ACHARYA
AERO MAGAZINE

Issue 2 | Date: November 19, 2019

ACHARYA

"Look at the sky. We are not alone.
The whole universe is friendly to us
and conspires only to give the
best to those who dream and work".

- A. P. J. Abdul Kalam

Vision

The Department of Aeronautical Engineering is committed to providing quality education fostering excellence in academics, research and innovation to produce aeronautical engineers who can contribute to society on a global scale.

Mission

M1: To provide outcome-oriented learning that is based on research and innovation.

M2: To encourage cross-disciplinary learning and interaction with the global community.

M3: To enable a holistic education that is deeply rooted in social values.

I AM SLOWLY LEARNING WHAT IT MEANS TO BE HUMAN

- Mir Suhaib Maqbool

I am slowly learning what it means to be human.

I am slowly learning how to forgive the past. How to accept that sometimes beautiful things end, that sometimes the timing isn't right, that sometimes the messiness of life gets in the way.

I am slowly learning that endings aren't something to be upset about, but rather, I am slowly learning how to appreciate how damn lucky I was to experience something real and hopeful and light in a world that sometimes fails to be soft.

I am slowly learning how to be alone. I am slowly learning how to wake up in the middle of the bed. How to make just one cup of coffee in the mornings. How to hold my own heart, how to take up my own space.

I am slowly learning how to stop filling voids with other human beings, and instead, I am slowly learning how to confront the void itself. How to heal it.

I am slowly learning what it means to be human. What it means to make mistakes and learn from them.

What it means to be both happy and sad at the same time. I am slowly learning how to do the damn work. How to stop running from what is heavy and uncomfortable in my life. How to take the easy route less and less. How to grow myself, how to be a better person.

But most of all, I am slowly learning how to just be, in this moment. How to exist. How to understand that I cannot control life, I can only experience it in both its light and its dark stages. I am slowly learning how to laugh and cry and feel through it all, how to welcome the confusion and the joy that comes with loving, and living, and breaking. I am slowly learning how to accept where I am. I am slowly learning how to simply just believe in the person I am becoming.

- HAFSA SHAIKH

UDNAY DO MUJHE

- Rohan Ansari

Rukh badalti hawao kaa darr naa dikhaao,

Uddan pakki nahi kah kar naa sunaao.

Kal ke tute pankh naa dikhaao,

Wo dard kaa lamha beech mein na lao,

En pankho ki taakat naa aazmao,

Udnay Do Mujhe.

Kinaara naa milne ki aashanka naa jagaao,

Uddan se aage jhaakne ki dilaasa naa dilao.

Apane sawaalo se nazar meri neeche naa lao,

Behat upar udnaa hai,

Udd Jaane Do Mujhe.

Ye rishte ki bhaar naa rakho mere upar,

Uddan kaa kinaara chota ho jaigaa.

Bas hoslaa do mujhe,

Bas Udnay Do Mujhe.

Baarish pankh bheegho dhegi kah kar,

"Uddan mushkil hogi", yah bahaana naa banao.

"Roshani hogi, tohi uudan hogi", yah dilaaasa naa dilaao,

"Acche se uddna", kah ke mushkurao,

Aur Udnay Do Mujhe.

Kisi shikari ke darr se ,

Pankh naa kaato mere.

Satrangi pankh failaane do,

Aur Udnay Do Mujhe.

Baaz ki tarah uddan bharna hai,

Neele aakash se bhi upar jaana hai.

Tufaano me bhi pankh failaana hai,

Baarish ko bhi apnaana hai ,

Behat upar udke jaana hai,

Bas Udnay Do Mujhe.

CHANDRAYAAN-2

-Meeran Adnan

-Meeran Adnan

Chandrayaan-2 mission is a highly complex mission, which represents a significant technological leap compared to the previous missions of ISRO, which brought together an Orbiter, Lander and Rover with the goal of exploring south pole of the Moon. This is a unique mission which aims at studying not just one area of the Moon but all the areas combining the exosphere, the surface as well as the sub-surface of the moon in a single mission.

The Lunar South pole is especially interesting because of the lunar surface area that remains in shadow, is much larger than that at the North Pole. There could be a possibility of presence of water in permanently shadowed areas around it. In addition, South Pole region has craters that are cold traps and contain a fossil record of the early Solar System.

Vikram began its descent at 20:08, 6 September 2019 and was scheduled to land on the Moon at around 20:23. The descent and soft-landing were to be done by the on-board computers on Vikram, with mission control unable to make corrections.

The initial descent was considered within mission parameters, passing critical braking procedures as expected, but the lander's trajectory began to deviate at about 2.1 kilometres (1.3 mi; 6,900 ft) above the surface.The final telemetry readings during ISRO's live-stream show that Vikram's final vertical velocity was 58 m/s (210 km/h) at 330 meters above the surface which, according to some experts, is quite fast for a lunar landing. Initial reports suggesting a crash were confirmed by ISRO chairman K. Sivan, stating that "it must have been a hard landing".

ELECTRIC VEHICLES (EV's) FOR SUSTAINABLE AND GREENER FUTURE : - Ayush Singh

What are EV's?

Any vehicle that are propelled by an electric drivetrain or taking power from a rechargeable battery or a portable electrical energy source are called an electric vehicle.

Transportation is a major source of greenhouse gas emissions worldwide. Reducing greenhouse gas emission from transportation is a key to slow down climatic change and making sure that earth remains a healthy place to live.

Electric vehicles fight climatic change by powering transportation with electricity not fossil fuel. Driving an EV can cut fossil fuel emission in half or get rid of them entirely when renewable energy sources are used.

The electric vehicles are costlier than internal combustion engine cars initially but the overall running cost of an electric vehicle in long term is much cheaper than the traditional fossil fuel cars.

EV's are far more efficient than the internal combustion engine cars. An electric vehicle has efficiency of up to 80% whereas the most efficient internal combustion engine car has efficiency of just 38%. This is achieved because the EV's have less moving mechanical parts.

As the concern over the climate change increases, many automobile companies are shifting their priorities to design and production of electric vehicles.

The NITI Aayog had proposed the government of India that from 2030 only electric vehicle should be sold in India. Taking a step towards a sustainable energy.

ROTODYNE -NELITO DE SOUSA

In the late 1950's,intercity air travel was on rise.But while a trip from New York to Boston by airplane maight only take an hour,you'd still need to get toand from the airport.And in many congested cities,letting passengers skip over traffic to connect airports with their city centres.But helicopters were ultimately too inefficient to become a viable form of mass transport.The Rotodyne was going to change all that.Taking off from downtown rooftops and heliports,but flying faster,further,and more economically than any helicopter,the Rotodyne would be the quickest way to move from one city centre to next.

The Rotodyne might have looked like part helicopter, part plane, but it was actually neither. Where a helicopter uses engine power to spin a rotor blade to force air down and create lift, on a Rotodyne the large rotor wasn't directly driven by a motor. Instead it used a freely-spinning rotor called an autogyro. As air passed naturally through the rotor blades during flight, it caused thr rotor spin around like a pinwheel to create lift . The Rotodyne still had wings and a pair of turboprops much like an airplane. But in forward flight,the unpowered spinning rotor lifted more than half the aircraft's weight. To take off and land vertically and hover, tip jets at the end of each rotor blade would be used to spin up the Rotodyne's rotor. Once in forward flight, the tip jets were shut off and the rotor would once again spin freely. When the first Rotodyne prototype took to the skies, it could carry 40 passengers over 700km and reach speeds of over 300km/h, all while being able to land and take off on a space not much larger than the aircraft itself. And after 350 successful test flight, the Rotodyne proved to be safe and capable. But despite plans for an even larger more powerful version, a combination of noise concerns and lack of government support for research and development ultimately led to cancellation.

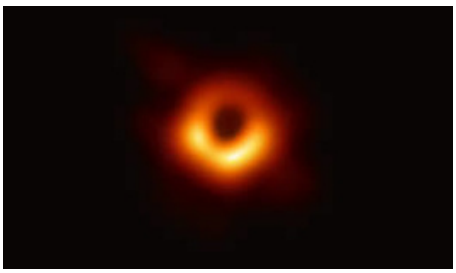
BLACKHOLE -Shivam Jaiswal

Released on 10 April 2019, finally the wait is over, the blurred image of a ring of bright orange shed light one of the biggest mysteries of our time. A miracle of technology, data-recording and timing has brought us our first glimpse of a concept that was previously the work of Science-Fiction. It took eight telescopes across the planet a week of observations to produce the black hole image that stunned the world last week, but it took scientists much longer to teach those instruments to work together.

In the two years since the data behind that image was gathered, the Event Horizon Telescope partnership behind the groundbreaking observations has already expanded, with more telescopes looking to join the fray soon. Each new instrument will sharpen scientists' images of their quarry, but each will also need to be outfitted carefully before it can join the collaboration.

Speculation about black holes dates to the early 1900s, when we discovered that light can be warped with fluctuations in gravity. This realization led physicists to theorize that there could be objects in space that have masses and densities so immense that even light, the fastest speed known to man, is trapped in its pull.

Albert Einstein's theory of relativity claims that as all this energy gets sucked in, it reaches a point at its centre where density reaches an infinite value, creating a gravitational pull nothing can resist. All light and objects are trapped here and can no longer be seen. They call this point the event horizon – the black hole at the centre of the orange loop.



The image will help astrophysicists sleep better at night knowing the theory they've been banking on for years is once again validated, and then some. One of the core pillars of science today, it would be devastating should we have found out Einstein was wrong. The great scientist's equations predicted there would be a perfect circle and we now have hard evidence.

During April 2017, the Event Horizon Telescope project turned eight satellites towards a point in space. Scientists were trying to take a photo that would confirm years of speculation and theorizing. They were taking a picture of the now famous black hole at the centre of the Virgo A galaxy Messier 87.

Beyond a good night's sleep, the image helps scientists to get a better estimate of the precise mass of the black hole. Before last week, they only had images of events around the hole to make guesses. The Virgo A black hole is estimated to be 6.5 billion times the mass of our sun. To put this in perspective, the sun is 330,000 times the mass of Earth. That's a lot of zeroes.

-SANKARSHANA B K

- UTTKARSHA GUPTA

- SHASHIMAN SHRESTHA

The journey is never ending.You just gotta take it all in and do what's right,continue to grow,continue to live in the moment and wait for the next issue to arrive.....

THE BOARD

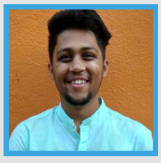
DR M R PRAKASH,
PRINCIPAL,
ACHARYA INSTITUTE OF TECHNOLOGY

DR. S K MAHARANA,
CHIEF ADVISOR
HEAD OF THE DEPARTMENT,
AERONAUTICAL ENGINEERING

MS. STEFFI THANGACHAN,
CHIEF EDITOR
PROFESSOR, DEPT OF AERONAUTICAL ENGINEERING

Vaishnavi Kandalgaonkar
Assistant Chief Editor

Dhananjay Kulkarni
Assistant Chief Editor



Shivam Jaiswal,
Sub-Editor

Uttkarsha Gupta,
Sub-Editor

Md Meeran Adnan,
Sub-Editor

PEO

PEO1: Employability: Graduates of the programme shall have the abilities required for employment in the core industries, academic fields, and multidisciplinary fields.

PEO2: Advancement: Graduates of the programme shall have professional advancement in the management, entrepreneurship and industries.

PEO3: Contribution: Graduates of the programme shall have creative ideas and the potential to support the aviation industry needs.

PEO4: Lifelong learning: Graduates of the programme shall have a never-ending desire to learn and be able to adapt new technology developments to the needs of changing industrial environments.

PSO

PSO1. The ability to apply aeronautical engineering fundamentals in the sphere of industries such as aerospace.

PSO2. The ability to translate numerical and experimental results for propulsion systems, structural components, flight vehicle aerodynamics, and control systems.

PSO3. The ability to advance in the chosen field.

PSO4. The ability to broaden the scope of learning to include socially relevant activities.