर्शन देख प्रधानमंत्री काफी उत्साहित नजर आए। डॉ. अभिषेक ने बताया कि इससे पहले भी विभरम ने अमेरिकी हेलीकॉप्टर सोसाइटी की ओर से आयोजित 34वीं वार्षिक छात्र डिजाइन प्रतियोगिता में हिस्सा लिया था। इसमें तृतीय पुरस्कार मिला था। इसी तरह आठ जनवरी

को हुए आर्मी टेक्नोलॉजी दिवस पर भी विभरम ने चीफ ऑफ आर्मी स्टाफ के सामने प्रदर्शन किया था। उन्होंने बताया कि विभरम की डिजाइन सामान्य हेलीकॉप्टर की तुलना में 10 से 20 फीसदी तक बेहतर है। आईआईटी ने इस डिजाइन के पेटेंट के लिए भी आवेदन किया है। इस डिजाइन से हेलीकॉप्टर के परिचालन लागत में कमी आएगी।

इस डिजाइन को एयरोस्पेस इंजीनियरिंग के डॉ. अभिषेक की देखरेख में तैयार किया गया है। इसमें टीम लीडर एमटेक के छात्र कार्तिक एस हैं। इसके अलावा टीम में पीएचडी के छात्र राहुल रामानुजम, रामदास, एमटेक के छात्र अविनाश शेट, विशेष कुमार सिंह, नबा किशोर राउट्रे, दीक्षा अग्रवाल और साक्षी गुप्ता हैं।

January 15

JEE Advanced Rank: IIT Kharagpur awards first Learn Earn Return fellowship to 3 students based on rank

<http://www.timesnownews.com/education/article/jee-advanced-rank-iit-kharagpur-awards-first-learn-earn-return-fellowship-to-3-students-based-on-rank/188885>

IIT-Kharagpur start LER Fellowship on the basis of JEE Advanced Rank

Kolkata: IIT Kharagpur has awarded the first ever Learn-Earn-Return Fellowship to three of its 1st year students on the occasion of Annual Alumni Meet. The award had been instituted by IIT KGP Director Prof P P Chakrabarti in July 2016 with the funding crowdsourced from the alumni. Jyoti Agrawal, Jyotisman Das and Rathin Singha from the Department of Computer Science and Engineering were the recipients. Each of the students will receive Rs 10,000 per month for 4 years as cash award. At the end of the first semester of the 1st year, the fellowship will be awarded based on JEE Advanced rank. From second semester onward the recipients of the award would have to maintain a CGPA (Cumulative Grade Point Average) 9.

The fellowships were awarded on the occasion of the Annual Alumni Meet on January 13, 2018 in the presence of about 300 alumni who came from India and abroad. "The concept of Learn-Earn-Return (LER) Fellowship is to support a student and enable him/her with the vision of extending similar support as an alumnus towards future generations of students at IIT Kharagpur. So it's a full circle of life which LER represents," Prof Chakrabarti said.

About 120 alumni from all over the world and India donated for the fellowship since its launch. "LER is unique in the way that it enables us to meet various expenses of students associated with academics and research projects. I have taken the pledge to give back to my Alma Mater as I grow in my life," said Jyotisman Das. Rathin Singha pointed out that LER would help him pursue his studies without worrying about financial burden. "I am elated with the fellowship as it is an honour to stand in front of the alumni and be recipient of their care and affection for us. Also I feel the girls in the country and their parents should know about it and feel motivated to pursue career in engineering," said Jyoti Agrawal.

IIT Kanpur researchers develop 5G antenna

<http://www.hindustantimes.com/lucknow/iit-kanpur-researchers-develop-5g-antenna/story-5Z2MLVLjRbqBQ2YWJh86CO.html>

The researchers said the 5G technology will boost the dream of next generation of driverless car and faster loading of any data or HD movie. Besides, the new technology will enable a surgeon to conduct surgery of the patients from a very distant place effectively.



According to the three researchers, the 5G wireless network required high data transfer rate which was possible by installing several small and powerful antennas with several devices in a smaller place.

Three research scholars at the Indian Institute of Technology (IIT-K) have developed a high tech antenna for 5G communication system.

The researchers -- Yashika Sharma, Deep Sarkar and K Saurabh -- were working on the project under professor Kumar Vaibhav Srivastava of electrical engineering department. Yashika had presented her research paper at an international seminar held on Modern Antenna Innovation at the Institute of Electrical and Electronic Engineers in Bangaluru in December 2017 and it was approved for its viability in transmitting messages under 5G technology.

According to the three researchers, the 5G wireless network required high data transfer rate which was possible by installing several small and powerful antennas with several devices in a smaller place.

They said the 5G technology will boost the dream of next generation of driverless car and faster loading of any data or HD movie. Besides, the new technology will enable a surgeon to conduct surgery of the patients from a very distant place effectively.

Web pages could be boosted in milli-seconds through the advent of the 5-G technology, the researchers said.

Yashika Sharma, who has developed ultra wide band using the multiple input and multiple output technique, said she had succeeded in developing a wide band high gain antenna which could transmit

Low Cross Polar level. To increase the data rate, the system of multiple input and multiple output technology would be used, she added.

Deep Sarkar said he had developed a Compact antenna which would be useful for communicating through 5-G handsets. According to the researchers, the 5-G wireless network required high data transfer rate which was possible by installing several small and powerful antennas with several devices in a smaller place.

January 14

JEE Advanced 2018: Make separate merit lists for girls, government tells IITs

<https://timesofindia.indiatimes.com/home/education/make-separate-merit-lists-for-girls-government-tells-iits/articleshow/62491972.cms>

KOLKATA: The human resource development (HRD) ministry has directed the Indian Institutes of Technology to prepare separate merit lists for girls from the 2018-2019 academic session to ensure the number of female students, on each IIT campus, is 14 per cent.

The "separate vertical" for girls will be published after IIT authorities see the percentage of girls who have got admission through the common merit list. So, if a specific IIT's common merit list has 6 per cent girl students, that IIT will have to come up with an extra girls-only merit list to ensure their percentage on the campus goes up to 14 per cent.

The ministry has specified that the number of girls to be admitted — to achieve the figure of 14 per cent — will be "supernumerary"; the number of boys to be admitted cannot go down from the 2017 number.

The recent circular from the ministry to the IITs follows consultations with the law ministry but has already drawn protests against "the introduction of gender reservation in IIT without calling it by that name". The HRD ministry's directive is part of a long-term plan to increase the female representation on IIT campuses to 20 per cent of the total number of students by 2026.

"The MHRD instruction, asking for a separate merit list for girls, actually introduces reservation for girls without calling it that," a senior IIT official said. The matter was placed before the Joint Admission Board (the highest decision-making body of the IITs) on January 7.

Many officials felt that the second girls-only merit list — to take their representation to 14 per cent — may mean less meritorious students gaining admission at the expense of boys who have done better. "This will also put more pressure on IITs, who will now have to arrange for more bridge-course or remedial classes for students getting through to IITs just because we want a pre-determined percentage of girls on the campus," an IIT teacher said.

All 23 IITs (including the Indian School of Mines, Dhanbad) will now have to increase the number of

seats. The total number of admissions across IITs in 2018 will be 11,509, up from 10,988 (which TOI reported on November 25). All existing reservations would apply proportionately for the extra seats, officials have told TOI. But the specific number of extra students that each IIT will have to accommodate will depend on the number of boys each campus admitted in 2017.

IIT-Kharagpur, for instance, will need to increase the number of seats by 80, which will take the number of total admissions to 1,421; the number of girls who need to be admitted to take their share to 14 per cent will be 199.

January 13

Inter IIT Tech Meet 2018: Students from IIT Kharagpur win gold

<https://www.indiatoday.in/education-today/news/story/inter-iit-tech-meet-2018-students-from-iit-kharagpur-win-gold-1144574-2018-01-13>



IIT Kharagpur students have won gold in the Inter IIT Tech Meet 2018 held on January 5 to January 7 at IIT Madras.

The event saw the highest ever participation of 19 IITs in any Inter IIT and was hosted by various research institutions and industrial houses such as BARC, TCS, Cochin Shipyard, DRDO.

STUDENTS' SCORES IN THE EVENT:

As reported by IITKGP in student newspaper of the institution, the students from IITKGP scored 832.1052632 points, followed by IIT Roorkee at 668.4210526 and IIT Madras at 650.

FOCUS OF THE EVENT:

The focus of the 2018 Inter IIT Tech Meet was to offer quick solutions to common problems faced by the people.

EVENTS IN THE COMPETITION:

The competition had 10 events including Engineer's Conclave, Exoplanet Detection and Automatic Toilet Cleaning.

The hackathon was held on developing an orbital simulator while a case study focussed on issues related to agriculture, health care, defence services, energy efficient technologies

These included solutions for safety device for fishing vessels, technology for upgrading gear of soldiers, warehouse inventory check through an unmanned aerial vehicle and countering ransom ware which could delete inventory data.

PROJECTS SHOWCASED IN THE EVENT:

- Bomb retriever and universal terrain explorer
- Low-cost blind E-book reader and stick
- Technology for reusable polymeric pellets replacing the heavy use of water and detergent in the laundry
- A device for harvesting ocean wave for energy use
- Micro-needles for painless drug administration
- Waterless toilet

"IIT Kharagpur Tech contingent attempted some of the challenging issues and excelled in solving them against the best brains of the nation." Prof. William Mohanty, President of Technology Students' Gymkhana, IITKGP told *PTI*.

"We won by huge margins in the real-life problem statements that were put forward by various industries." Rishabh Kumar Shrivastava, a team leader, IITKGP said to *PTI*.

IIT Hyderabad organises its first 'Industry Day'

<https://news.webindia123.com/news/Articles/India/20180112/3250781.html>

Indian Institute of Technology (IIT) Hyderabad held its first 'Industry Day' on Friday to encourage collaboration between industries and academia. As a part of 10th-year celebrations, Industry day offered an exciting avenue for IITH to exhibit their capabilities to industry. More than 40 industries participated in this event. After almost a decade has passed since the inception of the Institute, over the past years, IIT Hyderabad has been consistently ranked as one of the top ten engineering and technology institutes in the country. Active industry interaction is part of the Research culture at IIT-H resulting in more than 50 diverse industry partners and 10 per cent of its Research & Development (R&D) budget from industries. Speaking on the occasion, IIT-Hyderabad Director Prof U B Desai said, "I am extremely happy and very thankful to the more than 40 industries that are participating in this event. I am very hopeful that this event will pave the way for enhanced industry-IITH joint research and development projects, some of the industries setting up their research labs in IITH Research Park, and industry funded masters and Ph.D. programs". The Institute cherishes the close relationship with the industry. Hence, the aim of the Industry Day was to further strengthen the existing relationships and to forge new ones between various industry partners and the Institute. The theme of the interactive session was 'Industry academia interaction' and the objective of the session was to know about the research work and projects done by IIT Hyderabad as well as the Industries. In addition, what industry expects from academia is also emphasized. This provided a scope for closer research collaborations in the mutually agreed areas. Over 40 industries such as Microsoft, Adobe Research, TATA STEEL, Boeing, Qualcomm, Hindustan Unilever Ltd, Samsung Research India Ltd and among others were part of the event. The Industry Day presented a unique opportunity for IITH faculty to

interact with industries and for various organisations from the industry to establish long-term collaborations with IIT Hyderabad. The event offered a platform for the Industry and the Institute to exchange ideas, create synergies, and plan the path to mutual success.

A non-intrusive method for quantity and quality assessment of algae

<https://researchmatters.in/news/non-intrusive-method-quantity-and-quality-assessment-algae>



Scientists from Indian Institute of Kharagpur (IIT KGP) have developed a novel method to estimate the biomass and pigment concentration of algae, without ever having to touch or disturb the organism, which could help algae using industries, like pharmaceutical and food industries, with quick tests of their yield.

Algae are a diverse class of photosynthetic organisms, commonly forming the lowest level of the food chain. Apart from being the food source for many aquatic and marine life forms, algae have also been used for production of pigments and various medical applications. Recent developments in processing methods have found new uses for these ancient organisms. Today, one of the primary uses for algae is in producing bio fuels, apart from which they are also used in pollution controlling agents, bioremediation and production of certain polymers.

Two important factors that are required to deduce the yield of fuels or other usable products from a colony of algae are biomass and the pigment concentration of the said colony. This often involves and intrusive or destructive testing methods, which requires collecting samples from the colony. To avoid such intrusive measures, scientists from IIT KGP have developed optical based testing method to determine the two properties.

Using a technique called diffuse reflectance spectroscopy (DRS), which involves analyzing the infra-red and visible radiations scattered from a sample using a spectrometer. For their experiment, the scientists used two species of algae; *Chlorella Vulgaris* and *Nostoc muscorum*, and a mixed culture of the two species. Visible to near infra red (VisNIR) light is scattered off of samples of the two cultures, which is then sent through a spectrometer, which splits the emerging light into its constituent frequencies. Next, using partial least squares regression (PLSR) algorithm, the spectrum is analyzed to

reveal the biomass and pigment concentration of the cultures. The analysis of the spectra also revealed culture specific spectral signatures, allowing the scientists to identify the specific culture based on the spectra it produced. The amount of carotenoids, a type of organic pigment present in all photosynthetic organisms, like plants and algae, was also deduced using the PLSR method on the spectra.

This new method of testing for pigments, according to the scientists, has the “potential for developing a new approach for estimating pigment concentrations in algae samples without consuming the sample”. And if commercialized, could reduce the time and effort required to convert algae into a viable industry resource.