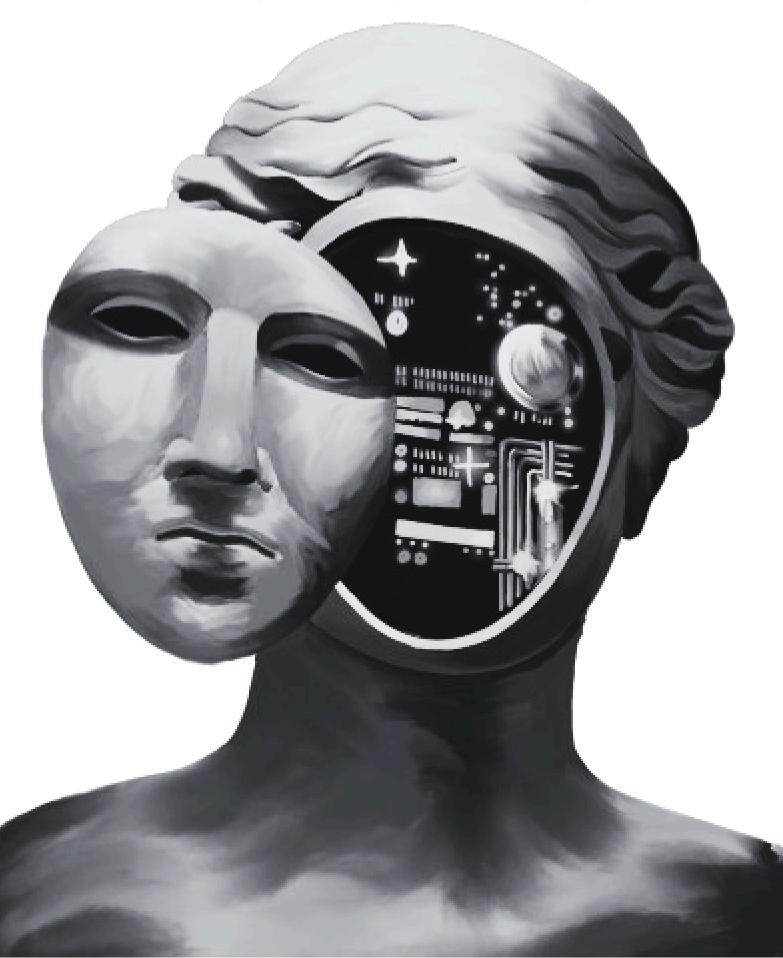# TECHKEY

THE TECHNOLOGICAL RENAISSANCE

Dear Readers,

What does technology mean to you?

For me, technology is an instrument of expression. It is a tool through which fiction becomes reality, desolation becomes hope, and dreams become achievements. It is humanity's testament of resilience and innovation, and the beacon of a brighter and a more progressive world.

Today, we stand on the brink of a technological revolution-one that will cause a shift in all paradigms of life. At the forefront we see the transformative impact of Artificial Intelligence, exemplified by advancements like Generative AI and Interactive AI. The telecommunications industry is approaching marvelous growth with 5G technology, quantum computing has accelerated scientific growth, and blockchain technology has highly contributed to the enhancement of user safety. Tasks that earlier required highly extensive as well as intensive manpower are now being done within minutes without any compromise on quality and accuracy.

This reformation does not just limit itself to progress. In fact, this fast paced development in technology brings almost all other human developments to a brief standstill. The advent of technology raises serious concerns over ethical implications like intellectual property infringement, information breaches, and of course the persistent fear of replacement. Thus, we are forced to reconsider the progress of this technology-driven age.

With this issue of the magazine, we bring to you articles covering the latest trends in the technological realm- how AI contributes to political misinformation, the upcoming interactive phase of AI, the rise of autonomous weapons, the phobias that coexist with technology and the phenomenon of doomscrolling. The centerspread showcases the growth of AI generated art- summing up the theme of 'The Technological Revolution.'

Within this vast expanse of endless possibilities, it is almost impossible to determine what the future holds. At this crossroad of uncertainty one axiom deeply resonates- "The real problem is not whether machines think but whether men do." -BF Skinner

Happy Reading!

Editors-in-Chief
Twisha Choudhary and Riya Mohata

Editor's NOTE

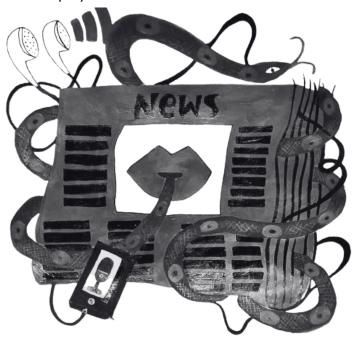## CONTENTS

ALGORITHMIC MENACE
How AI Fuels Political Misinformation

From high-quality deepfakes to convincingly deceptive voice recordings, Artificial Intelligence (AI) is certain to change the face of the political spectrum including the entire election process. The catalogue of potential threats regarding mass misinformation using AI is infinite. A phone call from the president or a covert recording of a prominent politician which once required a highly skilled group of people with technical prowess and an even greater amount of money, is now mere child's play.

Generative AI is far from perfect. There have been cases of AI chatbots producing factually incorrect outputs often referred to as 'hallucinations'. Moreover, AI works by analyzing engagement trends and hence often prioritizes public response over informational accuracy. This process, known as 'microtargeting' is what exploiters find easy to misuse, converting it into a weapon for disinformation campaigns. A lot of times, AI-powered bots, and automated accounts are also employed to gain social traction and 'mimic' human responses. These bots interact with fake news by engaging in conversation and providing support for certain desired viewpoints.

Furthermore, AI systems often produce results that reflect inherent human biases. This bias is often created based on initial training data, which is either not entirely representative of the environment it is supposed to be applied in, or has been inputted based on prejudiced sampling. Hence, the algorithm may endorse a particular party or person, leading to inaccurate and inflammatory content surfacing on the users' feeds.

Many popular cases have proven to be potential forerunners of AI's toll on electoral and other political issues across the globe. Recently, China was blamed for using generative AI to sabotage elections in Taiwan. An AI deep fake clip, which was circulating across social media, displayed US representative Rob Wittman, Vice Chairman of the US House Armed Services Committee, promising stronger US military support for Taiwan if a particular party's candidates were chosen.

Though difficult, misinformation can be strikingly reduced if all users take the responsibility to report potential instances of deception. Strong legal acts must also be endorsed, that hold creators and users accountable for the propagation of inaccurate news. Global awareness campaigns must be organized to increase literacy on the same.

The current political scene is obscured by generated audio messages, fake news clippings, deep fakes, and much more. But the question remains: Can we afford to let algorithms dictate the truth, or must we strengthen our critical thinking to discern fact from fabrication?

-Tamanna Baid (Pre SC)

TECHNOPHOBIA

From dreading the job-stealing potential of machines to the sheer panic of misplacing your phone charger, the evolution of technology has turned us into a society plagued by technophobia: the irrational fear that one day, even our smart watches might outsmart us.

For a tech-centric age, this concept is often overlooked despite being profoundly relevant in our digitally dependent lives.

Often manifesting as avoidance or discomfort when using digital devices or engaging with technological advancements, technophobia is an umbrella term which encompasses a plethora of phobias, some of which may seem too whimsical to be fathomed. So please enjoy the list of the most absurd tech-related phobias that we came across:

"Nomophobia" is the fear of losing, or being out of touch with your mobile phone.

"LETS DISCUSS THIS FEAR YOU HAVE OF TECHNOLOGY"

This fear makes you feel extremely anxious when your phone is malfunctioning, losing signal or battery, or when you simply misplace your priceless possession. According to Psychology Today, an increasing number of college students now shower with their cellphones and adolescents have reported that they would rather lose a pinky than be without their cell phone.

Yet another trivial tech fear is "loremophobia". It refers to the fear of losing your television remote control. This comical yet relatable phobia highlights the dependence on technology for even the most mundane tasks, leaving us in a state of panic at the mere thought of having to exert any physical effort to operate our entertainment devices. After all, why walk to the television when you can spend fifteen minutes frantically searching for the remote under the couch cushions?

Lastly, the disastrous thought of losing our phones to the wrath of the toilet is one which we all have imagined at some point in our lives. Yet again the internet has managed to shock us by coining a name for this fear. "Drosmartophobia" is the fear of dropping your smart phone down the toilet. So dear readers, better be careful the next time you place your phone on the ledge above the washroom closet.

Whether it's the fear of being without our smartphones, the concern surrounding the ever-increasing pace of technological advancement, or the dread of seemingly absurd scenarios like dropping our devices in the toilet, these phobias reflect deeper anxieties which stem from our reliance on technology. Understanding and addressing these phobias will be crucial for us to find a middle ground between liberation and dependence as technology continues to grow and advance to unimaginable heights.

-Naija Mehra and Arushree Kashyap (SC)

THE GENERATIVE PHASE OF AI

Generative AI is just a phase, what's next is Interactive AI

This is the opinion of Mustafa Suleyman, co-founder of DeepMind, who intends to build a chatbot that does much more than just chat. Interactive AI interacts with other softwares and systems in order to perform its task.
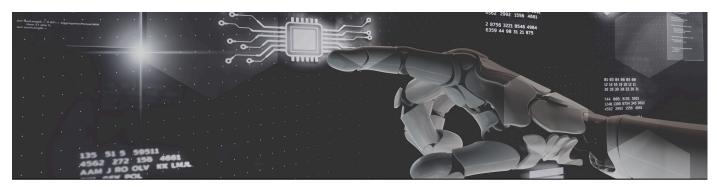
Generative AI models are built upon underlying AI tools, such as Large Language Models (LLMs). LLMs are text-generating algorithms. One such example is ChatGPT-3. While Generative AI learns from complex data patterns, it lacks the ability to actually engage the user. It largely focuses on content generation. Interactive AI, on the contrary, focuses on bridging the gap between human beings and computers. Content generation can also be faulty in the case of generative AI as the lack of interaction with humans often leads to misunderstandings. Only when the computer understands the human, can it serve the user advantageously.

Suleyman is not the only one exploring this vast land of artificial intelligence, but he is one of the most promising in the field. His new billion-dollar company, Inflection, is made up of hand-picked fresh talents from DeepMind, OpenAI, Google, Microsoft, and Meta.

Founded in 2022, Inflection is an AI Studio that is backed by $1.5 billion worth of investment by major tech giants.

Earlier this year, they released a Chat GPT rival, Pi, which is Personal Intelligence that is not only pleasant but also polite. Suleyman guarantees that this creation is incapable of producing any kind of toxic outputs. He calls it "extremely controllable". To balance out the acclaim, however, there are growing concerns regarding this apparent model of perfection. This very technology was trained using completely identifiable information of more than a million patients. While Suleyman claims that his intentions are pure and no data regulations were violated, a government investigation proved otherwise. Pi and its personalization allow for detailed information to be extracted from the user. Even though Suleyman's NGO background and quotes speak volumes about helping people, one should be better safe than sorry. After all, it is not the algorithm but its implementer that might be hiding under a facade of "pleasantry and politeness". We can do nothing but try to shield ourselves from this so-called wave of humanity in AI.

-Paridhi Saboo (SC)

THE NEXT REMBRANDT

Blurring the boundaries between art and technology, The Next Rembrandt is a 3D printed painting which challenges the boundaries of creativity. It was created by imitating Rembrandt's style and subject matter using machine learning algorithms which analyzed his body of work, bringing the legendary Dutch painter back to life.

NEURAL ZOO

Sofia Crespo, an artist interested in the intersection of biological processes and machine learning, is the creator of Neural Zoo. She decided to explore how AI generated images could create a somewhat "rearranged" nature, that our brain understands, but can not properly discern into reality.
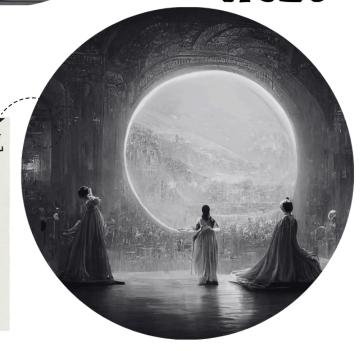
STARRY NIGHT, REIMAGINED

By the use of Blockade Labs' Skybox AI image generator, Michael Sim was able to generate a series of stunning 360° artworks that pay homage to the iconic Van Gogh painting while also exploring new visual territory. It is a fantastic combination of the power of AI and traditional art techniques, exploring a new era of creativity and imagination.

AI ART through THE AGES

THÉÂTRE D'OPÉRA SPATIAL

It was created by Generative AI platform Midjourney, by Jason Michael Allen. It became one of the first AI-generated artworks to win the 2022 Colorado State Fair's annual fine art competition in the photomanipulation category, setting off a fierce backlash from artists who accused him of, essentially, cheating.

The autonomous picture creator

1973

The painting fool

Generative adversarial networks

Open AI's dall-e

2024

Stable diffusion

THE RISE OF AUTONOMOUS WEAPONS

War has constantly been evolving. From ancient battles fought with swords and shields to today's high tech military weapons, technology has played a pivotal role in shaping the outcomes of conflicts worldwide. In fact, it has become such a formidable force multiplier that it is becoming increasingly difficult to see past the horizon that intermingles technology for protection and technology for destruction. One thing, however, that must be clarified before we begin to dive deeper into the topic is that technology shapes warfare, not war. When we put technology and warfare in the same sentence, people mostly just think of guns, tanks, and maybe nuclear weapons, but these are just the tip of the iceberg. These shifting battlefields have completely transformed with the use of complex technologies. For example, many instruments, known as 'precision guided munitions' such as guided missiles, drones, and smart bombs, aim to minimize collateral damage and civilian casualties, while simultaneously maximizing intended lethality. Today, robotic dogs like SPOT from "Boston Dynamics" and the VISION 60 from "Ghost Robotics" are also being deployed for production. These robots can transport military supplies, "sniff" out bombs and navigate challenging terrain to gather data. What's even more astonishing is that now we can use 3D printing to make tools and weapons that would have otherwise taken a large amount of time and money to be made and exported.

Countries worldwide are adamant about implementing technology into their warfare. Australia has been developing fully AI-powered, unmanned submarines called Ghost Sharks. These submarines can operate automatically, in great depth, and remain undetected. The US and China too, seem to be in a race to develop killer robots that can use lethal force without the supervision of a human commander. These robots already have the potential to deliver sharp increases in firepower and to change how battles are fought. Many countries are also using 'cyber warfare' including information manipulation, sabotaging enemy systems and networks, and hacking to disrupt the target country's governance. Just recently, the Israel Defence Force deployed sophisticated jamming technology to neutralise the GPS systems of Iranian drones and missiles, preventing them from accurately reaching their intended destinations.

Technology is not solely confined to combative capabilities. Uncrewed Aerial Vehicles (UAVs) are often used to provide victims with food, medical supplies, and other necessities in remote regions. Recently, Ukraine also used AI-based imaging and facial recognition software to identify deceased Russian personnel through their social media profiles so that their relatives could be notified and bodies could be transferred to their families.

We are living in a society today that is not only tech-oriented but also tech-driven, and if we fail to utilize this technology in a way that benefits us, it could possibly lead us to the very brink of extinction or perhaps to such fatal damage from which mankind may never recover.

-Yashvi Agarwal (Pre SC)

The Celestial Evolution

From Galileo's Telescope to Musk's SpaceX

In the 21st century, decades after man first stepped on the moon, several hundred satellites have been sent into space by major developing and developed economies. Even after the construction of a huge home right in the heart of space, i.e., the ISS, the amalgamation of technology and the human mind continues to baffle us as they catalyze the process of widening the horizon of our knowledge about what lies in the cosmos, be it within or beyond our reach.

From before the time of Copernicus, Kepler and Galileo, the human mind has always proved to be curious about different aspects of life. Human beings from time immemorial, even with lesser resources than what are available today, came to know much more than we can imagine. As we step further into the timeline of the Earth, we see the evolution of Sputnik I, the first satellite launched by the Soviet Union, which accelerated the birth of the National Aeronautics and Space Administration (NASA).

Years followed with competitive missions being lined by NASA and the USSR simultaneously, as viewers stood on the side-lines, watching a ping-pong match. With the subsequent launches of the first woman, man, and even dog, the world transcended into a journey of more scientific growth as agencies went on to unravel the mysteries that lay beyond. As technology developed and books of handwritten codes were squeezed into computer databases, NASA progressed enough for man to carry out a spacewalk without being tethered to the spacecraft.

Over the years, with the launch of SpaceX and its collaborative work with NASA, technology has reached its maximum utilization with several reusable cargo and crew rockets being produced and many on-ground scientific developments.

Countries like India, Japan and China are not far behind as they too have built their IR space agencies, brick by brick, with their human and financial capital. With a record of 40 days, India's spacecraft Chandrayaan 3 managed to touchdown on the South Pole of the Moon, creating history. To make this possible, AI powered instruments like the altimeter, velocimeter, and accelerator were used. Scientists even used AI to forecast the potential hazards, hindrances and topography of the landing site and to manage the descent of the Vikram lander. AI managed to give the team better altitude and thrust control, reducing the probability of any sort of landing failure.

The work power with the development of advancing technology showcased during these missions is just an indicator of how the nations are moving positively towards a future where mankind will hopefully be able to take a giant leap into what is for now the unknown.

-Prisha Jain (SC)

DOOMSCROLLING
The Algorithmic Abyss

Have you ever sat for hours incessantly scrolling through negative news or content on your phone even though it is saddening? If you have, what you have experienced is a phenomenon called "doom scrolling".

This phenomenon became widespread during the COVID-19 pandemic. Amidst the escalating concerns surrounding the pandemic and the lockdown which confined individuals to their homes, it became natural for many to turn to their devices for information. Such excessive scrolling, as was witnessed during the pandemic, became a habit when social media algorithms were altered, filling people's feeds with more sorrow.

Doom scrolling is encouraged by algorithms that prioritize engagement metrics. Adding fuel to the fire, these algorithms are personalized in a way that they monitor your past behaviours and preferences. These are designed to identify if the content elicits strong emotional responses in the scroller such as anger or fear. As users scroll through these distressing news stories, they inadvertently contribute to the algorithm's understanding of engaging content and its feasibility of being promoted further. This type of content reinforcement can create a feedback loop wherein the output of a system is fed back in as the input. This further constantly exposes users to doom-laden narratives.

People engage in such behaviour to ease their anxiety, either by attempting to access all the information required to protect themselves from what is dangerous around them or because they are curious to know what people are talking about.

For some people, it could also serve as a way of avoiding work in case of chronic procrastination.

One might not feel as disheartened while scrolling through news about the potential end of the world or the inevitability of death because they are connected with like-minded individuals who share their engagement, creating a deceptive sense of positivity.

It is disheartening to see how dependent people have become on social media in the present era, letting companies profit from what can be the most catastrophic occurrences in people's lives. This dependence reveals a significant change in the way we look for comfort and connection, often resorting to digital platforms for approval and support. The modern age raises a serious paradox: are we compromising our emotional well-being through virtual relationships and for commercial benefits under this 'supposed' remarkable connectivity?

-Kashika Jain and Delishah Mirza (SC)

Crafting the Future

Kon'nichiwa, Gijutsu-Sha!

All of us have seen astonishing instagram reels on Japan's electronic gadgets that aid so much with day-to-day chores. Not only do their vending machines sell everything from cooked ramen to customized cakes, but also sort food based on the expiry date to prevent food wastage! On a recreational trip to Japan this March, I was a personal witness to many of its technological endeavors. We visited the famous Nissan Factory where we observed the production of Nissan cars. The factory contained many robots surveilling the area for cleanliness along with various machines that tried and tested the car parts. We also got the experience of a lifetime by traveling in the 'Shinkansen' or the bullet train. It is recognised globally for being the fastest, most efficient, and most reliable source of transportation. Our guides also provided insights into the country's progress in many other fields. With their experti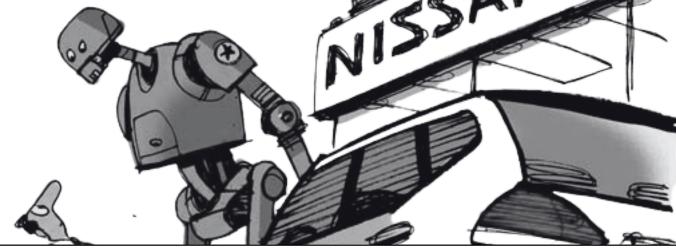se in robotics and automation, Japan has become one of the first countries in the world to employ robots to assist with surgery and rehabilitation. Moreover, Japan has also consistently been working to create humanoid robots, such as Honda's ASIMO and SoftBank's Pepper, to battle the increasing workload on the population. In the agriculture sector, drone imagery of fields is aiding in predicting harvests and to detect weeds, pests, and diseases. They have also implemented many disaster prevention technologies in the country. Smart phones have been equipped with early earthquake warning signals and systems have been installed that help with quick and safe evacuation guidance. Japan is also very particular about cleanliness and hygiene.
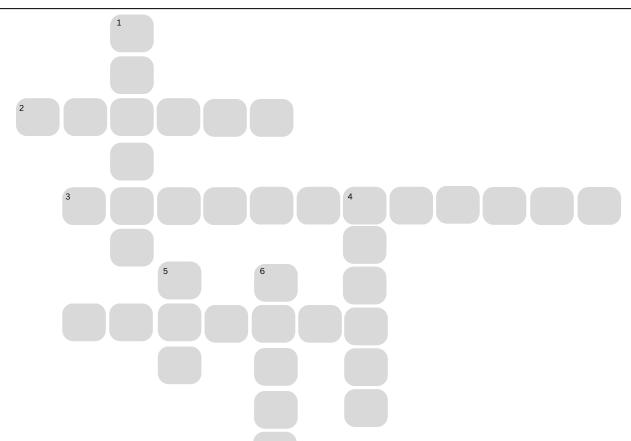
'Non-contact technology' like elevators with infrared sensors help to reduce the danger of transmissible diseases. Smart waste collection systems that can monitor waste levels and locate efficient collection routes have also been implemented in many cities. Evidently, Japan holds a compelling presence and a competitive future in the technological domain and is certainly showing consistent results that will pave its way to becoming the superpower of this industry.

-Jiya Singh (SC)

Down:
1. What is the name of the world's first 3-D printed car?
4. What was the coding machine used in world war two?
5. Which trend involves objects with sensors, actuators, and wireless interfaces that can connect to the internet and exchange data?
6. A freestanding booth which enables self service

Across:
2. Which American tech company started by renting out air mattresses in their San Francisco living room to travelers to avoid high rent costs?
3. An acronym representing the use of computer tecnhology to create a simulated environment
7. What app has a green owl as the mascot?

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