News Clips
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May 11

IIT Kanpur Students Develop Device to Check Fuel Theft by Petrol Pump Operators

https://uttarakhandnewsnetwork.com/2018/05/iit-kanpur-students-develop-device-to-check-fuel-theft-by-petrol-pump-operators/

Now alongwith the Central and State Government teams, the common man will also be able to catch the fuel theft at petrol pumps. PhD students of the Mechanical Department of Indian Institute of Technology (IIT) have developed a special device (Fuel Quantifiers) in this regards.

Now on the petrol and diesel pumps, the hacks to burn a hole in the common-mans pocket will not . A special type of device (Fuel Quantifier) can be installed in the fuel tank of the car or bike. Nozzle of gasoline or diesel pump machine will be in the tank from inside the device. With this help, you will know the actual amount of oil in just 10 seconds. The developer students of IITs have estimated the cost of the device to be only Rs.1500 to 2000 rupees per unit. However, if the orders are in bulk amount then the cost could go down below Rs 500. The Institute has patented this research.

Measure of oil per unit time

'Fuel Quantifier Device' measures the oil per unit time. It measures the flow rate of oil. Whether the speed of going to the oil from the nozzle to the tank is fast or slow, it does not have any effect. According to experts, the device has several sensors. First of all, the oil goes into the magnetic rotor. There are a number of negative and positive blades in it. The reading of the oil flow will move into the microprocessor unit as it rotates the blade. Microprocessor is already calibrated. It has been functioning with the whole circuit.

IIT Bombay makes it to top 30 Times Higher Education (THE) ranking, but check out IISC Bangalore!

http://www.zeebiz.com/india/news-iit-bombay-makes-it-to-top-30-times-higher-education-the-ranking-but-check-out-iisc-bangalore-46451

The Indian Institute of Technology, Bombay (IIT-B) figured amongst the top 30 institutes in emerging economies at the Times Higher Education (THE) Rankings 2018. IIT-B bagged the 26th overall position, but ranked second amongst Indian institutions.

The Indian Institute of Technology, Bombay (IIT-B) figured amongst the top 30 institutes in emerging economies at the Times Higher Education (THE) Rankings 2018. IIT-B bagged the 26th overall position, but ranked second amongst Indian institutions.

Indian Institute of Science (IISC) Bangalore secured the top spot in the country and the 13th position amongst emerging economies. Savtribai Phule Pune University sat at position 180. The University of Mumbai failed to feature in the list yet again.

India was the second most represented nation after China, with 42 institutes making it to the list of top 350 institutes from four continents. In 2017, only 27 institutes were on the list.

The performance indicators used for the rankings were grouped into five areas: Teaching (the learning environment); Research (volume, income and reputation); citations (research influence); International outlook (staff, students and research); and industry income (knowledge transfer). IIT B scored the best in Industry income (53.4) followed by Teaching.

May 10

IIT researchers build sandbox for autonomous driving algorithms
https://factordaily.com/multi-agent-driving-sim-madras/

Story Highlights

- Indian AI researchers have built the world's first open-source, fully-controllable multi-agent driving simulator.
- The simulator has the ability to model a multi-vehicle environment closer to their real-world behaviour in different traffic scenarios.
- Support for multi-agent algorithms will enable the creation of more realistic and reactive autonomous driving behaviours, the researchers say.

Researchers testing and tweaking machine learning algorithms used to control fully autonomous or self-driving vehicles have for long had to rely simulators that mimic real-life driving conditions while testing code that powers autonomous vehicles. A pedestrian crossing the road, a traffic signal turning from green to amber, a car ahead signaling a right turn, a school zone, and the hundreds of other scenarios in daily life on roads.

But, as much progress as these simulators have helped researchers – so-called Level 5 vehicles or those that need no human intervention, predicted to go to market as early as 2019 – make, they have a wall or another around them: they are either proprietary, inaccessible products like those in use at Uber

and Google or they simulate conditions for single-vehicle conditions on proprietary platforms (e.g.:Carcraft). Even open source simulators – think Carla and DeepDrive as instances – control algorithms one vehicle at a time.

That's set to change courtesy of researchers from two Indian Institutes of Technology: IIT-Madras and IIT-Kharagpur.

Abhishek Naik (left) and Anirban Santara (right) did a bulk of the work on MADRaS while interning at the Parallel Computing Lab at Intel India.

Released on Github last month, MADRaS (Multi-Agent DRiving Simulator) is a multi-agent version of TORCS and it adds the ability to use control algorithms on multiple cars running simultaneously on a track. The researchers say it's the world's first open source, fully-controllable, multi-agent driving simulator. It's been created chiefly by Abhishek Naik, a 22-year-old from IIT Madras, while doing an internship at the Parallel Computing Lab at Intel India (PCL-India) in Bengaluru.

"When researching the open source world, I identified a couple of hot burning fires that needed to be doused," teammate Anirban Santara told FactorDaily on a conference call. Santara, a 25-year-old Google India Ph.D. Fellow from IIT-Kharagpur, identified this particular deficiency in open source simulators while also interning at the PCL-India lab under Bharat Kaul, its director. "The entire thing was written by Abhishek ," Santara says.

Balaraman Ravindran, head of Robert Bosch Centre for Data Science and Artificial Intelligence at IIT-Madras provided additional expertise in the areas of reinforcement learning. (Reinforcement learning is a branch of machine learning which provides a powerful learning paradigm to go beyond human capabilities. Google's DeepMind, which defeated world champions at the game of Go, used reinforcement learning techniques, for example.)

A World First

As an AI researcher with exposure to problems related to fully autonomous driving, Naik says that most open-source driving simulators (Carla, DeepDrive, and Airsim included) support control algorithms for a single car even if they come with pre-programmed behaviours of the other vehicles in the testing environment.

"Why is this problematic? If you want to simulate the traffic congestion in front of K R Puram railway station in Bengaluru, for example, these simulators would not be able to cater to the task," says Naik. "A single agent has to learn to negotiate all types of real-world scenarios all alone, even though there

are hundreds of vehicles around, each trying to achieve the same objective of reaching safely and reliably from Point A to Point B. It restricts the diversity of real-world scenarios that can be simulated."

MADRaS allows each car on the driving track to be independently controlled in custom-made traffic scenarios.

"Today's open-source multi-agent simulators for driving, to the best of our knowledge, require proficiency in niche and heavy low-level software like Unreal Engine or ROS (Robot Operating System), something that rarely appears in the skillset of a machine learning engineer or scientist," says Santara. The major players in the autonomous driving space – Google or Uber, for instance – have their own in-house simulators and almost all of their software is proprietary, he adds. "The absence of an open-source multi-agent driving simulator has left the machine learning community throttled for a long time," adds Santara. "We really wanted to build a basic set of tools that would let anyone to try their hands out and test the feasibility at a low cost."

MADRaS is that attempt to lower the bar of entry for researchers in autonomous driving, says Ravindran. In comparison, "some of the more detailed simulators would require a steeper learning curve."

Low specs, wide reach

It has minimal hardware requirements, says Naik, adding there's no need for a GPU. "It even works on a five-year-old Core i3 laptop," he says. "You can create your own traffic environment and assign custom behaviours to your cars, add as many cars as you want." This potentially opens up research in multi-agent reinforcement learning and imitation learning research aimed at acquiring human-like negotiation skills in complicated traffic situations. "It's a major challenge in autonomous driving that all major players are racing to solve," Naik adds.

The goal was to build a platform on which you can quickly try out ideas before going into a more detailed development, says Professor Balaraman Ravindran, head of Robert Bosch Centre for Data Science and Artificial Intelligence at IIT-Madras.

The goal was to build a platform on which you can quickly try out ideas before going into a more detailed development, says Ravindran. "The current extensions enable one to develop multi-agent learning algorithms for autonomous driving, so as to learn in an environment where the other drivers are also adapting. This, we believe, is crucial to develop more realistic and reactive driving behaviours."

The basic requirements of autonomous driving like lane discipline and collision avoidance are met with relative ease today. "What stands between the current state-of-the-art and full-scale real-world adoption of the technology is the ability of the cars to negotiate complicated and unprecedented traffic situations with the precision of an expert human driver," says Devashish Chakravarty, professor-in-charge of the Autonomous Ground Vehicle Research Group at IIT-Kharagpur. "Reinforcement learning in a multi-agent simulated environment has a promise to achieve just that and I think the work of this team is really the need of the hour."

"We are pretty optimistic that MADRaS would facilitate solving some excellent research problems especially in the context of navigating traffic similar to Indian scenes and learning how to navigate in such traffic," says Madhava Krishna, professor, and lab head at the Robotics Research Center, International Institute of Information Technology (IIIT), Hyderabad.

Next stop: FAD

While partially autonomous cars are here, FAD (fully autonomous driving), with all the complicated scenarios that it will have to account for, is still a long way away – and could take decades to become a reality. The researchers envision inter-vehicle communication becoming ubiquitous and reliable with the advent of 5G data and phone services, enabling vehicles to transmit their intent to other neighbouring vehicles and develop situational awareness that's more sophisticated than what humans are capable of.

As of now, autonomous driving is so hard that even time-tested technologies that go into autopilots for aircraft can't solve it totally, says Naik. "Even the biggest players in this field like Tesla and Uber are facing fatal accidents, despite having the best talent. It's an extremely hard problem to solve," he says. In an accident that Tesla said was caused by the driver, a Joshua Brown died in May 2016 at Florida, US – the first such fatal accident involving an autonomous car.

Berkeley professor Michael Jordan recently published an essay in which he imagined what the self-driving car infrastructure of the future would look like. "The overall transportation system (an Intelligent Infrastructure system) will likely more closely resemble the current air-traffic control system than the current collection of loosely-coupled, forward-facing, inattentive human drivers," he writes.

A snapshot of some of the scientists working on AI technologies pertinent to autonomous driving at the Parallel Computing Lab at Intel Bangalore. Top row, L-R: Nataraj Jammalamadaka, ex Research Scientist and Md. Vasimuddin, Graduate Research Intern. Bottom row, L-R: Kunal Banerjee, Research Scientist; Leena M, Operations Manager; Anirban Santara, Google India PhD Fellow, IIT-Kharagpur; and Abhishek Naik, Dual Degree Student, IIT-Madras

MADRaS enables machine learning and AI researchers to advance computer vision research algorithms, demonstrating their effectiveness in real-time decision-making through machine learning techniques, says Pradeep Dubey, Intel Fellow, and PCL-India director. "These algorithms will ultimately help navigate hazardous traffic scenarios to improve road safety in a way that is transformative," he says.

For now, the researchers behind MADRaS are inviting the AI community to come and participate in developing the simulator further. The official blog lists a series of possibilities and problem statements related to multi-agent learning.

Some years from now, if scores of researchers want to play around with autonomous driving algorithms on an open source platform, they will have MADRaS as an option, and its creators to thank for.

Karnataka takes the lead in Swachh Bharat internship

http://www.newindianexpress.com/cities/bengaluru/2018/may/10/karnataka-takes-the-lead-in-swachh-bharat-internship-1812699.html

Students pursuing higher education courses in the state can register themselves for the summer internship programme under Swachh Bharat Abhiyan and get two extra credits.

BENGALURU: Students pursuing higher education courses in the state can register themselves for the summer internship programme under Swachh Bharat Abhiyan and get two extra credits. An official circular issued by the state department of collegiate education has directed all degree colleges affiliated to it to register their students under the programme. The internship will be conducted for 100 hours between May and July. Those who register under the programme must visit and stay at the respective villages chosen by them and conduct cleanliness activities there. They will have to later update about their activities on the website of Ministry of Human Resource Development (MHRD).

At a recent meeting of University Grants Commission (UGC), all higher education institutions were directed to provide two extra credits under CBCS (Choice-based credit system) in case students take part in Swachh Bharat Abhiyan activities. As per the circular issued by the UGC to institutions across the country, this should be a 15- day summer internship programme which may be initiated from the coming academic year. However, the state has decided to implement it from the present academic year itself. "Students will not just participate in the cleanliness of the village/slum, but also help in setting up of a system for sustaining cleanliness/sanitations efforts under Swachh Bharat Abhiyan. These efforts are expected to provide great learning experience and improve overall quality of education," the circular reads.

India has second highest no of institutes in Times' University rankings table 2018

https://economictimes.indiatimes.com/industry/services/education/india-has-second-highest-no-of-institutes-in-times-university-rankings-table-2018/articleshow/64103082.cms

KOLKATA: India remains the second most represented nation – after China – among the 42 countries across four continents in the Times Higher Education (THE) Emerging Economies University Rankings 2018.

Forty-two Indian institutions have made it to the 2018 table, a significant increase from 27 in the previous year. Times Higher Education ranking comprises more than 350 universities, expanded from 300 last year.

Indian Institute of Science, Bengaluru, at number 13 (up from 14) has taken the top spot among Indian institutes, while several others have climbed the charts, including IIT Kharagpur which has jumped 26 places to break into the top 50 at No 45. IIT Bombay maintains its position at number 26.

Overall, NIT Rourkela has gained the most, jumping 57 positions to grab the joint No 138th spot, courtesy improvements in research influence and citations. Tezpur University has climbed 41places to break into the Top 100 at joint 99th place, thanks to improvements in its teaching environment and research influence.

 "India has reached a pivotal juncture. It is ambitious and has undoubtedly the potential to emerge as a key player in global higher education in the coming years," said Phil Baty, editorial director of the THE Global Rankings in a statement. "The government's Institutions of Eminence initiative could certainly elevate selected universities on the global stage and may begin to narrow down the gulf with China in this ranking. But sustained investment, a relentless drive to attract leading global talent, and a reinforced emphasis on international benchmarking will be crucial to realising its global ambitions," he said.

On the flip side though, the majority of India's previously-ranked institutions have slipped in the rankings, and both IIT Madras and IIT Delhi have fallen out of the top 50. The nation remains the third most represented in the Top 200 – behind China and Taiwan – but it has slipped to the 17th spot from 19th.

 Among the institutes to enter the rankings for the first time are IIT (ISM) Dhanbad at the joint 146th place. IIT-BHU, Jamia Millia Islamia, University of Kerala and Pondicherry University have made their debut in 201-250 band while Thapar University and VIT are in the 251- 300 group.

Other institutes that have entered the rankings this year include Annamalai University, Jawaharlal Nehru Technological University, Anantapur, University of Mysore and Tamil Nadu Agricultural University in the 301-350 band while GB Pant University of Agriculture and Technology, Pantnagar, GITAM Univrsity, PSG College of Technology, SASTRA University, Sathyabhama University and SRM University bring up the rear in the 351+ group.

China dominates the ranking: it has 63 institutions represented, up from 52 in the previous year. For the fifth consecutive year, Peking University leads the table, with Tsinghua University ranked at number two.

Ex-IITian gives nano touch to synthetic leather
https://timesofindia.indiatimes.com/city/chandigarh/indian-scientists-discover-nano-coating-for-synthetic-leather-in-ohio-varsity-lab/articleshow/64101976.cms

ROPAR: A team comprising two Indian scientists, including an alumnus of the Indian Institute of Technology (IIT), Ropar, has made huge progress in the field of nanotechnology while carrying out research in the labs of the Ohio State University, US. They have made nanotexture coating for synthetic leather that repels water and oil, keeping the surface protected for years.
The work carried out by the research team comprising lab's director Professor Bharat Bhushan and IIT alumnus Dev Gurera is being acclaimed as an important event in the field of nanotechnology.

Interacting with the TOI from Ohio, eminent scholar Prof Bhushan said the nano-engineered texture was inspired by nature and has properties of the lotus leaf. He said the invention has a huge potential for extensive use in furniture, automotive interiors, clothing, shoes and handbags, and any products for which people use synthetic leather.

Bhushan, who specializes in biomimetics, said people who often worry about staining their favourite leather-like jackets or peeling bare legs from a sticky vinyl car seat in the summer, this nano-coating is going to provide a lasting solution. He said it can be compared with self-cleaning glass and a mesh that separates oil from water.

Prof Howard D Winbigler of the mechanical engineering department at the Ohio university, who remained associated with the research, said, "It is the first time someone has managed to fabricate synthetic leather that is not just water resistant, but super-liquiphobic as it repels both water and oil-based liquids, besides, being heat resistant."

Explaining about the invention, Dev said, "Synthetic leather is made from fabric coated with plastic, usually polyurethane (PU) or polyvinyl chloride (PVC). Both PVC and PU can be moulded into flat sheets with grooves that give it a leather-like texture. Like genuine leather, synthetic leather is somewhat permeable to liquids. Unlike genuine leather, it gets sticky at high temperatures because heat softens the plastic surface. He said in their previous experiments of creating water and oil-repellent surfaces, the researchers tried to create a bumpy texture by spraying a coating of silica nano-particles on the surface of the synthetic leather.

Gurera, who is the doctoral student at the university, said they quickly discovered that the plasticizers in the synthetic leather, that is, the chemicals that give plastic its plasticity, prevented the nano-particles from sticking, especially inside the leather-like grooves. So they cleaned the surface with an ultraviolet light treatment commonly used in computer chip manufacturing following which the nano-particles stuck to the clean synthetic leather, creating a bumpy surface.

Bhushan said coated texture also exhibited durability and heat resistance up to 70 degrees Celsius making it the next big thing in all areas where synthetic leather is used.

May 9

IIT Madras has a 'happiness' programme among other measures to help students deal with mental pressure

https://www.indiatoday.in/education-today/featurephilia/story/iit-madras-has-happiness-programme-to-counsel-students-mental-pressure-stress-html-1229253-2018-05

IIT Madras has two student-run teams and a 'happiness' programme among other measures to help counsel students.

The very coaching and preparation to get into IITs is a nerve-wracking experience and news of student suicides especially when they fail to crack JEE or cannot deal with unnatural, continuous study methods is not new. But what happens to students who crack the exams and become an IIT-ian?

IIT-ians have packed schedules with classes, workshops, presentations, seminars and research projects among other work. Almost everyone is studying or innovating and such an atmosphere can at times become too much for the young college-goers.

India Today Education spoke with Professor MS Sivakumar, Dean (Students) from IIT Madras to know about the various innovate methods taken up by the institute to deal with student stress and suicidal tendencies.

Prof S.M. Sivakumar, Dean (Students), Indian Institute of Technology Madras

MITRA AND SATHI: THE STUDENT-RUN COUNSELING TEAMS
IIT-Madras has two predominantly student-run counseling teams -- Mitra and Sathi -- which help counsel students. While Mitra is for reactive handling of student stress and mental issues, Sathi is for preventive measures.

Reaction means when a student is already going through some emotional trauma; then the Mitra team helps in terms of coping with whatever emotional burden and also takes them to get professional help if they require it.

- Prof SM Sivakumar, Dean (Students), IIT Madras

"As far as Sathi is concerned, it is for preventive work. The team works towards building skills the students would need in terms of coping with certain situations that they might have to tackle. They could be of different nature -- peer pressure they deal with academically or even relationships. They do get tensed about small things as well," the professor adds.

Members of the Sathi team are trained at the grassroots level so that they are ready to help impart the first level counseling before they take the students for professional support provided at IIT Madras.

IIT Madras has two student-run counselling teams which help provide direction to troubled students.

COURSES INTRODUCED TO HELP STUDENTS DEAL WITH LIFE CHANGES AND STRESS
First-year students need to take Life Skills (1 and 2) and a course.

"An important thing that students have to learn is how to get along -- whether it's with people, environment, animals or several other things. Students here undergo a change from being a school student to being an IIT-ian who is looked up to in terms of leadership skills, academic skills etc. So, how to get along and how to find ways by which to get along is the first step in Life Skills 1," says Sivakumar.

Students going from campus to corporate sectors need to learn certain important strategies. In Life Skills 2, IIT Madras deals with such changes that students wish to have, dream of, or are dealing with.

Many times, one of the difficulties they face is dealing with conflict -- it can arise anywhere and everywhere. How do you resolve conflicts? How do you become a leader? What kind of leadership skills are there? Why do you need to learn reason? -- These are some of the things covered in Life Skills 2.

These are seeds sown into the students so that they can build on all the seeds that we have sown.

- Prof SM Sivakumar, Dean (Students), IIT Madras

The Happiness programme carried out in IIT Madras is a brilliant initiative that provides training and information to strengthen the minds of students and develop their personality.

Apart from this, another thing noticed among students was that though they had unparalleled creative skills, but didn't realise it. For this, IIT Madras offers a course on creativity too.

"I felt the need for introducing course on Happiness, called 'Happiness, Habits and Success' so students can understand themselves," says the professor.

Through this course, students can learn a variety of tools available to understand oneself and to understand the need for development through a scientific approach.

The course includes latest psychology research, the impact of positive emotions and gratitude, a guide to meditation, advice on how to avoid distractions, research on sleep and the power of habits, the power of language, and the definition of personal purposes.

The bottom line is -- when a student feels there is no other way by which his or her problem can be resolved and they see themselves corned, that is when they feel stuck and start to abort.

- Prof SM Sivakumar, Dean (Students), IIT Madras

"If we build in them the skill of looking at various possibilities by which they can cope with the particular kind of corner they face, that is empowerment for them," adds the professor.
This capacity to deal with student stress or even suicidal tendencies is exactly what IIT Madras is building through various fronts -- through workshop modes, student-run teams like Saathi or Mitra, interaction with other students, discussion forums -- in order to communicate to students that there are possibilities they haven't explored.

An electronic board outside the office of Dean (Students), IIT Madras, urging students to call helpline if they have any stress-related issues.

HOW TO DEAL WITH PARENTAL PRESSURE WHICH IS A MAJOR CONTRIBUTOR TO STUDENT STRESS
Parents will always want what's best for their children and their definition of 'best' usually consists of a high salary by which their children can live a well-to-do life.

But this means that most of the time they simply aren't aware about how they become the primary contributors to their child's stress which then creates health problems.

"It's not so easy that you will just tell this to parents and it will get done," says IIT Madras' Dean of students.

"Parents have a nagging fear -- 'What if my child is not able to have the comforts of a life that is good?' And it is always attached to the profession that they take up. They do not know that there are certain talents, skills and dispositions that one needs to have and build so that they can go into a particular profession," Sivakumar adds.

He says that parents find themselves in a mess because they keep saying "study, study, study". But all they want is for their child to do something meaningful while moving on in life.
Surprisingly, the professor says that parents need to focus on building the strengths if their children instead of focusing on the subjects they aren't good at.

If my child got 95 in maths and 50 in chemistry, I should put my child in a tuition class for maths because building a strength is what should be done.

- Prof SM Sivakumar, Dean (Students), IIT Madras

Parental pressure is a major contributor to student stress.

COUNSELLING AND INTERACTION SESSIONS WITH PARENTS
At IIT Madras, a programme is held which school students along with their parents are invited to attend. Here, the parents are shown how their child really is. They are then told how they can nurture certain creative aspects of the kids.

I am not saying that don't do other things. But if you start to nurture and use language powerfully, the world will be a different place. We will be flooded with people who are very self-confident and who can do things they love to do.

- Prof SM Sivakumar, Dean (Students), IIT Madras

"Today one of the biggest difficulties we face is parents push their kids into doing something. Many parents of that sort come. I sit with them and tell them oh there's a connection!"
He tells us about an incident where he met a metallurgy student of IIT Madras who said that he hated metallurgy as there was no mathematics there.

"So I sat down with him and showed where all mathematics is there and how beautifully it is intertwined with materials," the professor says.

"That was the end of his demotivated period. Now he sees mathematics in many different ways when he goes to his material course."

Professor Sivakumar says that a certain mindset change needs to happen which can allow child and parent see each other's points of view.

He explains:
So it's a way that the shift has to occur so it is possible for both the parent and the child to be able to understand. In fact, I did this exercise along with the parent so that they can understand where the problem is.

Prof S.M. Sivakumar, Dean (Students), IIT Madras, talking to students

PROFESSIONAL COUNSELLING UNITS AT IIT MADRAS

IIT Madras also has professional counselling units and two professional counselling providers. They use several means to touch students-it could be through online chat, or face to face counselling. When the counsellor looks at a student we have pulled out of the brink, the reason seems to be a very simple reason, says Sivakumar.

The professor explains how we are blinded by stress:
If you take a coin and put it in front of your eyes, everything else disappear, only the coin is visible. A very similar thing happens to them-the moment they have a little bit more time, they come out of this rut.

"So, how do we bring in that particular time that they need to have -- this is what we work on," he adds.

Professional counsellors are present in IIT Madras who help students where Sathi and Mitra fail

HOW IIT MADRAS HELPS STUDENTS DEVELOP A 'GROWTH MINDSET'

Life will always have one challenge or another, each of which can help us learn various life skills. The moment we get stuck after failing to get to our goals via one path, our life seems to stop.

Students need to avoid getting stuck after a failure and develop a 'growth mindset' that can help them keep moving on in life without getting sucked into a depressive state.

"Motivation is about what you want to do, what you want to be, what you want to have-and these are not static, these are dynamic," Professor Sivakumar explains.

The concept of 'growth mindset' as explained by the Dean:
We need to understand that there are several ways that we can achieve our goals. There is no one single path that takes you to the goal -- understanding this itself will help enable you to see other ways to achieve your goals and therefore not get de-motivated. I call this the 'growth mindset'.

Professor MS Sivakumar has some amazing advice for students which most youngsters tend to forget:

"We are not here to do a sprinting. It is a long life. Don't worry! If you are 20, you have around 70 more years that you can live happily."

In citations on research papers, PU 2nd in country

http://www.tribuneindia.com/news/chandigarh/in-citations-on-research-papers-pu-2nd-in-country/587008.html

It is the citation score of research papers which keeps Panjab University (PU) alive in international rankings. It is one of the parameters to judge a university in the Times Higher Education (THE) rankings and is given 20 per cent weightage.

According to THE, the citation score is calculated as average number of times a university's published work is cited by scholars globally. This year, bibliometric data supplier is Elsevier for THE.

If we compare only citations, the PU jumps to second spot in the country as it has a score of 55.5 while IIT Roorkee is at top with 56.1.

Overall, IIT Roorkee is at the 39th spot in citations and the PU is at the 41st place among emerging economies of the world.

According to THE, the data is normalised by the overall number of papers produced, and to reflect variations in citation volume between different subject areas.

"This means that large institutions or those with high levels of research activity in subjects with traditionally high citation counts do not gain an unfair advantage," it said.

The PU has highly cited papers which have come from association of its particle physicists in Large Hardron Collider project. Many of these papers have more than 1,000 authors. In 2015-16, THE did not count such papers, but then it devised a method of fractional counting and counted these papers.

According to THE, it "ensures that all universities where academics are authors of these papers will receive at least 5 per cent of the value of the paper, and where those that provide the most contributors to the paper receive a proportionately larger contribution".

The overall score of the PU is 26.6. The PU lags behind in research parameter where it has got just 8.6 marks. It counts number of research papers, income and reputation survey. It has a weightage of 30 per cent.

In international outlook too, the PU scores low with just 16 marks. It counts international to domestic student ratio, international to domestic staff ratio and international collaborations. It has a weightage of 10 per cent.

In teaching parameter, the PU has scored 27.1. It counts students to staff ratio, doctorate to bachelor's ratio and doctorates awarded to academic staff ratio. It has a weightage of 30 per cent.

In industrial income, it has got 31.8. It contributes 10 per cent to total score.

Ranking in India subject-wise

Subject	Ranking
General Engineering	7th
Geography	2nd
Sociology	5th
Economics	5th
Political Science	3rd
Business and Management	8th
Language, Literature & Linguistics	8th
History	3rd
Art, Performing Arts	3rd
Education	4th
Comm & Media Studies	3rd
Chemical Engineering	10th
Dentistry	1st

(RANKINGS BY SUBJECTS OF ONLY THOSE UNIVERSITIES HAS BEEN CONDUCTED WHICH HAVE APPEARED IN RANKINGS)

May 8

Here's How IIT Madras Students Are Making Wound Healing Easier For Diabetics

https://www.ndtv.com/food/heres-how-iit-madras-students-are-making-wound-healing-easier-for-diabetics-1848768

Students at IIT Madras have developed a novel wound dressing material that would help diabetic patients heal faster. The dressing material uses grapheme-based compounds

Students at IIT Madras have developed a novel wound dressing material that would help diabetic patients heal faster. The dressing material uses graphene-based compounds. Wound healing in diabetic is not as rapid as compared to a normal, healthy individual. This delayed healing or non-healed wounds could lead to serious complications and in worse cases call for amputations too. In a bid to contribute to the major clinical challenge, students at IIT Madras have come up with a new wound healing material. The researchers said, that they were aiming to exploit the property of graphene-based materials of improving blood vessel formation at certain concentrations to prepare an inexpensive wound dressing. In the animal studies conducted, the psyllium-reduced graphene oxide nanocomposite showed emphatic results.

"We hope this is the first step towards developing inexpensive wound dressings using graphene-based materials for clinical use," said Vignesh Muthuvijayan, Assistant Professor, Department of Biotechnology. The researchers used a convex lens to focus sunlight on graphene oxide to obtain reduced graphene oxide. "Thereafter, they loaded these reduced graphene oxide dispersions into a plant carbohydrate polymer (psyllium) solution to obtain wound dressing scaffolds.

The researchers used fibroblast cells which are responsible for wound healing to evaluate the toxicity and bioactivity of these scaffolds on the cell attachment, migration and proliferation. "These newly developed scaffolds provide a suitable tissue-friendly environment for cells and subsequently improve cell proliferation and attachment," Muthuvijayan added.
The trials and results revealed that the normal wounds treated with the dressings healed in 16 days as compared to 23 days in untreated normal wounds. Similarly, diabetic wounds treated with the dressings healed in 20 days as against 26 days in untreated diabetic wounds. "These scaffolds are easy to prepare, inexpensive, and show excellent healing properties. Thus, the material acts as a good wound dressing and helps in accelerated healing of normal and diabetic wounds," he said.

Researchers at IIT Bombay develop improved model of predicting monsoon

http://www.newindianexpress.com/nation/2018/may/08/researchers-at-iit-bombay-develop-improved-model-of-predicting-monsoon-1811735.html

Rain predictions in India is far from accurate because the meteorological models used at present reportedly ignores the conditions emanating from the sprawling 8,60,000 sq km Ganga river basin.

NEW DELHI: Researchers at IIT-Bombay along with a collaborator from University of Maryland, US have developed what is being touted as a "more accurate model to predict monsoon in India". The new method uses improved representation of land processes, along with mountainous Himalayan topography.

Those in the know say that one of the main reasons why rain predictions in India is far from accurate because the meteorological models used at present ignores the conditions emanating from the sprawling 8,60,000 sq km Ganga river basin.

"Every year, the June-September forecasts simulated by the operational model of the India Meteorological Department seem to predict less rain will fall than actually does," said Subimal Ghosh, one of the researchers. To overcome this major shortcoming, decided to use their model to zoom in closer to earth's surface.

"The standard models for predicting Indian monsoons don't take into account local topographical details such as the western Himalaya. These models often miss complex interactions between the land and atmosphere, such as how moisture evaporates from the land, then falls back down as precipitation," said Ghosh.

The team corrected this by combining a regional climate model called the weather research and forecasting model with two land-surface models that can simulate interactions between the atmosphere and north central India's agricultural land, along with Himalayan mountainous topography."The operational monsoon prediction model for India, Climate Forecast System version 2, has significant dry bias in precipitation over the Ganga basin, and this restricts the use of model output for hydrologic prediction," the finding summary of the study, published in an international weather science journal, said.

"We attribute such bias to the lack of representation of land surface processes and characteristics in the model. We show that an improved representation of land characteristics in a regional coupled atmospheric land model improves not only the land atmosphere interactions but also the moisture contributions from distant oceanic sources," the researchers further added.This finally results into improved simulations of monsoon.

To verify their model's accuracy, the researchers checked it against real-world weather data from 1981 to 2015.Inaccurate monsoon prediction in the country has long been a butt of joke in India where majority of the population relies heavily on rains for drinking water, agriculture and raising livestock.

Indian Navy inks pact with IIT-Gandhinagar

https://timesofindia.indiatimes.com/city/ahmedabad/indian-navy-inks-pact-with-iit-gnagar/articleshow/64070556.cms

AHMEDABAD: The Indian Navy on Monday signed a memorandum of understanding (MOU) with Indian Institute of Technology-Gandhinagar (IIT-Gn) to promote academic cooperation, enhance scientific understanding of technologies related to defence and undertake research in mutually beneficial areas.

The MoU will engage IIT-Gn with Indian Navy for cooperation and promotion of research and development in areas of mutual interest, exchange of visits by faculty, students and researchers of Indian Navy and concerned organizations of Indian Navy to IIT-Gn and conduct PhD and PG programmes for Indian Naval officers, said a statement from the institute based at Palaj village, Gandhinagar.

Professor-in-charge of external relations of IIT-Gn, S P Mehrotra and Commodore Indrajit Dasgupta, Commanding officer of INS Valsura signed the agreement.

Professor Sudhir K Jain, director of IIT-Gandhinagar, said, "We are very happy to contribute in the research projects and in academics for Indian Navy ".

Commodore Dasgupta said, "On behalf of the Indian Navy, I am extremely proud to take the association of the Navy with IIT-Gandhinagar forward".

Don't look at monsoon only, examine soil moisture to predict crop yield, says IIT study

https://www.hindustantimes.com/mumbai-news/don-t-look-at-monsoon-only-examine-soil-moisture-to-predict-crop-yield-says-iit-study/story-M1ctexyM9yTubYPzgay2xH.html

The study suggests that rising temperatures are depleting the soil moisture more quickly, which affects agricultural productivity

Study found that over the years, depleted soil moisture had led to large-scale droughts during rabi season despite adequate rainfall during the monsoon.

Traditionally, the monsoon has been viewed as a key indicator of how good the agricultural yield will be. However, a new study by Indian Institute of Technology (Gandhinagar) suggests that the rising temperatures are leading to soil moisture depleting quicker, which in turn affects agricultural productivity.

India has two main cropping patterns – kharif season, which is between July and September, for the monsoon crop; and rabi or the winter crop, which is cultivated between November and March. Rainfall in the monsoon, between June and September, delivers 73% of the country's total precipitation and a deficiency usually means drought. A normal, or average, monsoon means rainfall between 96 and 104 percent of 89 cm. A good monsoon is usually reflected in kharif harvest.

The IIT-Gn study found that over the years, depleted soil moisture had led to large-scale droughts during rabi season despite adequate rainfall during the monsoon. This means monsoon rainfall may not an accurate indicator for drought forecasts.

IIT-Gn reconstructed droughts events over India from 1951 to 2015 using 60cm depth soil moisture that was simulated from three land-surface hydrological models. Conditions, including the amount of daily rainfall, maximum and minimum temperatures, and wind speed, were replicated using data from the India Meteorological Department (IMD). Results showed that in the 64-year study period, there were more large-scale droughts during rabi season (in 1966, 1973, 2001 and 2003) as compared to kharif season (1987, 2002, and 2015).

"Moisture in the soil builds up during the monsoon season. So theoretically, it may seem normal conditions will prevail during the non-monsoon season. In reality, however, soil moisture starts depleting owing to high temperature anomalies from October to March that could lead to a drought or severe drought," said Vimal Mishra, lead investigator and an associate professor of civil engineering at IIT-Gn.

The study emphasised that soil moisture, rather than the amount of rainfall during the monsoon, should be considered to monitor, assess, and predict a drought situation during the non-monsoon season, which will help policy makers to evaluate and calculate irrigation demands for crops.

Experts agree that emphasis should be placed on soil moisture, rather than monsoon rainfall. "Water availability for crops in the Rabi season is not solely dependent on the total amount of precipitation during southwest monsoon. It also varies with several factors including intensity of rainfall, type of crop, type of soil, surface and groundwater irrigation," said Satkumar Tomer, technical director Aapah Innovations, Hyderabad, which has developed state-of-the-art algorithms to estimate various agro-hydrological variables such as soil moisture and crop health using satellite data in real time.

Tomer, who was not involved in the study, said, "The knowledge of soil moisture during rabi cropping season is therefore without doubt a more realistic indicator of the health of crops relative to the amount of precipitation during southwest monsoon."

At present, the National Agriculture Drought Assessment and Monitoring System provides information on the prevalence, severity and persistence of drought only during the monsoon crop season. The study has recommended a dynamic prediction of drought during the non-monsoon season as well.

"Since water stress is a major limiting factor for crop yields in India, it is of paramount importance for farmers to get timely information on the likely soil moisture during a cropping season that will help in making a well-informed decision about which crop to grow," said Tomer.

May 7

IIT Delhi to set up three research parks

https://www.thehindubusinessline.com/news/iit-delhi-to-set-up-three-research-parks/article23805550.ece

One on campus; two in Haryana

Indian Institute of Technology Delhi (IIT-D) is setting up three research parks to facilitate design and development of advanced technology, incubate more start-ups and promote industry collaboration.

Research parks will come up on IIT Delhi campus and in Sonepat and Jhajjar in Haryana. The parks are funded by the college and managed by the Foundation for Innovation and Technology Transfer (FITT).

FITT is one of the oldest technology innovation centres established in 1992. It launched the Technology Incubator Programme in 2000 to promote entrepreneurship, but it is only now that the institution is setting up research parks.

Knowledge transfer

Anil Wali, Managing Director, FITT, explained that while the organisation is old, the research parks are a response to growing demand not only from Delhi but also from the surrounding regions. The objective of the parks, Wali said, is to establish avenues of engagement with industry, transfer knowledge and create value.

The research parks will have research & development labs, set up by corporates jointly with IIT Delhi, incubators, Impact Lab for Path, a global health innovation hub, high-end central research facility and Centre of Excellence in Smart manufacturing. In addition, the research parks will have training centres and convention facilities.

Sonepat facility

The first phase of the Sonepat research park is completed and can incubate around 15 start-ups. It also has residential facility, which the start-ups can use for a fee. So far, four start-ups have been incubated. Around ₹175 crore has been invested in the first phase.

"We are planning the second phase that will be able to accommodate close to 100 start-ups," Wali said. "We are waiting for environmental clearance for the one coming up at IIT Delhi, which should come any time now," he said. Once the approval is obtained, Wali said, the park will be operational in 18-24 months.

It can also house 100 start-ups and close to ₹140 crore has been invested. The proposed third research park at Jhajjar is likely to take time due to delay in land deals, he added.

Start-up incubation

FITT has so far incubated 82 start-ups and works with establishments such as the Department of Science and Technology, Biotechnology Industry Research Assistance Council (BIRAC) and Technology Development Board for funding and partnerships. In addition the organisation also protect, maintain and commercialise patents.

FITT has filed for 630 patents so far and around 5 per cent has been commercialised, generating a value of ₹2-3 crore.

Chikungunya: IIT Roorkee researchers identify molecule with antiviral activity against the virus

https://www.financialexpress.com/lifestyle/health/chikungunya-iit-roorkee-researchers-identify-molecule-with-antiviral-activity-against-the-virus/1157738/

IIT Roorkee researchers identify molecule with antiviral activity against Chikungunya virus.

Indian Institute of Technology Roorkee researchers have identified a molecule that exhibits antiviral activity against chikungunya virus. The antiviral activity, researchers said, achieved around 99% reduction in the virus. At present, there are no drugs or vaccine available in the market to treat chikungunya disease.

The research team led by Prof Shailly Tomar, Department of Biotechnology (DoB), IIT Roorkee, used structure-based studies of chikungunya virus specific nsP2 protease to identify molecules—Pep-I and Pep-II—that exhibited protease inhibitory as well as antiviral activity.

Talking about the importance of this research, Prof Tomar said, "The nsP2 protease is a strict viral enzyme. It means it is absent in humans and, thus, is an excellent antiviral drug target for chikungunya virus. Our research group has targeted nsP2 using biochemical and structure-based approach. We identified a molecule that not only possesses anti-nsP2 activity but also effectively kills the chikungunya virus in the cell based assays."

The research was funded by the grant from the DoB and published recently in the Elsevier journal Biochimie.

One of the two molecules—Pep-I—has higher antiviral activity against chikungunya virus. The Pep-I molecule inhibits the enzymatic activity of nsP2 viral protein and in cell based assay proves to be an effective antiviral molecule.

Speaking about the future work in this direction, Prof Tomar added, "Derivatives of Pep-I and Pep-I like molecules are being developed that will be tested for their antiviral potential in animal model."

According to the researchers, any molecule that inhibits nsP2 protease should possess antiviral activity.

IIT Goa to offer PhD programme from July 2018

https://timesofindia.indiatimes.com/city/goa/iit-goa-to-offer-phd-programme-from-july-2018/articleshow/64056563.cms

Just two years after it was established, the Indian Institute of Technology (IIT), Goa, is ready to take in research scholars to pursue their doctorate. And, no sooner the IIT invited applications online, it was flooded with more than 1,000 requests from aspiring PhD candidates for only around 20 research scholar positions available at IIT Goa.

PhD students will be admitted to the institute in Goa starting July 2018. Students will be selected after being put through a rigourous process, including a written test and an interview round. Chosen research scholars will be eligible for a monthly stipend of Rs 25,000 from the government of India.

"Since we have faculty members with us who can act as research guides, we decided to begin taking in research scholars," said IIT Goa director Barad Kant Mishra. "We have received 350 applications for mechanical engineering itself. To start with, we will only take in around 20 PhD students as per the availability of hostel facility for them."

IIT Goa will take in PhD candidates in all the three engineering streams in which it offers the BTech programme — mechanical, electrical, and computer science. Students can also pursue PhDs at IIT Goa in the science subjects of mathematics, physics and chemistry, as well as in the humanities stream.

The IIT is currently operating from its temporary campus within the complex of the Goa Engineering College at Farmagudi. "We are constructing a hostel at a cost of Rs 40 crore," said Mishra.

Institutes want Govt to play bigger role in funding tech research: Nasscom study

https://economictimes.indiatimes.com/small-biz/startups/newsbuzz/institutes-want-govt-to-play-bigger-role-in-funding-tech-research-nasscom-study/articleshow/64057709.cms

As many as 92% of India's technology institutes want the Union government to play a bigger role to encourage research and innovation, and enhance industry-academia collaboration to boost innovation, according to a joint study by Nasscom and Infoholic.

The study, which featured interviews with representatives of 75 prominent technology institutes across the country and industry representatives, found that the overwhelming view was that while the government played an active role in making technology products commercially viable it should offer more aids to students for pursuing research. The interviewees highlighted that the government should have well-implemented policies to remove disconnect between the industry and academia.

Large technology services and startups in the country have sharpened their focus on developing technology products that solve everyday problems. Industry lobby Nasscom said in this year's strategic review that in 2017 India had the third largest startup ecosystem with more than 5,000 startups, and that the startups with direct consumer connect attracted more funding.

In 2016 and 2017, 39% institutions received more than Rs 5 crore in research funds. Nonetheless, the study named adequate funds and proper guidance as the two top needs for successful academic research.

In two major technology institutes, funding dropped while the number of projects increased. IIT Kharagpur saw the number of sponsored projects increase 75 in 2016-17, but its funding dropped Rs 9 crore even as 27 more funding agencies came in. At NIT Tiruchirappalli, the number of projects went down by just one but funding fell Rs 11 crore.

Nearly four in five representatives of institutes said that a greater industry-academia convergence would encourage entrepreneurship. The study said "78% of the universities agree that industry-academia convergence will lead to a better entrepreneurship ecosystem".

India has seen a growth in patents filed by an increasing number of institutions, as 70% institutes surveyed had filed one or more patents. While IIT Delhi has filed more than 600 patents till date, IIT Madras filed 126 patents in 2016-17 alone.

IIT-R identifies new enzyme from yak cheese that can boost veg diet

https://timesofindia.indiatimes.com/city/dehradun/iit-r-identifies-new-enzyme-from-yak-cheese-that-can-boost-veg-diet/articleshow/64067788.cms

Researchers at Indian Institute of Technology Roorkee (IIT-R) have identified a new enzyme from yak cheese that could enhance micronutrient availability in vegetarian diet. Naveen Kumar Navani, associate professor, department of biotechnology, IIT Roorkee, who led the research, said, "In plants, phosphorous is stored mainly as organic phosphorous called 'phytate', which is an anti-nutritional factor (ANF). Nuts, seeds, beans and whole grains are rich in phosphorous, while vegetables and fruits have it in lesser quantity. Despite this, people with vegetarian diets not only exhibit deficiency of phosphorous but also other minerals. This is because humans lack an enzyme called phytase needed to convert phytate into free phosphorous for absorption by the body."

Navani said that the phytase enzyme was identified, cloned and characterised from a probiotic bacterium 'Lactobacillus fermentum NKN51'. The bacterium was isolated from ethnic cheese (called churpee) made from milk of Himalayan yak from Khardong village in Nubra Valley, Leh.

"In the long term, this enzyme could be used to enhance the micronutrient availability to infants, pregnant women and the elderly," Navani said. Navani added that according to a report by the Food and Agriculture Organization, micronutrient deficiency (also called hidden hunger) afflicts one in three people globally.

May 5

142 students learn Japanese course at IIT-H

https://timesofindia.indiatimes.com/city/hyderabad/142-students-learn-japanese-course-at-iit-h/articleshow/64038792.cms

HYDERABAD: The Indian Institute of Technology (IIT), Hyderabad is offering a one credit spoken Japanese basics course to its students for smooth communication with Japanese researchers while they pursue higher studies in Japan.

According to a press release issued by the IIT-Hyderabad on Friday, about 142 students are undergoing the training this year. While 108 took the course in 2017, a total of 126 were trained in 2016. The course that commenced in 2016, is being taught by Yuka Shori Kataoka, a native Japanese speaker and a certified Japanese language instructor.

"To make the classes more interactive, it uses Learning Management System based on Moodle (an educational software package). In addition, it exposes them to Japanese culture, business mannerism, calligraphy and traditional dressing," read the press release.

Apart from this, the IIT-H and Japanese universities have collaborated in several science and technology research projects such as SATREPS (Science and Technology Research Partnership for Sustainable Development), coordinated by Japan Science and Technology Agency (JST) and Japan International Cooperation Agency (JICA).