THE SCMC CHRONICLE

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A SPECIAL ISSUE ON SCIENCE AND TECHNOLOGY

EDITOR'S NOTE

It would hardly be possible to solve most of the world's problems without seeking help from science and technology. There are efforts worldwide to use technology in dealing with core issues in health, education, communication, and the environment. This issue of The SCMC Chronicle magazine contains a wide range of articles from space technology to electric vehicles and from artificial intelligence to technology biasedness.The year 2021 was marked by the advent of private enterprises launching satellites in space. 'Space War 2.0' throws light on our fascination with the universe and the space war it has led to. The article, 'DART mission to deflect asteroids and defend earth' gives details of the world's first planetary defence system. There are articles on space debris orbiting the earth and the 12-year mission of the spacecraft Lucy to explore Jupiter's Trojan asteroids.Electric vehicles are the need of the hour, and there are efforts worldwide to shift to that technology. India is no exception. An article on India's electric vehicle revolution discusses the challenges in introducing EVs. Another fascinating article explores the possibility of sunlight and air replacing fossil fuels.The likely misuse of technology is discussed in two articles - 'Can facial recognition technology be racist ?' and 'How cars are made to be safer for men than women drivers?'. There is a growing use of technology in medicine, artificial intelligence, and agriculture. The articles 'Are robots the solution to loneliness in the elderly?', 'Synthetic organs: novel hope for humanity', 'Bitcoin and the world economy,' 'GM seeds shackle farmers to seed corporations,' are some other interesting articles in this special issue of The SCMC Chronicle magazine on science and technology.

DR SAGAR GOKHALE
(EDITOR)

TABLE OF CONTENTS

03 APPLE DONS THE DIY TREND
BY NANDITA SINGH RATTAN

04 NASA LAUNCHES ITS DART MISSION
BY SOMALIKA CHHABRA

05 ARTIFICIAL ORGANS: THE NEW HOPE
BY PURNIMA PRIYADARSINI

06 GAN- TECH THAT CAN TRANSFORM ANIMATION
BY AKSHAT BHATNAGAR

07 CO2+WATER FROM AIR CAN FUEL FUTURE AIRPLANES!
BY SOPHIA NAVAGAONKAR

08 HOW BITCOIN HAS CHANGED THE GLOBAL ECONOMY
BY SAYANTA SENGUPTA

09 FB'S DATA PRIVACY IS STILL A MATTER OF CONCERN
BY KEERTHANA UNNI

10 INDIA'S EV CHALLENGE – PRICE, TECH AND INFRA
BY RUPASHREE RAVI

11 PARO- ROBOTIC BUDDY FOR LONELY ELDERS
BY KRISHNA BAROT

12 BIO-METRICS: HOW GOVTS CAN MISUSE TECHNOLOGY
BY SHRUTI MENON

13 SAMSUNG TO RECRUIT 1000 INDIAN ENGINEERS
BY RISHAB SENGUPTA

14 WHATSAPP'S CONFUSION HELPS TELEGRAM, SIGNAL
BY KRISHNA BAROT

15 INS VIKRAMADITYA: INDIA'S LARGEST WARSHIP
BY MAYURA GHATE

16 PEGASUS SPYWARE- WILL THE GOVT TELL THE TRUTH?
BY ABHISHEK ANAND

17 RARE EARTHS: A CHALLENGE TO INDIA'S EV TRANSITION
BY VIJAYHARDIK JOYSULA

18 METAVERSE - FOR BETTER OR FOR WORSE?
BY HANNAH SARASU JOHN

19 LUCY IN THE SKY WITH ASTEROIDS
BY YASHVI SHAH

20 DEBRIS AROUND EARTH IS A THREAT TO SPACE MISSIONS
BY AADHYA VENKATESH

21 THE FINALS FRONTIER: SEEKING OTHER PLANETS
BY ADARSH TRIPATHI

22 SPACE-TECH CAN HELP TACKLE CLIMATE CHANGE
BY AARYA HARESH TRIVED

23 TIKTOK AS A PLATFORM FOR THE WORKING CLASS
BY YUKTA PATWARDHAN

24 D – MAT - THE TECH THAT BOOSTED SHARE TRADING
BY ATHARVA AGASHE

25 INCENDIARY CONTENT WORKS, AND FACEBOOK KNOWS IT
BY PRISHITA DAS

26 CHILIKA - THE TAKE THAT TECHNOLOGY RESTORED
BY PRANJAL NANGARE

Apple dons the DIY trend

By Nandita Singh Rattan

DIY or self-servicing models have been a fast-growing trend in the past decade that has caught the fancy of many entrepreneurial big techs including Apple. Apple recently announced self servicing repair kits for its customers beginning with iPhone 12 and iPhone 13 to perform DIY repairs on the said handsets following a heavy rise in the technological development of tools, easy to use solutions has made it convenient and accessible for customers to engage directly with products and services.

And, the investments in such solutions in the recent years have helped validate the demand and excitement about the self-serve trend.

Though in 2019, Apple initiated a program that allowed independent repair shops to buy its parts, tools, and instruction manuals; this is for the first time ever that the company will be seen selling spare parts, manuals, and certain tools to its customers under the Self Service Repair Programme starting tentatively in early 2022.

Interestingly, this is courtesy of the pressure and toil of consumer groups over the years that urged Apple to give easier and ample access to genuine parts and user-handbooks. Today the tech-giant has approximately 2,800 Apple independent repair shops under its programme that enables Apple consumers to buy genuine parts directly from the shops to perform repairs on their own simply by following the user-manual using which customers can fix the most commonly occurring issues related to the display, battery, and camera.

Though this sounds like a great idea, it also makes for a great buzz around how Apple plans to implement its new policy surrounding this programme since the announcement doesn't say much about it. Programs like these can not only help cultivate a sense of closer relationship with the product and the brand itself, but also help save up on repairs but the extent of its plausibility is something that only time will tell.

According to Apple, customers will receive credit following their repair in exchange for old parts. But, more interestingly, if the company prices their parts and tools right, this could mean a great deal of saving money for its customers whether they choose to repair on their own or take it to a local technician. Apple says it will also eventually extend this capacity to Macs.

In the US Apple Self Service Repair will be made available early next year and will likely expand to more countries throughout 2022. Indian Apple users can expect to get their hands on this service in the latter half of next year.

NASA launches its DART Mission

The illustration of the potential DART spacecraft

By Somalika Chhabra

On November 24th 2021, NASA launched the Double Asteroid Redirection Test satellite, the world's first planetary defence system, from the Vandenberg US Space Force Base. It was launched on a Falcon 9 rocket by SpaceX.

The spacecraft is aiming towards Dimorphos, a tiny moonlet with a diameter of around 160 metres. At a speed of around 6.6 kilometres per second, or 24,000 kilometres per hour, the spaceship will smash with it. Between September 26 and October 1, 2022, the collision is likely to occur. The goal of the test is to see if the technology is capable of dealing with a true asteroid impact hazard in the future. According to NASA, DART's target asteroid is not now a threat to Earth. However, the asteroid is part of a group of objects known as Near-Earth Objects (NEOs), which come within 30 million miles of Earth.There are currently approximately 25,000 Near Earth Objects, with no known asteroid larger than 140 metres having a serious chance of colliding with Earth in the next 100 years.

Launch of DART from Vandenberg US Space Force Base in California

According to NASA, carrying out a real-world test on an asteroid with mostly unknown physical attributes is an essential next step to evaluate current models and enhance them further to address possibly hazardous asteroids in the future. Following the hit, the research team will use several telescopes on Earth to determine how much the asteroid has been deflected.

The DART mission also has advanced navigation and imaging instruments, notably the Light Italian CubeSat for Imaging of Asteroids (LICIACube) from the Italian Space Agency, which will monitor the crash and its aftermath.

460-foot asteroids impact once every 20,000 years, according to scientists. Asteroids six miles in diameter or larger, such as the one that struck Earth 66 million years ago and wiped out most life on the planet, including the dinosaurs, occur every 100-200 million years.

"The CubeSat will, hopefully, capture the most magnificent photograph of DART's collision and the ejecta plume ejected by the asteroid. That will be a genuinely historic and magnificent photograph "DART programme scientist Tom Statler stated.

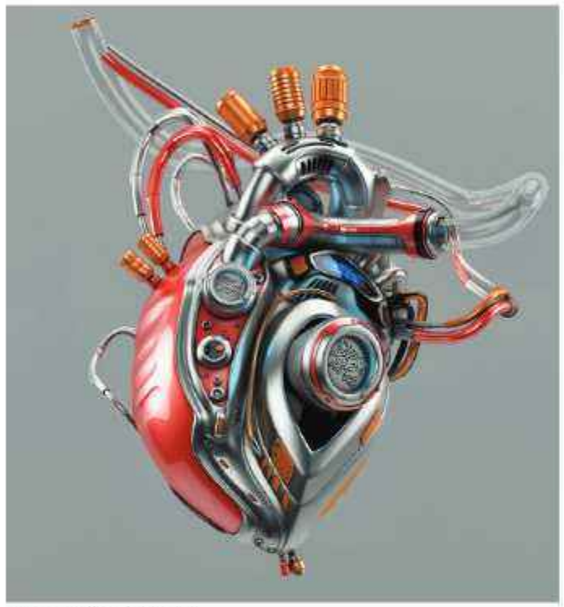
DART's total budget is $313.9 million over eight years, which comprises spacecraft development, launch vehicle development, and mission operations through late 2022.

Asteroid impacts are always deadly, but the size of the asteroid has a lot to do with it. Most asteroids will most certainly cause extinction events on Earth, similar to the one that occurred 66 million years ago when an asteroid with a diameter of 10 kilometres collided with the planet. Even more than its size, the speed of a comet can determine the magnitude of the impact it will have on Earth.

With many aspirations and expectations set, DART is a big step towards the future of the Earth's safety in space and paving way towards further developments into science and technology.

Artificial organs: the new hope

By Purnima Priyadarsini



An artifical heart

Artificial organs are considered as holy grails of bioengineering, it has very conveniently put life science and engineering together in a frame. The first-ever groundbreaking discovery regarding artificial organs can be traced back to 1982 when American medical researcher Robert Jarvik successfully installed a fully functioning artificial heart inside a human being.

Ever since then, novel mechanical factors and brand-new technologies have been helping the idea of artificial organ transplant advance further, science never stops developing. Numerous studies on stem cells, the fundamental life cell in the human body, have verified that harvesting of well-functioning mechanical organs in labs is very much possible now for the human organ transplantation process. Thanks to science, we can now create artificial organs via advanced technological marvel and 3D printing.

A Bengaluru based biotech startup called Pandorum Technologies made headlines in 2015 for becoming India's first firm to have developed a living tissue to execute the functions of a human liver.The ratio of people in need of organ transplantation to that of available organs is heavily imbalanced due to massive shortages of organs ready for implantations. Currently, in America, there are around 106,000 people on the waiting list for organ transplantations, in the UK demand for organs has increased by 162 per cent. And in India, while 2,20,000 people await a Kidney transplant only 15000 are fortunate enough to get successful implantation. This huge scarcity of transplantable organ shortage inches closer to getting solved with each advancement in artificial organ harvesting.

Many companies have cracked the code of cultivating artificial organs like Texas-based BiVACOR Total Artificial Heart (TAH), a device for patients undergoing end-stage failure of the heart and not qualified for a transplant. Also, 3-D printing and tissue engineering are growing rapidly, which means the goal now is to develop a tissue-based fully functioning artificial organ which could flawlessly imitate the role of real human organs like hormonal secretions and modelled growth as the individual grows.

The development of artificial organs may take a lot of time but it is still worth encouraging as they can be the best substitutes for medical research, especially for drug testing. Tissue-engineered skin products are grabbing attention in the cosmetic market as big makeup companies like L'Oreal in order to support cruelty-free animal testing are using these artificially manufactured skins to test make-up chemical reactions on skins. Artificial skins are blessings for victims of heavy burn marks on their bodies. And it also possesses the potential to provide the sensation of actual human touch to robots via a piezoelectric shell which can create and transmit stimuli similar to human beings throughout the robotic system.

The innovative crafting of an artificial womb named BioBag is said to have raised more optimistic outcomes for premature babies. The man made organ is shaped like a Ziploc and supported by tubes of amniotic fluid, oxygen, nutrients and blood moving in and out had successfully carried out nurturing of a fetal lamb. Premature babies with low percent of life expectancy could be saved through these lab- made wombs.

The progress in bioengineered organs seems to have no bound currently as it embarks on an evolutionary path paved by enthusiastic and optimistic researchers and scientists. And in the future artificial organs will not only focus on the forming of replicable human organs but also on technologies dealing with these synthetic body parts for therapeutic or preventive medicine. The hope is that with time the gap between human society and an era of affordable and dependable artificial organoids, printed or engineered for patients in need, will vanish.

GAN- tech that can transform animation

Face swap using Neural Net

By Akshat Bhatnagar

Synthetic Media is a piece of media, be it video, image, audio, text, that has either been modified or manipulated using artificial intelligence algorithms or has entirely been created using artificial intelligence algorithms. This includes Deepfake videos, speech synthesis, style transfer, photo restoration, colourisation, text generation, voice cloning, music generation, etc.

In the past few years, Synthetic Media has gotten very popular. This is because the technology that is used to create synthetic media has progressed almost exponentially in recent years. The tools required to make this kind of media have become so accessible that anyone with a decently modern computer or even a smartphone can easily create synthetic media with little to no technical knowledge required. It is not just that this technology has become more accessible but it has also become much more realistic and convincing at the same time.

One of the most significant innovations in this technology came in 2014, when Ian Goodfellow, a deep learning researcher, released a new machine learning system called Generative Adversarial Networks or GAN. This completely changed how these algorithms worked and how they were designed. Ever since this point, progress in this field has constantly and consistently been advancing.

This technology is now nearing maturity, and its capabilities are growing day by day, but we are yet to use this technology meaningfully in any large scale applications.

It is time that we scale up and utilise this groundbreaking technology to our advantage in the industry. Complex Tasks that usually take several months to complete even with industry-leading hardware and a massive team of animators can be completed in mere minutes using this technology.

Artists and Animators can use this technology to do all the repetitive and monotonous tasks while devoting all of their time and power towards the creative part of the process. As a downside of this, mainstream adoption of this technology would also lead people in the industry to lose their jobs as they become redundant.

However, it will also help remove barriers to entry into the media industry, leading to many independent animators and artists coming into the industry.

Many novice animators are often unable to pursue their interests in this field because of a lack of high-end equipment and because of the fact that they would have to do each task of the process themselves since they do not have a proper team of artists working with/for them. This technology would allow them to pursue their passion and show the world their creativity by removing these requirements.

In conclusion, I believe that this is a really promising technology that has the potential to completely change the media industry as we know it. All that is left is to implement it.

CO2+water from air can fuel future airplanes!

Just 0.5% of the area of the Sahara Desert would be enough to produce aviation fuel and fulfil its global demand.

By Sophia Navagaonkar

Scientists have now found a way to fuel airplanes by using carbon dioxide and water absorbed from the air. This is a major development for the industry as calls to take action against climate change are increasing.

This new technology was just published in a study in the scientific journal "Nature", by Dr. Aldo Steinfield of ETH Zurich and his colleagues. It talks of a method that can replace fossil fuels, by literally plucking this new fuel out of thin air. Much like the process of photosynthesis, where plants take in carbon dioxide, water and sunlight to produce energy, Dr. Steinfield has come up with a process that uses these very materials to fuel airplanes.

The process takes place in three stages. First, a device absorbs carbon dioxide and water from the atmosphere. Then, concentrated sunlight is used to heat a material called cerium oxide. By doing this, cerium oxide will react with both carbon dioxide and water which were absorbed by the device.

The products of reacting with these two materials are carbon monoxide and hydrogen respectively. In both cases, oxygen is formed as a by-product which is let out into the atmosphere. This resultant mixture of carbon monoxide and hydrogen is called "syngas", which is a widely used raw material for making other things.

The last stage is to turn this syngas into organic molecules. At this point, it can be turned into kerosene, methanol or other hydrocarbons. This technology of producing carbon-neutral fuels is at this point sufficiently developed for use in industrial applications.

In order to totally substitute aviation fuel using this technology, about 45,000 sq kms of land would be required. Deserts would be the most suitable sites of production due to their higher availability of solar resources. Basically, just less than one percent of the world's arid land could be enough to meet the global demand for aviation fuel.

Though Dr. Steinfield has demonstrated a credible and fairly scalable way of making aviation carbon-neutral, the initial investment costs are high and it would require major policy support for market entry.

An Air Europa Airplane

Air travel is in dire need of green technology, as it releases more carbon dioxide per kilometre than any of the other modes of transport. The other sectors are already taking measures to reduce their emissions but there has been no such significant development for aviation. In fact, emissions caused due to air travel are growing exponentially, with more people flying more and more often.

One thing that makes the aviation industry stand apart though, is that it is best equipped to pay for its own emission reductions and newer technology.

With proper investment and support, the industry can become more environment friendly, and help fight climate change.

How Bitcoin has changed the global economy

Bitcoins are slowly and gradually impacting the landscape of global economy and the way transactions are made

By Sayanta Sengupta

Bitcoin has therefore gained massive popularity among the users and people have started bestowing their faith and trust in it as a medium of exchange. Even industries and businesses have started to accept bitcoin as a mode of exchange and have bestowed a lot of faith on them.

Several industry leaders and founders/CEOs of companies have heaped praise on Bitcoin.

Virgin Founder Richard Branson is a huge admirer of Bitcoin and has credited it for helping people make fortunes.

"Well, I think it is working. There may be other currencies like it that may be even better.But in the meantime, there's a big industry around Bitcoin. — People have made fortunesoff Bitcoin; some have lost money. It is volatile, but people make money off of volatility too." said Richard Branson to Bloomberg.Because of the decentralized nature of Bitcoin, it has caused a lot of fear to the banks and governments as it might essentially disrupt the services of banks as there is always a fear of the banks crashing. This fear is eliminated when it comes to Bitcoin and this has been a major cause of concern for the banks and the governments.

The lack of intermediaries and the circumventing of capital controls imposed by governments has made governments wary of Bitcoin.

Nefarious and notorious activities can also get freebies when they use bitcoins and this has also been another reason why governments of many countries have not legalized this cryptocurrency.

Bitcoin has also largely impacted the digital wing of the economy and has made digital transactions quite smooth and hassle-free. It provides a lot of security to the data of the users and the transactions of the users. International transfer of funds becomes quite easy with bitcoin and people even without bank accounts can operate bitcoins quite easily. Bitcoin allows such people (mostly people from under-developed countries and weak economies) to engage in economic transactions from people across the globe. The transactions with bitcoin also take minimal time and there is a very little transaction fee that is charged.

Bitcoin investments have both their pros and cons but they can change the landscape of the way businesses grow and the way people make investments and make payments. Even with the volatility of Bitcoin, users have trusted it and have made it a very impactful cryptocurrency and undoubtedly, the world's leading cryptocurrency. And in the coming years, its vast impact is only going to increase.

FB's data privacy is still a matter of concern

By Keerthana Unni

Facebook, at multiple points since the start of the company, has faced cases of privacy concerns. They were mostly sued for giving access to their user's personal data to other companies.

On the 17th of March 2018, news organizations like the New York Times and The Guardian released articles about Facebook's most recent scandal with data privacy. The issue involved a data marketing company by the name of Cambridge Analytica who had managed to get their hands on and extract the personal information of about 87 million profiles from Facebook.

This showed how Facebook had failed to protect the privacy and personal information of its users. The case got complicated when it was known that the Analytica company worked for Donald Trump and the private information they had from Facebook was used to rig and influence the elections. This hugely affected Facebook not only because of the accusations they were facing but also the fact that their users had decreased hugely as people were deleting their accounts to protect their private details and themselves. After a year's time of going about with the negotiations and case, Facebook finally agreed to pay about 6.5 lakh US dollars as compensation for their involvement in the Cambridge Analytica scandal.

There were two smaller cases in February and December of 2018 both of which Facebook was found guilty of. In February the social media company was found guilty of violating privacy laws in the German and Belgian courts. They had claimed a bug led to sending its user's engagement texts based on their phone numbers that they had given to the company for two-factor authentication. In December of the same year 6.8 million photos of the social media company's users, as well as details from their internal emails, were released due to what Facebook claimed to be an API bug.

A much earlier accusation that they faced on the topic of breach of privacy was the scandal in 2015. They were held accountable for gathering data from calls and SMS of its users via the design of its Android app. They were also sued for giving certain other companies access to their user's private data as revealed from the company's internal emails.

In 2019, another bunch of Facebook's internal emails were leaked where it was revealed that the company had planned to access the location of its Android users to give them products available at that place at that time.

To avoid further such invasion of privacy problems the Federal Trade Commission introduced the new 20 year settlement order to overview and keep track of the company's decisions on privacy matters as well as to make sure there is transparency in the process. This new order makes sure that if such an issue were to occur in the future it would completely hold the company responsible at higher levels. The order also involved the inclusion of an independent privacy committee of Facebook thus taking away the CEO Mark Zuckerberg's authority over the decisions made on the privacy of its users.

India's EV challenge – price, tech and infra

By Rupashree Ravi

Electric vehicles are making news in recent times for being cost effective and environment friendly. However, widespread acceptance and a shift from fuel based vehicles will take time.

Electric vehicles (EVs) have been around for a long time since the 1900s. But they have been slow to take over the roads in many countries, including India. Recently, they have emerged as an area of focus for the government and other stakeholders as consumers across the country are becoming more aware and interested in electric vehicles.

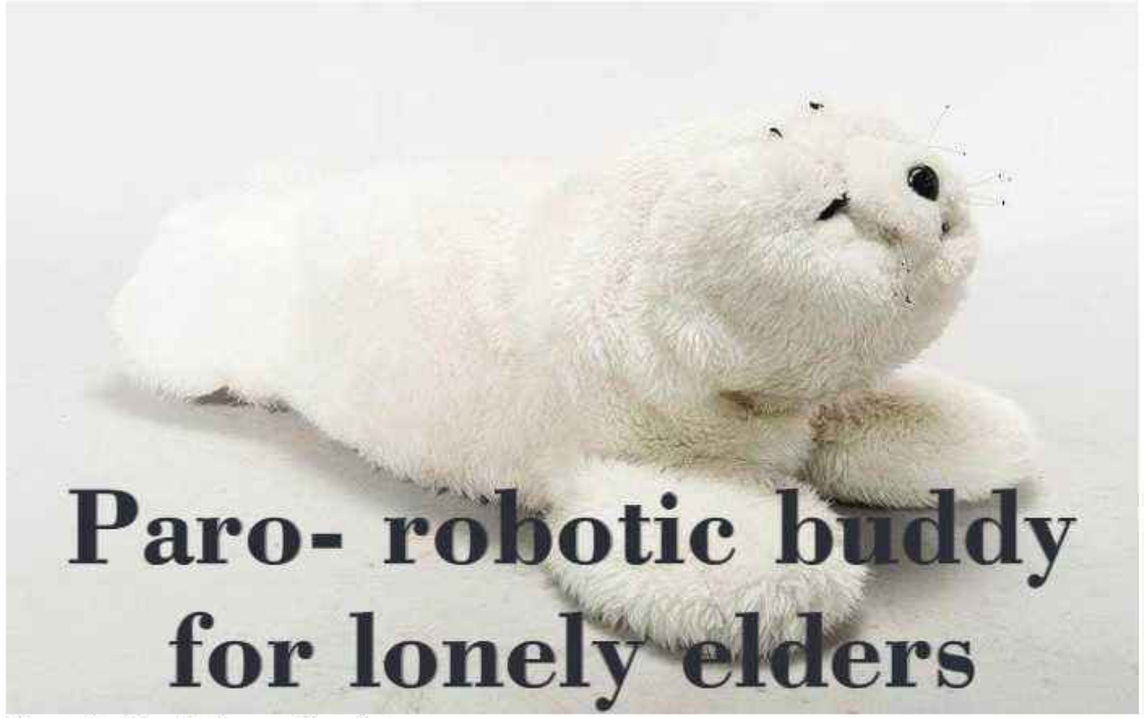
An Electric Vehicle is a battery powered vehicle that operates on an electric motor instead of an internal combustion engine or a fuel tank. It has low running costs due to fewer moving parts, cutting down on fuel emissions. EVs have emerged as a means of alternative transport in several countries across the world. Considering India's rising urbanization, economic growth, travel demand and energy security, it is time for EVs to penetrate into the Indian market. Innovative pricing, appropriate technology and support infrastructure are necessary. But these come with several challenges.

Lack of support from central as well as state governments discourages both consumers and manufacturers of electric vehicles. In 2018, Niti Aayog had urged state governments to frame policies for the promotion of electric vehicles. At present, only 14 Indian states have either come up with draft policies or have notified one. Moreover, heavy import duties levied on electric vehicles such as Tesla makes it out of reach for consumers in India. The company has repeatedly asked the government to slash its high import tax, but no such step has been taken.

There is also a need for a robust and accessible network of charging infrastructure in the country for these EVs. Planning for parking spots at multiple locations along with ubiquitous low-tension (LT) electricity distribution infrastructure must be implemented properly. So far, there are less than 2,000 charging stations in India, which must be expanded for electric vehicles to boom in the country. Meanwhile, the record prices of petrol and diesel at present has raised concerns for motorists and vehicle owners across the country, paving the way for serious discussions on electric vehicles.

Despite these setbacks, India has made huge progress to raise awareness about electric vehicles. At the UN Climate Change Conference in Glasgow, India pledged to support the global EV30@30 campaign, which plans to have 30 per cent new vehicle sales be electric by 2030. The central government also launched a web portal, E-Amrit, for information regarding electric vehicles such as purchase, investment opportunities, policies and subsidies.

Further, Indian car manufacturers such as Tata Motors have entered the EV segment with its Nexon EV and Tiago EV. Mahindra's eKUV100 and eXUV300 are expected to launch by next year, while Maruti plans to sell EVs only after 2025. Other manufacturers are waiting for the right time to enter the fray.



Paro- robotic buddy for lonely elders

Paro - the friendly therapeutic robot

By Krishna Barot

The term "loneliness" is heard of more often these days. Despite the high-speed connections today, more and more people experience bouts of loneliness. Amongst the millions of people resides a population that has long combatted with this emotion.

A study conducted by the World Health Organization (WHO) predicts that 1 in 6 people will be above the age of 60 by 2030. Even today the elderly population is rapidly rising in countries like China, Japan, Italy and the US. Along with issues like chronic illnesses, a large population of the elderly fight with loneliness - with reasons ranging from living alone, losing family or friends or retirement.

As the best medicine for loneliness is some form of interaction, a quirky solution is being implemented for the elderly. Befriending robots to combat loneliness.

Meet Paro, a therapeutic robot developed by Japanese company AIST. Paro is found in hospitals and elderly care facilities, where it provides company and cuddles for the elderly. Responding to touch and sound, if Paro is stroked, it will try replicating the behaviour to be stroked again. Resembling a baby harp seal, Paro has found immense success amongst residents of Gunther Village, an old-age care facility in rural Queensland, Australia.

Paro's popularity is attributed to its unconditional love, nuzzles and calming effect on residents. Not only did the elderly bond with Paro, but also began socializing with their fellow residents and forging bonds. And Paro is not the sole robot out there.

Various studies throughout the world have been conducted to explore this possibility - with different robots. Humanoid robots, therapeutics robots to telepresence robots - all aimed to form human-like interactions with people - have been used to determine whether technology can play a pivotal role in tackling a human emotional response.

While a final verdict is yet unheard of, our friendly robots have evoked mixed responses amongst people. Robots have certain capabilities humans lack - not getting tired, not taking offence, capable of repeating something continuously - amongst several qualities. What they do lack is emotional intelligence and expressing kinaesthetic feelings - which are qualities of a human.

Researchers have determined that robots can encourage responses of attachment, social integration and ease amongst

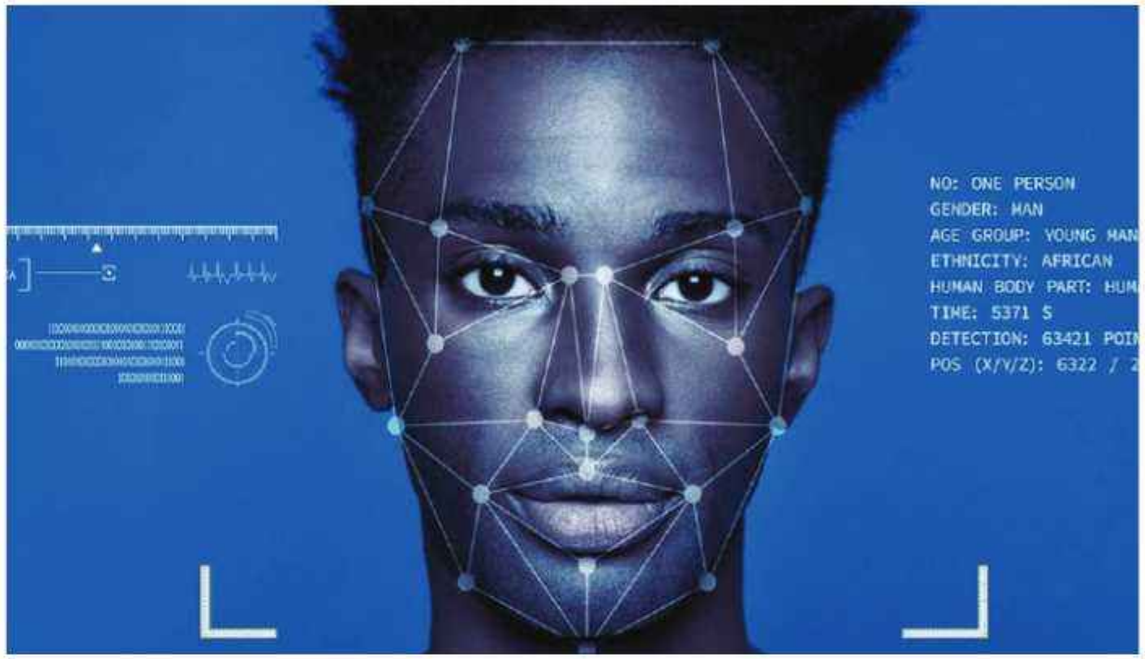
Paro cuddles up to an elderly person

the elderly. Different robots can aid the elderly with different needs, be it somebody with dementia or a person suffering from a physical disability. At a time when cracks have been noticed in aged-care facilities, robots can lend a helping hand in making life easier for the elderly and their caretakers.

On the downside, owning an expensive robot is for the privileged few - whilst the others have to seek other avenues to tackle loneliness. A major concern for researchers is the possibility of the elderly cutting off interactions with humans for the convenience of a robot. This could threaten the very aim of the robot's role - and is researched by experts.

Despite the concerns, will robots soon become an essential companion for the elderly - and perhaps younger populations too? Possibly.

Bio-metrics: how govts can misuse technology



By Shruti Menon

It's the stuff of sci-fi dreams: we've always wanted technology to evolve and grow up to be more and more capable, but experts are not so sure about whether one of the latest ways in which machines are learning is leading to them going astray. Artificial intelligence and facial recognition — this brainchild of humanity needs to be reeled in and checked, as claims about this technology perpetuating long-held biases of its creators are on the rise.

One prominent study that calls out bias embedded in facial recognition systems is MIT's Gendershades programme. It proved that facial recognition technology by prominent companies such as IBM, Microsoft and Face++, while having shown a relatively high accuracy in facial recognition overall, faltered when it came to recognising certain genders and races. It seems surprising that something non-human can retain biases that plague human society, but the answer to this lies in the creation of these programmes.

Simply put, facial recognition technology is software that detects and classifies a person's face. It works through the process of machine learning, by going through a sample data set that is fed to the programme, and the programme is told what pictures are those of human faces, and what aren't. The larger the data set, the better it gets at recognising faces. This is where we run into our first possible reason for bias in the system— the sample dataset used to teach the software to recognise human faces, could have been fed a higher number of white, cisgender, male faces that obviously leads to the system recognising those faces better. This speaks to a larger issue, a pervasive one that could trip up how effectively the software identifies minority groups at every step of the process: are those building the technology even aware of their biases, or how their oversight could seep into the technology?

Your smartphone has it, your photos app has it, and now your government wants it. Here, in India, the government seems to be enamoured by the promise facial recognition holds, having approved a plan last year, in 2020, to set up the National Automated Facial Recognition System. The issue with this, however, is that facial recognition technology in the hands of the government is poised to be a huge violation of privacy and digital rights — something that digital rights advocates have been shouting themselves hoarse about for the past few years. A chilling use of this technology is in China, where facial recognition software has been used to racially profile and surveille minorities like the Uighur Muslims living there. In the hands of the Indian government, which has in the past shown a majoritarian bias, against Muslims and those of lower castes, it cannot be said how justly this technology will be put to use.

If facial recognition is to be a type of technology that companies and governments want to invest in, the best course of action from here on, would be to ensure transparency — in the making of the software, the data sets used to prep it, and in how it is to be used, and for what purpose.

Samsung to recruit 1000 Indian engineers

By Rishab Sengupta

The Indian division of South Korean tech giant Samsung has recently announced that they are planning to hire over 1000 engineers across various departments from IITs and other major engineering colleges in India. It is good news for Indian engineering students as many of them will get the chance to start off their careers with one of the biggest tech companies in the world.

Sameer Wadhawan, Samsung India's Head of Human Resources, said in a statement to Business Insider that the company would be hiring engineers across various specialisations and departments, including computer science, electrical engineering, communications, mathematics and computing, and information technology.

"As businesses continue to expand and grow, we will be hiring 1000 plus engineers for our R&D [research and development] centres from top-notch engineering colleges. These engineers will work at our R&D centres located in Bangalore, Delhi and Noida," he said.

According to reports, Samsung intends to recruit 260 engineers from IITs. Recruiters from the company have recently visited the two new IITs in Goa and Jodhpur, and Kharagpur, Roorkee, Palakkad, Guwahati, Indore, Gandhinagar, and Varanasi.

While roughly a quarter of the recruits will come from IITs, the rest will be hired from other top-tier engineering colleges in the country such as BITS Pilani and NITs. Two hundred fifty pre-placement offers have already been extended to engineers across these institutions. "Hiring through PPOs helps both the employer and the employee get a better perspective on job fitment and satisfaction," stated Mr. Wadhawan.

The new recruits, who will be recruited in 2022, will be put to work in various fields of R&D, including AI, machine learning, Internet of Things, very large scale integration, networks, etc. They will be focused on developing creative solutions for India-specific issues.

Samsung has been active in India for over 25 years. In that period they have managed to massively expand their research and development sector, with the Bengaluru centre having filed over 7500 global patents and over 3500 patents in India so far. Samsung's R&D centres in India are some of their largest outside of Korea, and they show no signs of slowing growth.

Samsung's last major recruitment programme in India was in 2019 when they recruited 1200 engineers from colleges across the country. Recruitment efforts were stifled in 2020 due to delays and restrictions imposed by the pandemic. Many of the recruits hired in 2019 were allowed to join in 2020 due to these delays and some even in 2021.

Sameer Wadhawan, Samsung India's Head of Human Resources.

WhatsApp's confusion helps Telegram, Signal

By Shirin Pajnoo

"WhatsApp is updating its terms and privacy policy. Tap to Agree."

You, I and millions of users around the world received this message in January 2021. Apart from sparking confusion and controversies, it also opened gates of success for other messaging apps like Signal and Telegram.

WhatsApp, the number one messaging application in the world, faced public outrage after they updated their terms and privacy policy. The application is end-to-end encrypted, which means the messages can be read only by the sender and receiver. These messages are not stored on the Facebook server. The new privacy policy enabled the app's parent company to access the messages. The users were asked to accept the change before February 8; however, the deadline was changed to May 15 after facing huge criticism.

WhatsApp issued a confirmation stating that the updated privacy policy was intended to alert users that some business accounts on the app would be using Facebook servers to store messages with consumers, for business purposes only. Facebook added that, these messages wouldn't be accessed for any type of ad targeting. Furthermore, they mentioned that the private messages between friends and family members will remain end-to-end encrypted.

The confusion sparked when the language and the pop-up concerned users that Facebook would now access their private messages. WhatsApp has now erased the deadline. However, users can still accept the update. The users who do not want to accept the update will have fewer features.

Amidst all the confusion, two rival messaging companies, Signal and Telegram capitalized on the chaos. They took to Twitter to criticize the new privacy policy and added extra privacy features to have an upper-hand over WhatsApp.

Mobile apps analytics firm Sensor Tower has reported that from January to April 2021, Signal witnessed its first-time downloads growing 1,192 percent year-over-year (YoY) to 64.4 million worldwide, while Telegram's installations spiked 98 percent YoY to over 161 million. It was further seen that WhatsApp downloads all over the world have dropped to 43% from January to April.

"Signal is an open-source app unlike WhatsApp which is very much under a corporate set-up. When industrialist interests seep in, security and promised encryption becomes murky: as has been known and proven in the public domain over and over. As a media person working in Kashmir, it is imperative to ensure your security and safety, when the surveillance is massive. Hence, Signal if I have to talk to a source, and WhatsApp for regular vanilla chats," says Rounak Bhat, an alumnus of SCMC, Pune.

A survey reveals that one in five respondents prefer Telegram over WhatsApp because they find it more secure and private. The features in telegram are vast; ranging from creating multiple channels, allowing 200+ users in a single group, sharing of large-size files and watching movies.

When compared with WhatsApp, Signal has privacy features that lack on the former messaging application. Features like incognito keyboard, screen privacy, group invitation privacy etc. In Telegram, the end-to-end encryption mode has to be enabled. Otherwise, Telegram uses Client-Server encryption.

Every day, users are becoming more aware and apprehensive of the privacy policies of messaging apps. The miscommunication of policies has enabled Telegram and Signal to establish a strong base. The surveys and statistics paint a clear picture, but the larger question is about our data privacy in these times of high datafication.

INS Vikramaditya: India's largest warship

By Mayura Ghate

INS Vikramaditya is the Indian Navy's most significant short take-off but assisted recovery (STOBAR) aircraft carrier. This warship is transformed from the Russian Navy's decommissioned Admiral Gorchakov vertical take-off and landing (VTOL) missile cruiser carrier. This missile was custom-built in service in November 2013.

This warship is refurbished with entirely new impulsion systems, hull sections, sensors, and flight deck. The container can carry more than 30 long-range multi-role fighters with anti-ship missiles, air-to-air missiles, guided bombs, and a rocket. The onboard aircraft include MiG 29/ Sea Harrier combat aircraft, Kamov 28 naval helicopters, Kamov 31 radar picket Airborne Early Warning (AEW) helicopter, ALH-Dhruv, Chetak and Sea King helicopter

This floating airfield has an overall length of 284 meters and a maximum beam of 60 meters. It is like stretching as much as three football fields put together. INS Vikramaditya has 22 decks and 2,500 compartments, of which 1,750 were completely re-built and carries around 1,600 personnel. INS Vikramaditya can sail at a maximum speed of more than 30k and endure up to 45 days at sea.

This efficient ship is equipped with light deck lighting systems, refrigerator plants, new AC plants, 30m wide arrester gears, and much more equipment's are made available. This warship is so high that it does not allow any foreign ship interference in the Indian waters. It has the capacity to gunshot any aircraft from which tries to invade the Indian space. These high-quality features in the warship set it different and unique in many senses.

The Admiral Gorshkov is a modified Kiev-class aircraft carrier, initially known as Baku, commissioned in 1987. Admiral Gorshkov was inactivated in 1995 for being too expensive to operate. India purchased it from Russia in 2013 and was renamed in honor of Vikramaditya, the legendary emperor.

India and Russia reached an agreement on the final delivery and entire cost of the upgraded warship in December 2009. The deal was finalized at $2.33bn in 2010. The first sea trials began in June 2012. But, the delivery was delayed due to defects encountered in boilers and the need to replace additional electrical cables.

The modernized carrier completed final sea trials in the White Sea in July 2013 and aviation trials in November 2013. The INS Vikramaditya test-fired close-in weapon system (CIWS) and Barak 8 long-range air-defense system (LR-SAM) in March 2017.

The INS Vikramaditya has proved the capability of the Indian Navy towards the safety of its nation. If such inventions keep taking place in India, then I think no other country can stop making India the upcoming superpower soon. By making INS Vikramaditya warships, the Indian Navy has set an excellent example for future generations to look forward to joining the Navy. With the hope of safeguarding the Indian Ocean, this inspiring warship will seal the waters of glory.

Pegasus spyware- will the govt tell the truth?

By Abhishek Anand

The abuse of technology and monitoring of "potential threats" has raised questions about a free country and media. The recent revelations of governments spying on people who can threaten them have taken the internet by storm. The list of people being spied on consists of more than half a lakh people from across the globe.

Pegasus is a spyware designed by the Israeli technology firm named NSO Group. The functioning of the spyware is such that it can remotely be installed and can also be used to extract data from phones. These revelations have also shown how this spyware can penetrate through WhatsApp's encryption and the advanced security of Apple's iOS.

After getting installed, Pegasus can gather information from a personal computer, laptop, mobile phone, or tablet. The remote user can read emails and text messages, track locations and calls, access notes, calendar, and browser history. They can also switch on the camera and mic of the phone while operating on the device. In short, the user can have access to all the device's controls, including gathering information from all applications like Gmail, Telegram, WhatsApp, Skype, and others.The NSO group have maintained their stand by declining all the allegations. In a statement, they said that the company sells Pegasus only to "vetted governments" to help them combat terrorism by providing the means of "lawful interception."

The spyware achieved global prominence in August 2016 after a 'failed' attempt at hacking the phone of UAE human rights' activist Ahmed Mansoor. The hacking attempt was detected when he received text messages with a few web links that promised "new secrets" about brutality in the UAE prisons. At that time, Citizen Lab ran tests and found that his phone would have been compromised had Mansoor clicked on these links. The New York Times and Times of Israel reported that UAE has allegedly been using Pegasus since 2013.

In 2021, Forbidden Stories and 16 other international media organizations revealed governments using Pegasus spyware against their citizens.

The expose revealed that around 1,000 phone numbers belonged to India and were put on the list of potential targets. The list included names of opposition leaders like Rahul Gandhi and Abhishek Banerjee, around 40 journalists, and student activists.

Many experts believe that the government used this spyware to protect leaders in power and monitor the opposition and investigative journalists in the media. They have also brought how the government has unlawfully intercepted phones by completely ignoring the IT Act. The government has denied all these allegations.

When asked about the interventions, a source from the Ministry of External Affairs said, "Well, it's a gross invasion of privacy, of course. States often treat privacy as separate and direct their energies towards corporates and their abuse of it."

In a generation that promotes data privacy, it would be interesting to see how the Pegasus scandal would be addressed.

Rare Earths: a challenge to India's EV transition

By Vijayhardik Joysula

It is almost the end of an era. The internal combustion engine will soon be a relic of the bygone past. Climate consciousness is pushing governments and the industry to adopt alternative means to power vehicles. The global consensus is that the future is electric!

India hopped on to the electric vehicle (EV) bandwagon in 2012. The Department of Heavy Industry, a body within the Ministry of Heavy Industries and Public Enterprises, unveiled the National Electric Mobility Mission Plan 2020 (NEMMP). Its stated goal was to help India emerge as a leader in the EV market.

The goal started to materialise after the launch of the FAME-II scheme under the NEMMP. An approved outlay of Rs 10,000 crore under the scheme provided the financial impetus to the industry. It helped in creating a market for electric vehicles. Consequentially, a total of 1,44,623 EVs operate on Indian roads.

These EVs run on permanent magnet-based motors. Over 80 percent of EVs sold in 2019 used permanent magnet-based motors. Rare earth elements (REEs) such as neodymium, dysprosium, praseodymium and terbium form essential components of magnet-based motors. Their unique electro-magnetic, heat-resistant and phosphorous properties are a reason for their extensive use in the manufacture of electronic gadgets and devices.

The nascent EV industry in India is yet to reach its potential. The non-availability of raw materials for the industry makes it vulnerable to supply chain shocks.

It is an issue currently faced by the domestic automobile manufacturing units in India. Due to the economic downturn in China and the post-pandemic geopolitical realignment, semiconductor chips are in short supply. These events resulted in the disruption of the supply chain of rare earth elements.

These supply chains controlled by China account for 90 percent of the global trade of REEs. Having the highest global reserves of REEs strengthens this position. The global dependency on China for REEs puts it in a position to weaponize trade. Documented instances of China weaponising its dominant trade position in REEs make it a real threat.

The REEs acquire greater importance in the manufacture of electric vehicles. It places an increased risk on Indian manufacturers as they import refined REEs from China.

The situation worsened as China has multiple exclusive mining contracts across the world. It is a safeguard against depleting its existing reserves.In contrast to China, India does not leverage the reserves it possesses. India imports REEs from China despite having the fifth-largest deposit of REEs. A lack of incentive coupled with bad policy stymied the utilisation of these resources.

Lack of investment translates to outdated technologies. It impacts the extraction processes of the metals. REEs are rarely found in elemental forms. They need to be processed into pure metal form before manufacturing. It requires huge capital and skilled labour and is environmentally damaging.

These challenges posed by REEs do not address the lithium concern. Yet, both share similar challenges to make India's transition to EVs a success. The China snag. And a cost and policy conundrum!

Metaverse - for better or for worse?

By Hannah Sarasu John

The word 'metaverse' continues to be clouded in plenty of discussion post Facebook's announcement to rebrand the parent company to Meta on 28th October 2021 at the annual Connect conference. The announcement encourages the reimagining of the internet through the metaverse, a proposed online three-dimensional virtual space created with artificial intelligence, augmented reality, and virtual reality.

Initially, the term 'Metaverse' was coined by Neal Stephenson in his book, 'Snow Crash,' was a 1992 dystopian concept within the science fiction novel. The term 'metaverse' combines 'Meta' (literally meaning 'beyond') and 'universe,' which refers to the replacement of reality with a digital universe. The metaverse would allow users to use digital avatars for a more 'physical' online presence through virtual reality Oculus headsets. The idea of the immersive internet fast changes the concepts of the real and the digital.

According to Mark Zuckerberg, the primary function of the metaverse would allow users to enter the cyberspace for social interactions in both entertainment and networking settings as well as the possibility to conduct professional meetings online. With the announcement of the Meta rebrand at the company's conference, he has also stated that this shift would create nearly 10,000 jobs within the European Union as part of the expansion. Meta (formerly Facebook) now joins companies such as Roblox, Nvidia, Microsoft, and gaming companies such as Epic Games, the developer of Fortnite, in their investment in the metaverse. Meta has already spent billions of dollars in investment for their Reality Labs Divisions that work specifically for AI, VR, and AR.

Observers have also considered the timing of the rebrand curious, considering the company's recent controversies and the backlash it is currently facing from the public and essential stakeholders. Facebook has been dealing with problems including the spread of disinformation, inadequate action against problematic rhetoric, fuelling political polarization, and harm towards users and their data privacy. According to the internal company communications of its employees, there is also worry about the lack of regulation in this technologically unprecedented grey area. The responsibility of preventing a dystopian reality and its regulation must be taken into consideration to create safe precedents for this unregulated space.

Facebook's shift from a social media platform to a social metaverse has got both supporters and critics vocal in terms of what this means for the internet of tomorrow. Although the extended timeline is ten years or more for the full realization of the metaverse, the parent company's shift from Facebook to Meta, has made the tomorrow of the internet seem just a little bit closer today.

Lucy in the sky with asteroids

An Atlas V rocket with the Lucy spacecraft aboard before launch at the Vertical Integration Facility at Cape Canaveral Space Force Station in Florida.

By Yashvi Shah

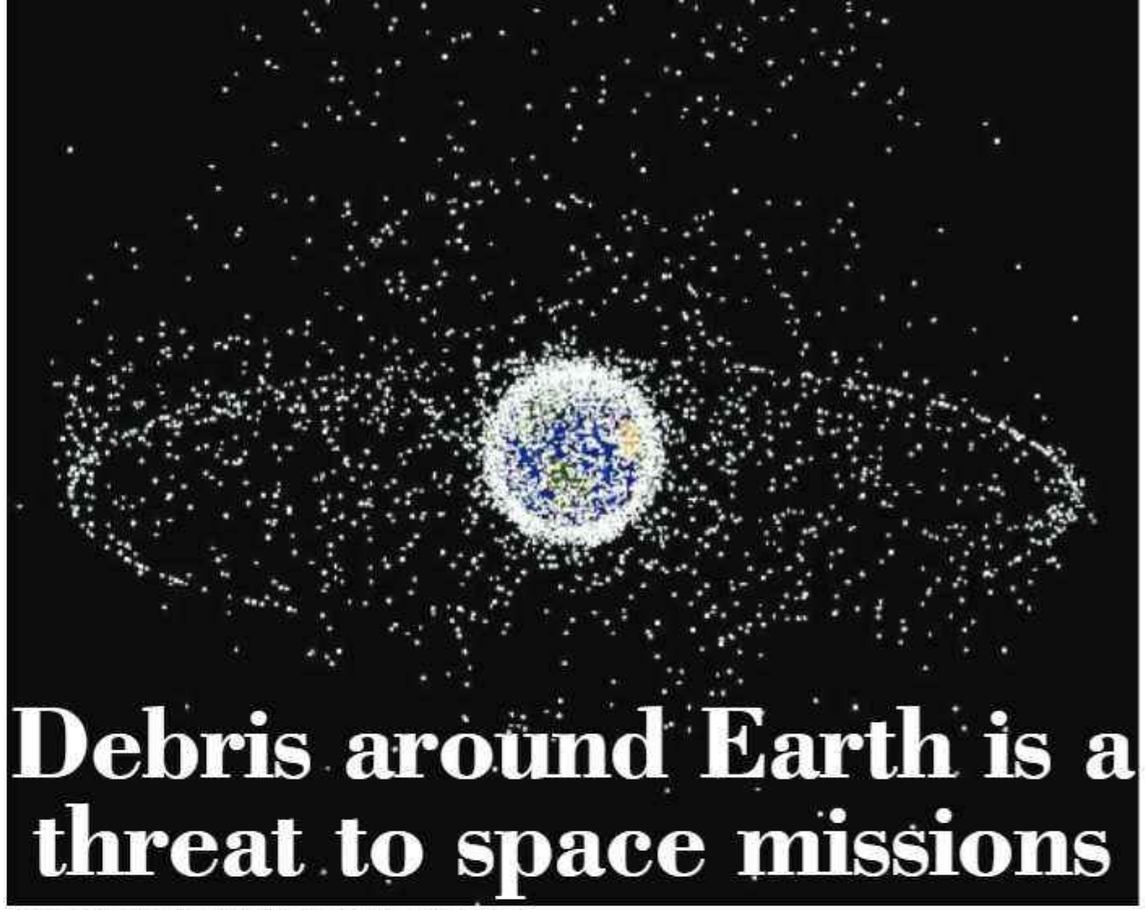
On October 16, 2021, NASA launched Lucy, a 12-year mission to explore Jupiter's Trojan asteroids. The mission aims at providing new insights into planetary origins and the solar system's formation.

According to NASA, this mission will be the first space mission to study the Trojans. Named after an ancient fossil of a pre-human ancestor that is roughly 3.2 million years old, Lucy will become the first solar-powered spacecraft to travel to the outer solar system. It will also observe more asteroids than any probe before it - eight in total.

In its 12-year voyage, Lucy will travel to eight different asteroids, including a Main Belt asteroid and seven Trojan asteroids. Lucy's complex journey will take the mission to both Trojan clusters, giving the first close-up picture of all three major body types in the swarms. According to Nasa, no other space mission has ever gone to as many distinct destinations in different orbits around the sun. Lucy will demonstrate the variety of primordial bodies that formed the planets.

The Atlas V rocket responsible for setting the probe in motion took off at 09:34 GMT on Saturday, October 16 from Cape Canaveral. Lucy will fly by the Earth three times for gravity assists, making it the first spacecraft to return to Earth's vicinity from the outer solar system. Lucy's first encounter with an asteroid will be in 2025. It will encounter asteroid Donaldjohanson, named after the discoverer of the Lucy fossil, in the Main Belt, between Mars and Jupiter. Between 2027 and 2033, it will encounter seven Trojan asteroids - five in the swarm that leads Jupiter, and two in the swarm that trails the planet. Four of the seven Trojans are paired up, allowing Lucy to see two asteroids at the same time on each of its visits.

Lucy will fly within 400 kilometers of its target asteroids to explore their geology, including their composition, mass, density, and volume by using its onboard equipment and big antenna. It will rely on two solar arrays, each measuring more than 7 meters across, to fulfill its duty. However, only one of the arrays appeared to have correctly latched when the spaceship deployed them following the launch on October 16. Since then, the mission crew has been assessing the second solar array while also completing the unconnected duties Lucy must complete at this stage in its voyage. NASA officials stressed in a statement released Tuesday, October 19, that the spacecraft can continue to operate with the solar arrays deployed as they are, and that the glitch isn't the end of Lucy's mission.



Debris around Earth is a threat to space missions

There are over 30,000 objects orbiting the Earth

By Aadhya Venkatesh

Harmful and poisonous substances because of human activity have been polluting the earth for a very long time. Vital resources such as the air, water and land have succumbed to pollution. Humans through the years have developed immensely, but the repercussions for these technological developments have been severe. The beginning of human space exploration in 1957 opened a new, unanticipated realm of pollution.

Non-functional, artificial objects like rocket parts, defunct satellites, launch release rubble, etc. all constitute space debris. Ever since The Soviet Union's launch of Sputnik I in 1957, space debris has been accumulated and floating freely in space. This debris is also commonly labelled as 'space junk.'

The increasing amounts of debris are orbiting the earth, creating concern for physical collisions during new launches. NASA reveals over 30,000 objects in space, travelling at high speeds orbiting the earth. They travel at up to 18,000 miles an hour and risk the chances of unintentional and unwanted collision. The most recent instance occurred in 2021, when a Chinese military satellite, Yunhai 1-02 spontaneously, degenerated in the earth's orbit, adding to the space junk. The cause of the disintegration was later revealed to be the collision of the satellite with a piece of space junk.

Spacefaring nations have been taking steps towards mitigating the problem of space debris. Although countries are taking measures to prevent unnecessary debris while venturing into space, they are not enough to minimise the rubble accumulated over the past sixty years. Countries are developing technologies to create reusable rockets to prevent the drifting away of rocket boosters into space.

Other measures include developing sturdier rockets and even creating a 'graveyard orbit' for all the junk, which would be far away from the earth and a place to eject the defunct debris.

China recently took a step towards space debris mitigation with the launch of their Shijian-21 satellite on 24 October 2021. The Shijian-21 satellite will extensively be used to test and verify space debris mitigation technology.

India, too, is working on various debris mitigation technologies. K. Sivan, the chairperson of ISRO, said at an event that "ISRO initiated 46 technological endeavours such as quantum communication, space-debris mitigation technologies like self-eating rockets, self-vanishing satellites and robotic arms to catch space debris."

Various initiatives such as Space Sustainability Rating are promoting global solutions for space debris mitigation. Such initiatives provide all spacefaring nations with basic guidelines that they must follow. The European Space Agency has also commissioned projects for debris mitigation, the proof of concept for which will be launched by 2025.

The earth's orbit is used for various exploration and now space travel purposes. It is pertinent that we mitigate the debris and further carry out space missions sustainably so that our future generations can enjoy the benefits of space exploration as well.

The finals frontier: seeking other planets

By Adarsh Tripathi

To begin with a fact, we all know that planet Earth is dying. Crumbling under the weight of a growing human population. In the face of looming issues like global warming, rising sea levels, and ever-increasing pollution, we know that it will soon be too late to turn back and save our planet. The question is, where do we draw that line? Where do we decide it is too late for the planet, and that we need to turn to other planets for sustaining the human race?

With the advent of new technology, humans can now go further than we ever have. Our fascination with the universe has driven us to go to distant lands and explore new horizons. We have made unprecedented progress, even landed human beings on the moon. In all of this the question that we must ask of the leaders at the forefront of this progress is this: Have we already given up on our planet?

Three of the richest men in the world, namely Richard Branson, Jeff Bezos and Elon Musk, have been driven by a similar fascination. An obsession, if you will, with going where no man has gone before. In the early 2000s, all three started companies to help their drive for finding new solutions to the problem of human survival. Bransons Virgin Galactic, founded in 2004 for developing vehicles for sub-orbital and orbital flights to carry human passengers into space.

Blue Origin, founded by Bezos in 2000, has similar visions, but seeks to be more pro-active in terms of deep space exploration, with it's Blue Moon program set to take humans to the moon for the first time since 1972, in the next 5 years. Space Explorations Technologies Corp. colloquially known as SpaceX, was founded in 2002 by Elon Musk with the express plan of reducing costs of space transportation to help the colonization of Mars.

All three have recently made manned trips beyond the Karman Line into outer space, with high success. While all three companies may have different visions, their initial goals line up against each other and this has served to fuel a space war of sorts. The three have been pitted against each other, with Bezos and Branson making sub-orbital flights recently. SpaceX, meanwhile, has gained key government contracts from NASA, and has recently tested the largest rocket ever built, the Starship, a 33-engine reusable behemoth with ambitions of one day carrying humans to Mars.

While these large strides are being made to take humans away from the earth, the original question remains. Should we, as a race, focus on escaping the planet we messed up? Or should we perhaps try to save what remains for as long as possible? If current trends are to be compared, we are leaning towards an escapist view of the question.

Somehow, sadly enough, we are destined to leave for the stars and leave this planet behind.

Space-tech can help tackle climate change

By Aarya Haresh Trivedi

While Billionaires like Jeff Bezos and Elon Musk have turned space into a playground, experts have argued that the need of the hour is a paradigm shift especially in space technology; which has shown tremendous promise in aiding humanitarian crises, and in climate adaptation and mitigation.

When it comes to renewable energy, the French business Leosphere created a compact gadget to monitor wind speed and direction from the ground up to heights of 200 metres in order to maximise the amount of electricity generated by new wind turbines. The 'lidar' technology is similar to what the European Orbit Agency (ESA) plans to employ on its Aeolus satellite to give worldwide wind profile data from space.

The Italian business Flyby's 'SolarSAT' can precisely anticipate the power production of photovoltaic power plants by using data from meteorological satellites. This data is used to improve systems and promptly identify defects in photovoltaic plants in operation - flaws that can lower energy production by more than 10% per year. In Italy, this system has already been implemented on a number of photovoltaic installations.

It helps reduce emissions from heating systems, through miniaturized ceramic gas sensor technology, initially developed to measure oxygen levels around spacecraft reentry vehicles. It is now being employed in systems that precisely manage heater combustion, one of the most polluting sources.

"It can help the environment by reducing dangerous exhaust gases and ensuring that heating systems operate at their best." It also cuts fuel usage by 10–15 percent," said TU Dresden's Rainer Baumann. This technology, which was developed with the help of ESA's Technology Transfer Program and its partner MST, is now used by the German business ESCUBE in industrial heating management systems.

Conventional satnav systems assist people in determining their location. Several developers have now come up with innovative ideas that use the same data to minimise automotive fuel usage and emissions. Even the greenest car's fuel consumption is increased by repeated quick acceleration and sudden stopping. The sophisticated GreenDrive system, created by Alex Ackerman and Yossef Shiri, combines information on the type of automobile, its location, and the road conditions to advise the driver on the most efficient driving style to use: when to accelerate, when to brake, and when to maintain a constant pace. On average, this can save you 15–25% on your fuel bill.

Galileo-Ecodrive is another solution proposed by Prof. Gerhard Güttler to the European Satellite Navigation Competition. This method uses satnav data on a road's geodetic height profile to optimise the operation of auxiliary devices like electricity generators, air conditioning, power steering, deep freezers for perishable goods on trucks, and the moveable parts of a cement mixer –devices that consume up to 20% of the fuel. This might save up to 2 billion litres of water per year in Europe, reducing the emission of 5 million tonnes of CO_2.

As a result, we confer that space-based technologies give vital information on ecosystem health, providing objective support for beneficial environmental actions such as conservation and sustainable resource management.

Tiktok as a platform for the working class

By Yukta Patwardhan

The ban on Tiktok in India after tensions between the two countries rose in a conflict at Galwan valley came with a price of its own. While Facebook and its subsidiary apps are the keystones of the contemporary social media experience, apps like Tiktok give a platform to those without the social capital to make it big, especially with Facebook's algorithm working against them.

Since its launch in 2016, Tiktok's popularity kept rising in India - the app had more than 1.5 billion downloads by 2020. However, the democratization of such a medium was probably the unique thing about TikTok. The app offered individuals from economically backward, caste marginalized communities who don't usually have access to spaces on the internet an opportunity to create content. This allowed these communities to participate in online cultures whose narratives they are usually excluded from.

Just as this space for marginalized communities was being established and they began carving themselves a niche in online communities, the Indian Government imposed a ban on 59 Chinese-owned apps, one of which was TikTok. This came as a great blow to content creators from disadvantaged communities. TikTok had been the ideal platform for their requirements. Fifteen-second short-form video content was feasible for them to record and post as it required lower internet bandwidth than competing long-form video platforms such as YouTube. This enabled anyone with a smartphone and a basic internet connection with the same opportunities to post content as someone with high-tech editing software would have.

The ban took away a means of self-expression and representation that marginalized communities rarely ever get. Although the space left by TikTok was filled by Facebook's short-form video alternative Instagram Reels, it was simply not as inclusive as TikTok. Content on reels is saturated with influencers from communities that already have the social capital to make it big on these spaces. Instagram content promotes more of an aspirational lifestyle that the middle class hopes to achieve.

Now, instead of a platform that allows disadvantaged communities the catharsis that making content based on their everyday lives brings, the content that has become popular is more so about what is out of their reach.

Post the ban; many people took to social media such as Twitter with disapproval towards the move. However, the problem comes up when upper-class, upper-caste content creators from TikTok, who at one point would criticize content made by the working class creators as "cheap" and "mediocre", now come to their defense, claiming to feel empathy for their plight. Such hypocrisy makes it apparent how their efforts towards giving a platform to marginalized voices are performative at best and there isn't much concern over what the loss of such a platform could mean for these communities.

As time goes by, the hope for another platform that lets people from all strata of society creates content on an equal footing increases. Unfortunately, with the contemporary political environment in mind, the possibility of it happening diminishes simultaneously.

D – MAT - the tech that boosted share trading

By Atharva Agashe

After the liberalization in 1991, the Indian stock market experienced major changes in its functioning. The National Stock Exchange (NSE) was established in 1992 as the first dematerialized electronic exchange in the country. This meant that the share trading process became a lot easier and fast.

Before 1992, share certificates were in place that meant one had to go to the broker to buy or sell a share. The give and take of the share certificate which were in the form of paper used to take place. After 1992 all these physical shares were made dematerialized. This meant that every investor could now buy and share the company's securities while sitting at home using the internet. Various software like ORACLE RDBMS, SQL/ORACLE FORMS Front - Ends, etc, came into use. The entire dematerialization process required a lot of technological brilliance and expertise.

Every investor post-1992 has to open a D – MAT account with their respective broker. This DMAT Account promises transparency and safety in transactions. Previously there was a huge risk of loss or theft of the share certificate. Due to the electronic systems, a lot of paperwork was reduced. The advancement of technology has made it extremely easy for people to invest in the share market.

Opening of a DMAT Account can be done via mobile phones. Brokers like Zerodha, Motilal Oswal, Angel Broking, etc lets a person open a DMAT Account in less than 24 hours. The investor gets listed with the SEBI (Security Exchange Board of India) via the brokers.

Rohan Shah, a retail investor says, " I was an investor pre liberalization and now I enjoy investing more. The DMAT system has made it extremely easy. Now I can take trades even when I am traveling. The stop loss and target triggers help me gain the perfect profit and bear the minimum loss. All thanks to the technology and the advanced systems."

Every broker has its mobile and desktop application and every investor has a unique ID and password. Each one gets to select the company he/she wants to invest in. The cash and available money has become more liquid, and thus more and more money comes into the market. Previously it used to take almost a month for the cash to be available in the bank for further transactions. Now, this procedure takes place in two working days after the transaction day.

Due to all these easy steps, the number of investors has gone up by 4 times between 1992 to 2005 in the Indian Share Market. During and post-pandemic, 10.4 million people started investing in the Share Market. The fear in the minds of the people has reduced and more retail investors are coming into the market which is a fantastic sign for the Indian Economy. As the share market and its investors are becoming tech-savvy, India will see maximum youth join hands in enhancing the Indian Share Market and the Indian Economy.

Incendiary content works, and Facebook knows it

By Prishita Das

When Mark Zuckerberg created Facebook as a sophomore at Harvard in 2004, no one imagined that the platform would grow into an entity that could inspire communal riots, threaten democracy, and destroy teenagers' mental health. When people think of social media, they think of Facebook- and that is not surprising, considering some of the biggest platforms, like WhatsApp and Instagram are owned by Facebook. No one expected a social media platform to have such intense impacts on society- and yet, as multiple investigations into the company show, it does have an enormous impact- and it knows it too.

In September 2021, the Wall Street Journal released the infamous Facebook Files.The Files, based on internal documents, whistleblowers, and research reports, painted a picture of a company that knew of its failures- and did little to change that.

One of the most shocking revelations was that Facebook was aware of the harm it caused teen girls- and it did little to change that. In fact, Facebook had to halt the development of Instagram Kids, following the backlash. According to a March 2020 slide presentation posted to Facebook's internal message board, "Thirty-two percent of teen girls said that when they felt bad about their bodies, Instagram made them feel worse." Facebook has repeatedly conducted studies into the harmful effects of its app, and has found damning evidence. It found that 13% of British, and 6% of American users that reported suicidal thoughts traced them back to Instagram. Another presentation from 2019 stated, "We make body image issues worse for one in three teen girls."

So, if social media like Facebook and Instagram are so harmful, why don't we make children stop using them? Why don't Facebook and Instagram themselves shut these dangerous messages down?

As Frances Haugen, Facebook whistleblower puts it, Facebook, when encountering a conflict between profit and user safety, repeatedly chose profits.

Teens and younger people have been moving away from Facebook for a long time, with only 5 million teens logging onto Facebook every day. On Instagram, 22 million teens log on each day. Retaining these users is essential to maintain Facebook's 100 billion dollar annual revenue.

Facebook has also rejected attempts to restrict the disproportionate amplification of inflammatory posts because it might hamper its growth. These attempts that Facebook rejected could have prevented its services being used spread religious hatred in India. In December 2019 when protests based on religion were sweeping the country, inflammatory content on the platform rose by 300%. In late February 2020, these calls to violence were spreading even more on WhatsApp.

A review of Facebook's documents show that the company also had a weak response to the fact that the site was being used by human traffickers, drug cartels, and the inciting of violence against ethnic minorities in Ethiopia.

Facebook's main strength lies in the fact that it makes its users keep coming back. Through the use of notifications and strategic algorithms, it shows people posts that are designed to grab their attention- even if it makes the user angry or unhappy. This is why incendiary content does so well- and why Facebook is reluctant to change that.

Social media, in less than a couple of decades, has grown into a force so powerful, it can cause harm to human life. Its regulation is essential to protect the people, and children, that use it.

Frances Haugen, Facebook Whistleblower.

Chilika- the take that technology restored

By Pranjal Nangare

It is said that "Technology is a bane disguised as a boon." However, like any other apparatus, it is a means to something, and whether good or bad depends on its usage. In recent years it has impacted many lives, changing it for the better. One such instance has been the Rejuvenation of the Chilika.

With an area spanning between 906 km² – 1,165 km², the Chilika lake isn't just any water body for the people of Chilika. It forms the elixir of livelihood and the synergy of all species living in and around it. The Chilika Lake, a brackish lake in the state of Orissa, with its 52 primary inflow streams, is an ecosystem in itself.

This lake is the source of livelihood of more than thousands of people and used to be called the Jewel of Orissa."However, since the 1990s, this lake and the state of this ecosystem have been gradually declining. The lake has been encountering problems that are affecting the sustenance of the lake and dependent species. The narrowing of the Lagoon's mouth resulted in a decline in the salinity of the lake. The improper claiming of land for agriculture very close to the shores of the lake has also affected the breeding and spawning grounds of many important fishes and mollusks.

By 1993, the problems in Chilika were so severe that the lake was put under The Montreux Record (Threatened List) . This was done as the lake was considered to have undergone, to be undergoing, or to be likely to undergo a change in its ecological character brought about by human action.

This deterioration of the Chilika biome was turning into an imminent threat. Nevertheless, with the emerging technology, this threat was very efficaciously curbed.

Floating agriculture islands address the issue of improper claiming of agricultural land along the shore, benefiting both the farmers and the lake's ecological balance. Vertical aquaculture, which is still a developing technology, will eliminate the agricultural runoff into the water while also producing year-round. This will also revive the fish catches that would have otherwise declined due to the agriculture discharge. Bioengineering is being put in place to also prevent the pollution of the water in Chilika.

Private organizations like BarifloI Labs and grassroots-level NGOs like "Pallishree" have utilized these emerging technologies, which constructively impact the agriculture and the biomes of the Chilika lake. With such mechanisms and apparatus, this restoration process has helped improve seagrass meadows and their species diversity, improving water level variations during the tidal cycle turning the Lagoon into a pulsating mode.

Though there will always be a need for consistent efforts from all public and private institutions, this restoration has been a significant accomplishment in the history of the use of technology. Technology today has helped much, so it is no longer a threatened site.

Technology, in this case, has been the evident boon that invigorates the elixir we call Chilika.

JOURNALISM BATCH OF 2022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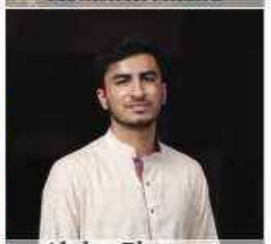
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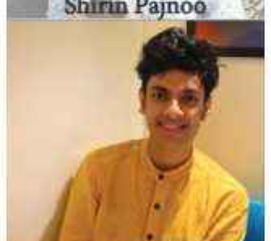
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