simbus

EDITION 11.1

TECH FOR GOOD

SMART tcet COMP ENGINEERS

COMPUTER ENGINEERING DEPARTMENT

Vision

"To become the department of national relevance in the field of Computer Engineering"

Mission

To nurture students with sound engineering knowledge in the field of computing through effective use of modern tools with a focus on global employability by imbibing leadership qualities, ethical attitude, lifelong learning and social sensitivity.

Programme Educational Objectives (PEOs)

Students of BE Programme in Computer Engineering will be able to:

PEO 1: Atain Sound Engineering knowledge and use of modern tools effectively to solve real life problems (KNOWLEDGE)

PEO 2: Atain need based skills and life long learning to ensure global employability (SKILL)

PEO 3: Become successful professionals and responsible citizens with good leadership qualities and strong ethical values (PROFESSIONALISM)

Programme Outcomes (POs)

PO 1: ENGINEERING KNOWLEDGE: Apply Knowledge of Mathematics, Science, engineering fundamentals and an engineering specializationto the solution of complex.

PO2: CONDUCT INVESTIGATIONS OF COMPLEX PROBLEMS: Using research based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.

PO 3: DESIGN/ DEVELOPMENT OF SOLUTIONS: Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.

PO 4: CONDUCT INVESTIGATIONS OF COMPLEX PROBLEMS: Using research based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.

PO 5: MODERN TOOL USAGE: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modelling to complex engineering.

PO 6: THE ENGINEER AND SOCIETY: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural activites

PO 7:ENVIRONMENT AND SUSTAINABILITY: Understand the impact of professional engineering solutions in society and environmental contexts and demonstrate knowledge of and need for sustainable development.

PO 8: ETHICS:Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practices.

PO 9: INDIVIDUAL AND TEAM WORK: Function effectively as an individual, and as a member of leader in diverse teams and in multi-disciplinary settings."

PO 10: COMMUNICATION: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instru ctions."

PO 11: LIFE-LONG LEARNING: Recognize the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PO 12: PROJECT MANAGEMENT & FINANCE :Demonstrate knowledge and understanding of engineering and management and leaders in a team to manage projects and in multi-disciplinary environments.

Programme Specific Outcomes (PSOs)

PSO 1: Develop academic aptitud e and apply knowledge of computing and mathematics to computer science problems and thereby design and develop Softwa re and Hardware Systems.

"PSO 2: Enhance research skills and utilize advanced computing tools for analysis, design and implemen tation of computing systems for resolving real life social problems."

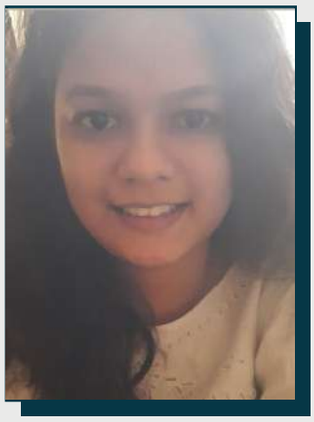
PSO 3: Utilize multi-disciplinary knowledge required for satisfying industry I global requirements and hence develop an attitude for life long learning.

"PSO 4: Have all round personality with skills like leadership, verbal and written communication, team work, sensitivity towards society in order to become valued and responsible professionals."

TEAM 2022

Aayushi Jha
Chief Editor

AsimVaibhav Tiwari
Chief Editor



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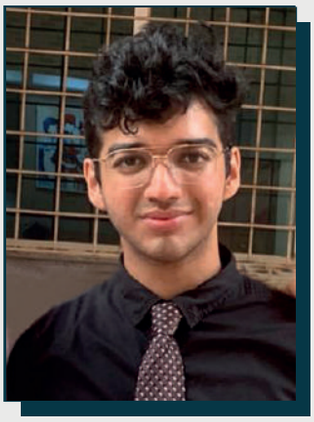
Anurag Vishwakarma
Art Designer



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Head of Art Design

Purvashi Shah
Art Designer

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Editor

Sagar Gupta
Editor

Khushii Nikhade
Editor


MESSAGES

HOD’s Message

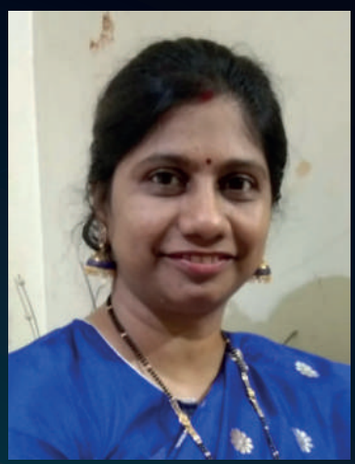
“Technology is best when it brings people together.”
Matt Mullenweg, Social Media Entrepreneur

The new way of life that emerged following the pandemic, fuelled largely by technological advancements, has paved the way for a more digitally driven future designed to make life easier for humans. It is undeniable that technology has altered every industry and people's perspectives on life's problems. The latest iteration of Nimbus sheds light on theseadvancements and how they have left a significant impact on society today. Everything is now staged online thanks to technological advancements.

Every task is computerised and performed by efficient machinery. With this, the purpose of education has broadened, and the never-ending struggle to make a living has been reduced. Machines are not only efficient, but they are also programmed to be flawless. Multimedia technology and internet networks have transformed the entire philosophy of learning and distance learning, allowing for close interaction between teachers and students with improved standard of learning materials compared to what was existing only with the printed media. Advances in information technology have had a considerable impact on commercial businesses in a variety of ways. However, the most important role of information technology in a commercial business is to provide a competitive advantage. Computer-aided design, relational database technologies, spreadsheets, and word processing software, as well as automation of manufacturing processes, all provide a commercial benefit to the business. Mobility is important these days, but in the twenty-first century, the need to travel physically is decreasing significantly. Instead of flying to New York for a meeting, one can simply attend the meeting virtually and save a lot of time and money (and protect the environment.

No longer do hospitals and doctors need to completely rely on the need to keep physical records for patients with the introduction of EHRs. All the information can be easily stored digitally, saving up significant cost and space for hospitals. While physical storage is still necessary, a major portion is digitized, making it very convenient for doctors to access any information easily. The goal of this edition of nimbus is to explore what was once unimaginable and a mere fantasy that we saw in movies has now become our reality thanks to advancements in technology and its reach to society.

Dr. Harshali Patil
HOD, Computer Dept



Faculty Incharge's Message

Technology has seen rapid growth since the beginning of the era and continues to rule today. It has spread to accommodate various fields like healthcare, space tech, agriculture, education, communication, and numerous others. Technology has brought people together, bringing newer opportunities and discoveries constantly. Not only that, but it has also improved the efficiency of manufacturing processes, transportation, and education.

Modern technology has paved the way for multi-functional smart devices. Computers are increasingly faster, more portable, and higher-powered than ever before. With all of these revolutions technology has also made our lives easier, faster, better, and more fun. Due to the wide range of uses for its diverse set of technologies, such as AI-powered assistance, Secure browsing, and Financial transactions with blockchain operating behind the scenes, various subsets of technology, such as Artificial intelligence, Blockchain, and immersive technologies, have become increasingly popular. People now prefer using AI-based smart devices rather than older simpler devices. For example smartwatches, which provide features allowing us to multitask anytime.

In recent decades, technology has also offered us brand-new gadgets like tablets, wearables and voice assistant devices. We can instantaneously transact between these gadgets and purchase anything from groceries to furnishings and many more. How we socialize and consumed media has all altered as a result of technology. It has created amusing developments, but has also brought significant advancements in safety concerning medical devices and home security. We can instantaneously connect with people anywhere in the world. We may live safer and healthier lives because of these innovations, which also keeps us linked.The rise of technology has typically had the greatest impact on younger generations. While older generations may have grown up using technology for specific critical tasks like email. The newer generation typically utilizes technology for virtually every task and is frequently overexposed to EMFs and blue light. Because of their increased reliance on tech, the younger generation is less likely to be concerned about privacy issues associated with technology. The younger generations also tends to understand how the technical systems work, to manage and make good use of them.

The boon that is technology has been gifted to our society and is intended to be used for the benefit of humanity. Tech continues to advance for our good as its scope lies beyond our imagination.

Dr. Veena Kulkarni
Faculty Incharge, Nimbus

Editor’s Message

Our students' knowledge and academic excellence and their dedicated approach toward disseminating knowledge have become a powerful segment of our department. Our department appreciates the role of spreading information based on research in education and is committed to developing an inclination towards research in both faculty and students.

In this pursuit, we are taking the opportunity to launch the new edition of our Departmental Magazine- Nimbus. The vision of our magazine is to impart quality education in all core disciplines of knowledge by focusing on the empowerment of our students with overall development. In this edition, we bring to you our new theme “Tech for good”. This magazine is launched to publish academic research papers and articles by students on contemporary topics and issues in the area of Technology. Especially, any technology that aims to improve and automate the use of online services has become an integral part of our modern world. Hence, we hope to convey our ideas through the articles in this magazine.

Lastly, congratulations to the committee and students for their phenomenal contributions, time, and effort and we express our sincere thanks to the mentors.
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AsimVaibhav Tiwari, Aayushi Jha,
Vandita Gopal, Gaurav Padam

Chief Editors, Nimbus

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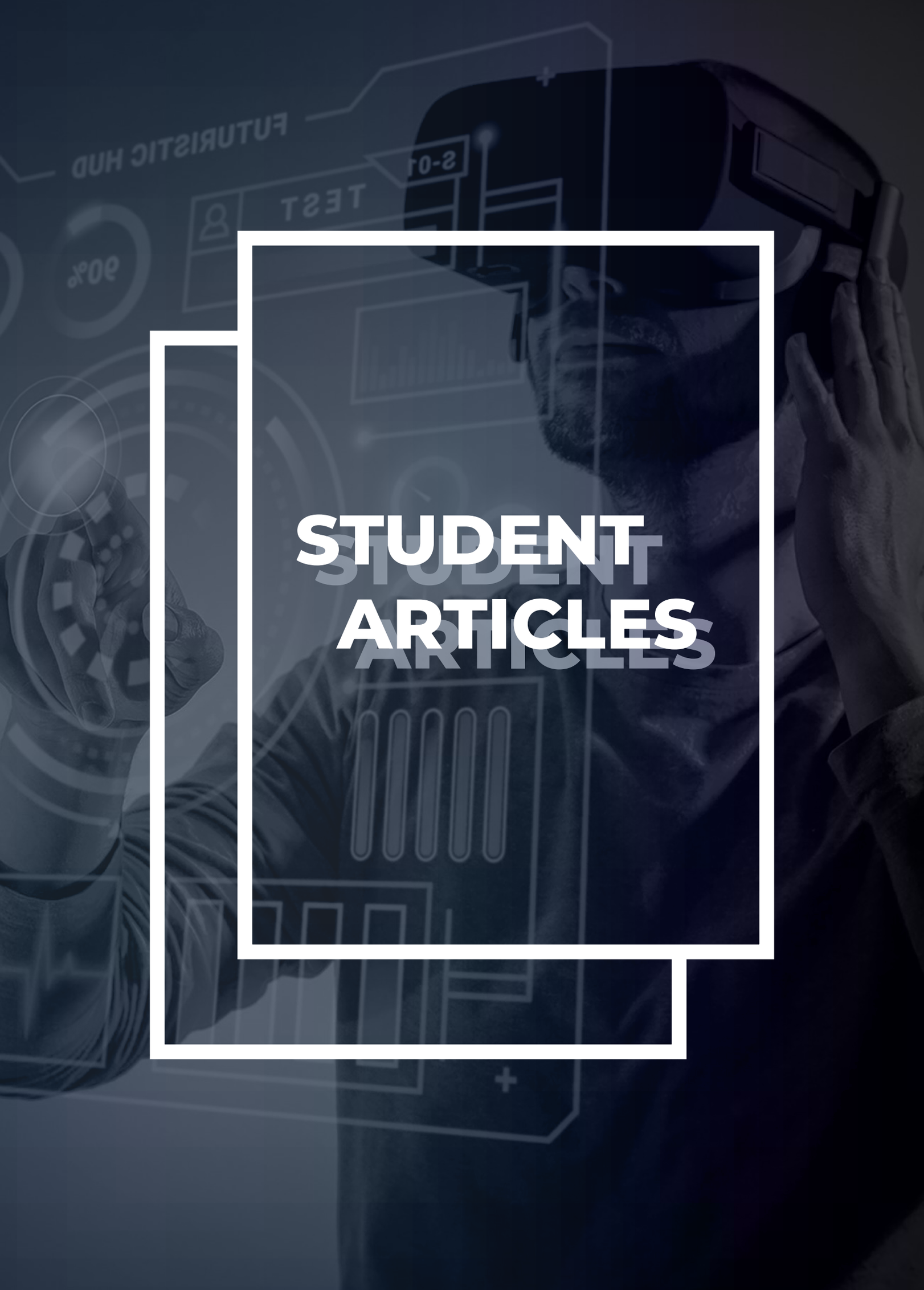

STUDENT
ARTICLES

SPACE TECHNOLOGY

A Renaissance in interest in space flight and the technological advancements powering it has occurred during the past decade.

In 2021, billionaire space travelers, Jeff Bezos and Richard Branson made headlines, while Elon Musk sees Mars colonization as his ultimate goal. But it's important to keep in mind that these lofty plans frequently have a more tangible impact on our lives

For example, space exploration has led to the development of products like heat-resistant metals, scratch-resistant glass, GPS, and memory foam that have revolutionized the way we live. . Numerous concepts in remote medicine, which have gained popularity as a result of the ongoing Covid-19 outbreak, were originally designed to facilitate space travel. Smoke and carbon monoxide detectors, which were also initially developed as space technology, have also undoubtedly saved countless lives. Where will space flight lead us in 2022, then? .

1. Reusable Rockets

Reusable launch systems for orbital vehicles are expected to drastically reduce the cost of Space travel, opening opportunities for many new and exciting space ventures that are currently too expensive to be feasible. Additionally, it will significantly reduce the cost of typical space missions like satellite launches and resupplies for the International Space Station. In early 2022, SpaceX's SN20 will aim to launch the first successful orbital trip utilizing a reusable rocket, subject to US FAA approval. The most potent rocket ever constructed, the SN20, is the vehicle that SpaceX hopes would eventually ferry people to Mars.

2. Back to the moon

In recent decades, lunar travel has not been a critical priority for space exploration, but this has changed as a variety of strategic justifications for restarting lunar missions have emerged. Most of these will be carried out by autonomous landers and exploration vehicles without the need for people to travel to the desolate satellite. The idea that it will provide a useful testbed for a lot of technologies that may eventually help us get to Mars is one of the main reasons for the revived interest. These missions will concentrate on delivering "small payloads," primarily autonomous instruments made to find, gather, and process lunar surface materials. Russia, Japan, and India intend to send robotic landers to the lunar surface in 2022, along with the United States, which is preparing to launch its Commercial Lunar Payload Services mission, a partnership between NASA and Astrobotic Technology.

3. Satellites

As we approach 2022, satellite launches will continue to make up the majority of commercial space activity. The declining cost of sending satellites into orbit and the diverse applications of data they can offer are

Purvashi Shah
SE COMP C
Space Technology

SPACE TECHNOLOGY

the main forces behind the rising efforts in this subject. A vital tool for many parts of daily life, GPS and satellite imagery constantly find new applications, such as fighting pandemics. According to studies from recent years, the cost of launching a satellite for a company is now on par with that of launching an app. A network of 192 satellites being developed by ADA Space will use artificial intelligence (AI) to send out live satellite photos of the Earth.

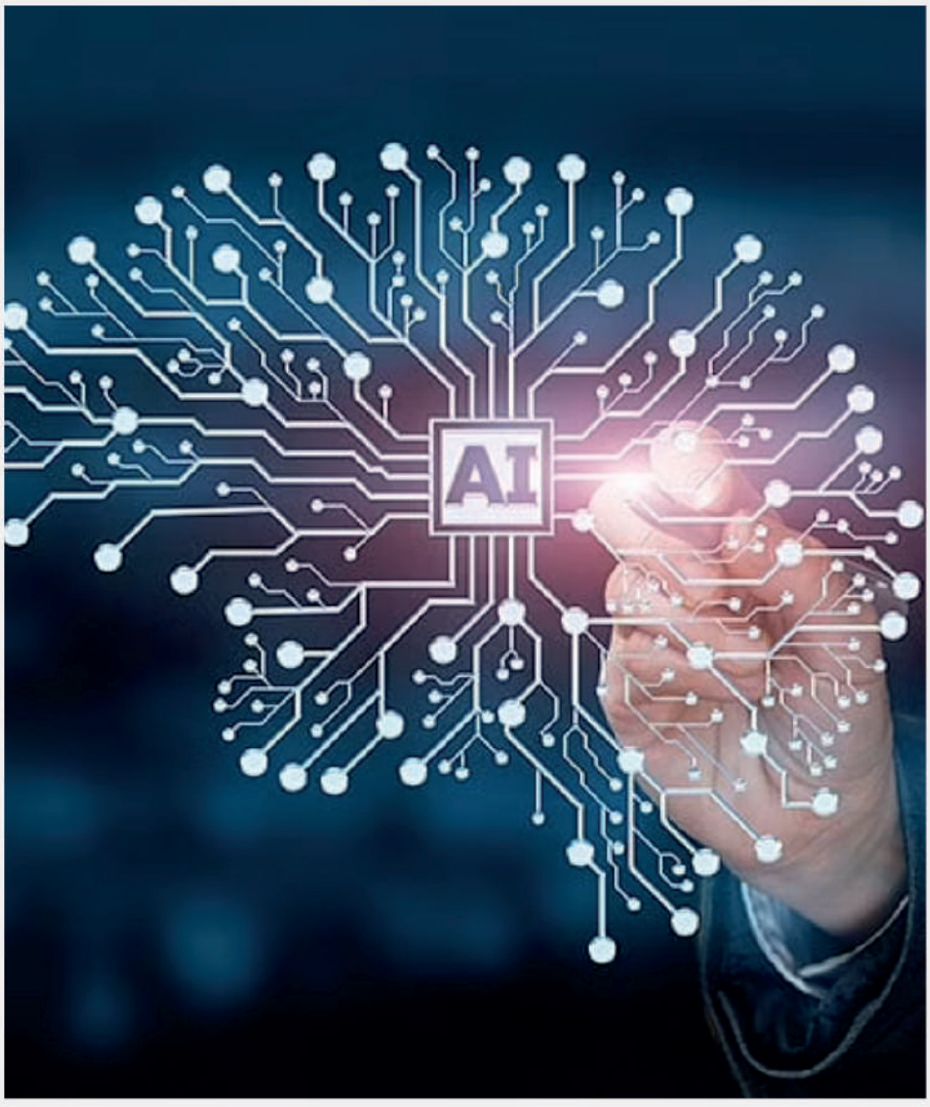
The world's first entirely 3D-printed satellites will be sent into orbit in 2022, which is another indication that satellites are getting more affordable and available. The internet of things (IoT) gadgets that are increasingly becoming popular in homes and businesses all over the world are the main focus of these satellites' design, which is to offer communications and networking options for them.

4. Cleaning up our mess

We might end up wrecking the rest of the cosmos just as we damaged our planet, which is a troubling side consequence of space exploration. Up to 8,000 tonnes of junk from earlier space missions and retired satellites are estimated to be floating in Earth's orbit at this time. These could endanger upcoming space missions since collisions with them could be disastrous and they also pose risk of interfering with many of the satellite systems we rely on, like weather predictions and GPS.

In light of this, it is comforting to know that when we venture beyond the atmosphere of Earth, we are already thinking about cleaning up after ourselves. The End Of Life Services by Astro scale-Demonstration (ELSA-d) mission, launched this year, aims to remove debris left behind in space by upcoming space missions. This is done by pulling drifting debris toward Earth with the help of magnets, where it will burn up in the upper atmosphere. The European Space Agency (ESA) is planning a mission ClearSpace-1, to send "self destructing robots" in ,which will be launched into space whose sole purpose would be to eliminate 100 kilogram of space junk left behind by previous missions. Another trash disposal spacecraft named Remove Debris will employ nets to gather floating rubbish.

DISTANCE BETWEEN HUMANS AND 'REAL' ARTIFICIAL INTELLIGENCE



Everything follows a pattern. Even in the randomness of the Universe one can find a pattern unfold. AI as we know it is one of the fastest and most promising field know to everyone, but how much do we know about it and how far are we from a time when AI becomes US.

In the recent times, with an increase in computing power in processor chips and their decreasing sizes, many operations, that were once unthinkable, have now become possible. From simultaneous multitasking to various graphics intensive games which couldn't have been performed in older Computers have now become a regular utility in newer PCs. Along with all such things, the field of AI too has grown to new heights. So obviously the question arises, how far has AI come and how far will it go in the upcoming future?

Firstly, what is AI? AI (or Artificial Intelligence) is a branch of Computer Science that deals with the artificial simulation of the complex thought processes of human beings inside a computer. The first and most misinterpreted part of AI is Machine Learning. (Yes, Machine Learning isn't Artificial Intelligence but a part of it.) Machine Learning is the development of a computer system that can learn and adapt to any situation just by searching and finding patterns in data and predicting newer outcomes. In simpler words, Machine learning is the process of finding patterns in seemingly random events. Have you ever unlocked your phone by just looking at it or experienced the fast and efficient search feature of your phones' assistant, all of those are possible because of a single machine understanding patterns and predicting the next processes based on it.

The most interesting and promising application of Artificial Intelligence is in the widely unknown but incredibly astonishing creation of Baby X at Soul Machines. Baby X is a simulation of an 18-month baby with a brain like the Human Brain with the ability to think, learn, understand, and respond based on external stimulus. He learns based on Neural Networks and Machine Learning and understands intent and facial expressions.

The Second most interesting application of AI is the Kepler Platform by Stradigi AI, a platform on which Users/Clients can interact directly with an AI without the feeling of talking to one. Most importantly, one of the Music Superstars Will.i.am is the AI advisor of this company with a digital copy of himself already being made.

We humans have become a lot like "cyborgs". The best example of it is seen when we need to go to a new destination i.e., first, we open Messages to ask people about the

Steve Fernandes
SE COMP A
Distance Between Humans and 'Real' Artificial Intelligence

DISTANCE BETWEEN HUMANS AND 'REAL' ARTIFICIAL INTELLIGENCE

place, then we use Google to search for some information about the place, next we use Instagram to announce that we are going to that place, next the weather app and finally Maps to find the directions to reach there. This is very similar to what an AI would do to guide you through a city to a new destination. In fact, this is exactly what the now implemented Autonomous Cars are based on.

Artificial Intelligence is also being used in Firefighting, Sports, and Racing. In one situation AI was able to help a former mountain-climber who had lost his legs due to a life-threatening accident rediscover his joy for climbing.AI surprisingly is also being used in the cooking industry at the infamous Zumepizza.com where using ML they were able to predict what pizzas should be baked and in what quantity and where it should be discovered. Though this business later came to a stop the idea that it brought into the industry is said to be one of the most creative and game-changing one the food industry had ever seen.

After going through all this, though it seems to be quite advanced, AI still has a lot of flaws. The first and the most important one being "common-sense". At this point the quote – "Common Sense is uncommon" holds golden. The next one being Trust. For any technology to become mainstream it should be able to earn the peoples Trust and AI is lacking in this field mainly because of its latest depiction of AI in the newer films. Though this phenomenon seems to be highly fictional some scientists say that it could become a reality. The next one is data. For any ML algorithm to be precise it needs data, a lot of it, which obviously infringes on people's privacy. AI models also seem to give some highly peculiar suggestions which we aren't quite able to understand and hence will never know the outcome of, for e.g. the pit RHO AI during one race had suggested a driver to pit his vehicle at a time when mostly none would, which led to some curious discussions between the Chief and the Pit Master, however later this decision wasn't followed by the driver because of lack of trust, but this event proved to be one of the most shocking yet awe inspiring event in the history of Racing.

In conclusion, AI is already around us, in various forms from our laptops to our clocks, from our cars to our watches. AI has proven itself to be quite a game changer and is continually proving itself useful. However, saying that, we can also say we are at quite a safe distance, from a world, where we can differentiate "AI from Humans", but if the patterns in the past hold true, this entire system is coming closer to become a part of reality very soon.

ACCESS OF INTERNET TO REMOTE AREAS

Internet, and the things that come along with it, prevail today at a large scale and its requirement remains on a frequent basis. It plays an immense role in the development of our country and also in individual development. Since before the covid-19 pandemic, Students have relied on online education in the forms of courses and sample tests and quizzes. Any and every task can be performed with the aid of internet.

So, what if the internet collapsed? A burdensome life indeed. For some, even a day without the internet is difficult to fathom. The cons of having no internet will be faced by the masses starting from businessmen sending out emails daily, to a person waking up every morning to scroll through Twitter and LinkedIn, (the fastest news updates).

The young generation, may take the Wi-Fi or mobile data for granted, but there are over 25,000 villages in India still lacking internet connectivity. The most common internet lag situations erupting is frequent disconnects from online zoom or google meetings, voice lagging and slow file uploads and downloads. But students have a lot on their plate. And no student should be hindered education, on account of limited internet access. Telecommuters as well (who shifted to work from home at their village) due to lack of fibre connectivity are not provided with internet facility and henceforth lose the opportunity to work from home. Furthermore, what if your fund transaction fails as a consequence of the same?

The right to internet access (right to broadband or the freedom to connect) is also a human right.

SOLUTIONS?

In 2012, The government of India, set up a telecom infrastructure provider, transmit signals over long distances. Bharat Broadband Network Limited (BBNL). BBNL commenced a fibre connectivity project, "Bharat Net: The Backbone of Digital India". Fibre Optic Cables have been brought in many villages on which wireless internet has been setup by a company, Multicraft Digital Technologies Pvt. Ltd. Fibre Optics are thin strands of great length. When fibre optics are arranged in bundles, they are called optical cables, and are used to transmit signals over long distances. The Government of India provides reliable internet infrastructure to multiple villages but, many do not use it because of the expenses. Indeed, the connectivity is improving all across the world. Recently, India launched 5G network services in the country and many more 5G services. Mukesh Ambani of Reliance Industries Ltd., mentioned the coverage of remote corners of India with affordable 5G network the upcoming year. This will lead to development of all the citizens of this country, and advancement in the future.

Purva Gharat
SE COMP A
Access of Internet to Remote Areas

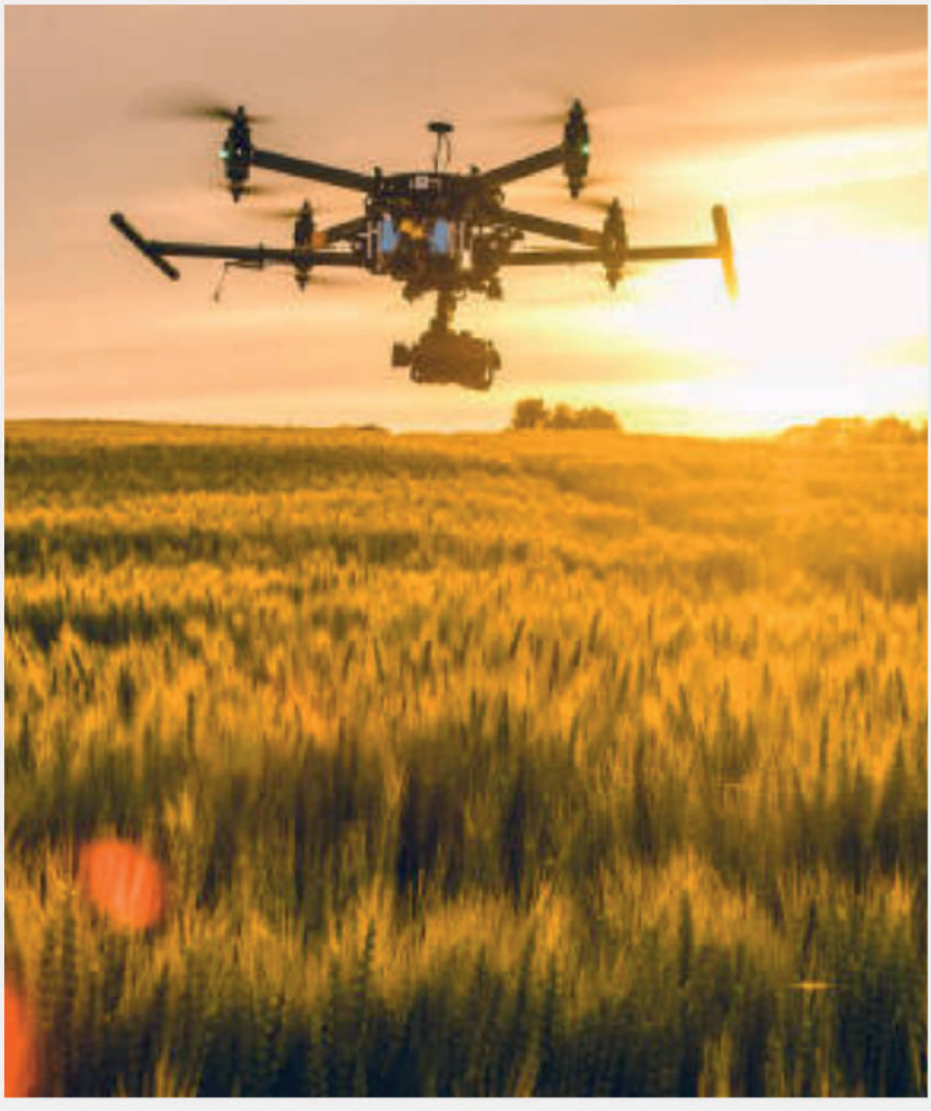
THE USE OF DRONES IN AGRICULTURE

Drones, or unmanned aerial vehicles, are used by many different types of businesses for monitoring. They were mostly used by the military, as well as companies in the mining and construction industries.

But a number of agricultural industries increasingly embrace drone technology as well.

due to the fact that drones can fly 50 to 100 meters above the ground, take high-resolution pictures, view data in real-time, and provide information on the quality of the soil, plot sizes, plant health, and other things.

Drones are used to plant seeds, apply fertilizers, and water as well as react more quickly to threats (weeds, pests, and fungus), shorten crop scouting times (to confirm the effectiveness of treatments), and improve variable-rate irrigation.



Sagar Gupta
SE COMP A
The use of drones in agriculture

5G- A BOON FOR INDIA'S GROWTH

We all use the internet in one or the other way, from chatting on WhatsApp to watching videos on YouTube, from watching films and TV shows on TV to watching them on OTT Platforms. internet has changed the human lifestyle completely. Recently when Covid-19 came as a hurdle and the whole world was under lockdown because of the internet students were able to study online and their whole year was not wasted, and businesses were also moved online due to the internet. The whole world is now connected to social media apps like Facebook, Instagram, and Twitter. We can talk to our family members which are staying abroad using the internet. So as the internet plays such a key role in our life, technology enhancement is a must to provide a more easy and convenient life to humans and as a result, 5G services are launched in India in 2022 by the Honorable PM Narendra Modi. But how 5G will be a key player in India's Growth and why all are so excited about 5G services in India?

5G is said to be 100X times more powerful than 4G. 5G alone is likely to benefit the Indian Economy by ₹ 36.4 Trillion or $455 Billion from 2023 to 2040. Recently our PM also shows a demo of 5G technology in Automated Guided Vehicle (AGV) by driving a remotely controlled car in Sweden using a 5G link from Delhi, India. As 5G comes to India farmers can keep an eye on the farms using drone technology by 5G which can lead to an increase in production. Online study can be more convenient with 5G technology as Indian Online Market will be more than ₹325 billion by 2026. Online business meets will be favorable for corporates as it reduces the cost of going to different cities and it saves time too. AR and VR technology will get a boom as its required high internet speed which can be fulfilled using 5G. Online Health check ups and quick results can help in increasing the life expectancy in India.

But these all are applications of 5G for civilian purposes but this technology is useful in the military too. Rustom which is India's first indigenously Made in India Unmanned Aerial Vehicle (UAV) military drone is being developed by DRDO which uses a 5G link to control the Drone in High Altitude Areas. Indian Army can use 5G technology to find the hideout of terrorists and to find out the landmines with a UAV that is remotely controlled so that no man will lose his life. It can be used while doing military operations as it is more encrypted and safer than the previous network. So it is right to say that 5G is a boon and will play a critical role in the Indian economy and achieving India's mission of being a developed country till 2045.

Jainish Jain
SE COMP A
5G- A boon for India's Growth

PLASTIC RAIN'S DIAMONDS

Imagine being able to solve carbon and plastic problems at once, while creating new materials of significant industrial value.

This is exactly what new research from the Helmholtz Zentrum Dresden Rossendorf Institute in Germany has found. This news focuses on the possibility that a distant planet may have huge (nano)diamond reserves. If this could be commercialized on a large scale, the large amount of plastic waste we generate would turn into a significant reserve of a valuable resource. It can be used for advance health treatments. Inspired by giant icy planets like Neptune and Uranus, the study shows that lasers can turn ordinary plastics that we use in our daily lives into tiny diamonds.

Using super-powerful lasers, scientists have blown up cheap plastic and turned it into tiny 'nanodiamonds'. Also the existence of an exotic new type of water was confirmed.The results could reveal that ice giants like Neptune and Uranus in our solar system are raining diamonds, and could explain why these frigid worlds have such strange magnetic fields. The laser blasting technology could also lead to more terrestrial applications.

What is nanodiamond?

Nanodiamonds are diamonds that are only a few nanometers, or billionths of a meter. They have both existing and potential applications such as converting carbon dioxide into other gases, and delivering drugs into the body, etc.

"Nanodiamonds could also be used as ultrasmall and very precise quantum sensors for temperature and magnetic fields, which may result in a plethora of applications," Dominik Kraus (a physicist at Helmholtz-Zentrum Dresden-Rossendorf, Germany) said. This technique could also reduce plastic pollution by creating a financial incentive to clear and transform plastics from the oceans, he said.

An experiment with cool implications for icy giant planets.

For many years, planetary scientists have suspected that diamonds form in the cold interiors of ice giants like Neptune and Uranus.

If these diamonds do form, they would then "rain" through the interiors of these frozen worlds.

To see if this process is feasible, the researchers took a sheet of polyethylene terephthalate (PET) plastic (the kind found in plastic bottles) and attached it to the extreme conditions of matter in the SLAC National Accelerator Laboratory's Linac Coherent Light Source to heat the plastic to around 10,000 degrees Fahrenheit (6,000 degrees Celsius).

This created pressures millions of times the pressure of the Earth's atmosphere for just one billionth of a second. This bone-crushing pressure impacted the plastic, causing the carbon atoms in the plastic to

Malvin Sawant
SE COMP B
5G- A boon for India's Growth

PLASTIC RAIN'S DIAMONDS

rearrange into a crystalline structure and hydrogen and oxygen to migrate through this lattice.

"Using a powerful X-ray laser, we could look inside the sample and create movies of the chemical reactions happening there," Kraus said. "We saw very efficient formation of nanodiamonds inside the compressed plastics within the timescale of our experiments, just a few nanoseconds."

A new study shows that this type of diamond formation is more common than scientists previously thought, showing that ice giants may sport thick layers of diamonds around their solid cores.

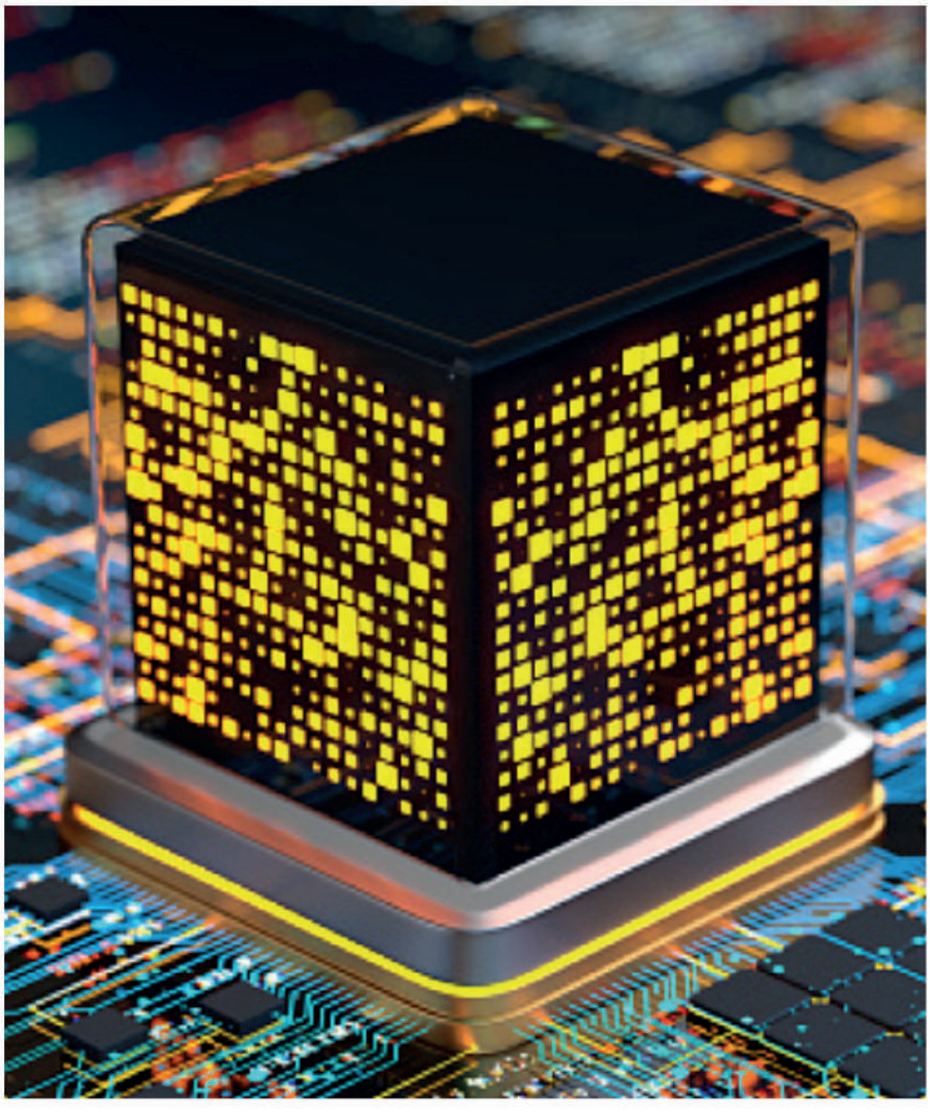
This experiment also strongly suggested that at the high temperature and pressure inside such icy worlds creates an exotic state of water, called superionic water ice. This strange form of water allows protons to pass through the lattice of oxygen atoms. If such superionic water exists on ice giants like Uranus and Neptune, the motion of protons through this exotic type of matter could help create the unique magnetic fields observed on those planets. Previous calculations have suggested that the carbon atoms likely to be found in planetary interiors make the superionic water that formed there highly unstable.

However, "our experiments now show that carbon and water are demixing [the unintended separation of the substances in a mixture] via diamond formation," Kraus said. "Thus, isolated water can be present inside the planets, which makes the formation of superionic water more likely."

And it may soon be possible for a spacecraft to visit our icy neighbours to see whether diamond rain and exotic water actually exist there. "Hopefully within the next decade, a new NASA space probe will be launched to Uranus, as just defined as the highest priority by the decadal survey," Kraus said.

The findings could also have more commercial applications. People now manufacture nanodiamonds by blowing up carbon or blasting larger diamonds with explosives to create a hodgepodge of diamonds of varying sizes. The new method will be a cleaner way to create diamonds of a given size.

QUANTUM COMPUTER



I. INTRODUCTION

The creation of Computer in the history of mankind was depended on the need of development and for a faster, easier and smoother life. It began with an early idea of Charles Babbage, also known as 'Father of Modern Computer'. He put forth the design of a mechanical computer which could perform simple calculations which was followed by the eventual creation of first programmable computer by German engineer Konrad Zuse in 1941. From 1941 till now the advancement in the computer to make life even more faster and safer had made the computers considerably more compact than their 30-ton ancestors. On the other side, the Quantum theory which is the theoretical basis of modern physics and explains the nature and behaviour of matter and energy at atomic and subatomic level was backboned by Max Planck and Niels Bohr. Matter obeys the rules of Quantum Theory which are quite different from the rules of classical Theory. With the shrinking ability of the classical computer to satisfy us with the solution of complex problem a need of a new technology computer was arisen and this need gave momentum to the idea of Quantum Computer which harness the principles of Quantum Theory to find the solutions of complex problems. The idea of Quantum Computer was proposed by Richard Feynman and Yuri Manin. After a study it was found that this computer whose components functions in quantum way are more powerful than any classical computer. A whole new idea of Quantum Computer was built whose memory is exponentially larger than its apparent physical body and who can manipulate an exponential set of inputs simultaneously was developed. Looking at the importance Isaac Chuang, Neil Gershenfeld and Mark Kubinec created first two-Qubit Quantum Computer. On November 16,2021 IBM (International Business Machines Corporation) announced its new 127 -quantum bit (Qubit) 'Eagle' Processor at IBM quantum summit 2021 and more research has been conducting on it to expand the applications.

II. WORKING OF QUANTUM COMPUTER

Quantum computer uses quantum two-state system called as Quantum bit or Qubit as a fundamental unit over classical computers which use Binary digit (Bit) system. The bit system carries out logical operations using 1 or 0, any one of two positions. This single state 1 or 0 is known as a Bit. On the other side, Quantum computer uses the Quantum state to produce the well-known Qubit.

The Qubit can switch between 0, 1 and a state called 'Superposition' (Combination Of 0 and 1). The Superposition state functions similar to Heisenberg Uncertainty Principle. This superposition state has a more fluid non-binary identity with some probability of being 0 and some probability of being 1. It can be consi-

Urmil Pawar
SE COMP B
Quantum Computer

-dered as a certain ratio of 0 and 1, for example: 70% chance of 0 and 30%chance of being 1, 80% chance of 0 and 20% chance of being 1, 60% chance of 0 and 40% chance of being 1, the possibilities are infinite. The superposition state holds the strong idea of giving up on precise values of 0 and 1 and accepting some uncertainty. This is similar to the concept of mixing two fluids (0 and 1), after stirring both remain present in the container but the ratio keeps on apparently changing. We can even consider our earth to understand the superposition state. Consider the North pole as 0 and South pole as 1. A bit can only switch between these two poles but a Qubit in its superposition state can be at any point, may consider Mumbai in India or New York in America.

As Qubit obeys uncertainty principle, more accurately we try to locate its position the less accurately we can measure its value. Though the value of Qubit in its superposition state can't be measured, it can be used and manipulated and can be mathematically related to solve complex problem. The complex mathematics behind these unsettled states can be plugged and can be used to harness special algorithms to sort out a complex problem easily. As problems become more complicated classical computer requires more bits to solve it while a Quantum Computer can able to handle the issue without requiring more and more Qubits.

III. APPLICATIONS OF QUANTUM COMPUTER

A. Health care and Medicine:

Design and analysis of molecules for any drug development is a big challenging problem today as determining and calculating all the Quantum properties of all atoms and molecules is practically much difficult for even a supercomputer. But, On the other side Quantum Computer works using same Quantum Properties. Quantum Computer can analyse trial and error and can effectively understand it's reaction on humans. So, future large-scale simulations for drug development can lead to the treatment of many incurable which can affect millions of lives.

B. Cybersecurity:

With increasing digitisation our vulnerability to cyber-attacks has increased it has become difficult for the classical computers to deal with this problem. Quantum Computer with the help of Machine learning can help to deal with such a problem. Quantum Computer can create an encryption method in which Private Keys can be created with help of Quantum Uncertainty for encrypting messages so that the hackers cannot be able to copy the key due to Uncertainty of Superposition state. To do such a Job they need to break the Uncertainty Principle.

C. Artificial Intelligence and Machine Learning:

Artificial Intelligence and Machine Learning are the new emerging field which can put a deep impact on human lives. However, expanding such field and to deal with the same speed and accuracy is a challenging task for classical computer But Quantum Computers can handle and process complex calculations and algorithms with its Qubit which can help to develop and expand this field to an extent we haven't even imagined.

D. Weather Forecasting:

Dealing with the nature is one of the hardest jobs in the world as it has proven us wrong many times no matter how accurately we calculate and find the answer. Weather forecasting consist of several variables such as air pressure, temperature, air density, etc and even disturbance in any one or two of these variables can affect the weather to a great extent. Quantum Computer can help in increasing our accuracy and speed by storing data effectively and analysing changing weather patterns for making prediction more precise and ahead of time.

E. Quantum Teleportation:

Quantum Teleportation is teleportation of information from one location to another without physically transmitting the information. In other words, a Quantum information of photons, atoms or electrons can be transferred from one place to another without and physical medium. It occurs due to the fluid identities of Quantum Particles gets entangled across space and time in such a way that when you change something about one particle it impacts the other and creates a channel of teleportation which can create future Quantum internet.

IV. CONCLUSION

The Idea of the Quantum Computer is a way to explore the Quantum wonderland. The Qubit system the computer uses can change many lives in this world and its applications that have been seen are only the vanguard of the entire army of Quantum Universe which we have never imagined. Quantum Computer holds the responsibility of a Quantum future which will be much safer and faster than today. It is not only a way of building a smoot life but also a pathway to probe the mysteries to nature and reveal more about the hidden world of knowledge which we are unaware of, which had always rewarded us by showing how incredible it is. May be the Quantum Computer is fundamentally uncertain but the Quantum Future it will create will be certainly incredible.

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ACCESSIBILITY IN TECHNOLOGY

We live in a world where technology is an essential part of our daily routine, it is ever present in all parts of life, be it transportation, communication, social--ization , education or entertainment. From devices we use everyday like electric toothbrushes, clippers, water heaters, air conditioners and personal computers to specialized devices such as space or ocean exploration vehicles, car racing equipment, medical technology and much more, the main goal of technology has always been to make our lives easier and it is always developing. One such way technology makes our lives easier is by being accessible. Accessibility is the practice of making activities, objects or environments sensible, meaningful and usable for as many people as possible.

Accessibility in technology can look as simple as providing captions to your videos so that they can be understood by the people who are hearing-impaired. Another way technology is made more accessible is with text-to-speech softwares, which read content out loud for you, and this includes not only the openly visible text on the website but also the descriptions of images or videos. However, this requires the alternative text for images and videos to be provided. Some other examples of accessible technology which can easily be found in the devices we use now include Colour filters meant for people with colour blindness. Colour filters change the colour palette and help people with colour blindness better distinguish between things that are identifiable on the basis of colour. Sticky keys is another feature that is easy to enable and helps people with disabilities, as it allows modifier keys like ctrl and alt to remain active without having to press on them. The Magnifier helps visually impaired persons by letting them magnify their screens.

Onto the more advanced breakthroughs in accessible technology, the Tap and wearable keyboard is a type of keyboard which goes around the user's hand and requires limited movement to be used. It is connected through 5 rings which go around each finger. This keyboard can be a great device for people with limited mobility as it transforms any surface into a keyboard that you can "type" on. Lastly, the Multi-line Braille Display machine called the Canute is groundbreaking as something that, as the name suggests, can display multiple lines of braille at a time unlike most other braille displays. Most braille display machines can only display one line of braille at a time, which is impractical in certain cases such as when you need to read a table, as tabular information cannot simply be understood or interpreted one line at a time. The Canut can display 9 lines with 40 characters at a time as compared to the usual 1 line of 12-80 characters at a time of other braille display machines.

Gayatri Mestry
SE COMP B
Accessibility in Technology

ACCESSIBILITY IN TECHNOLOGY

In conclusion, accessibility in technology is incredibly important for us to make meaningful advancements while including everyone and I encourage everyone interested in developing technology to make it accessible for everyone.

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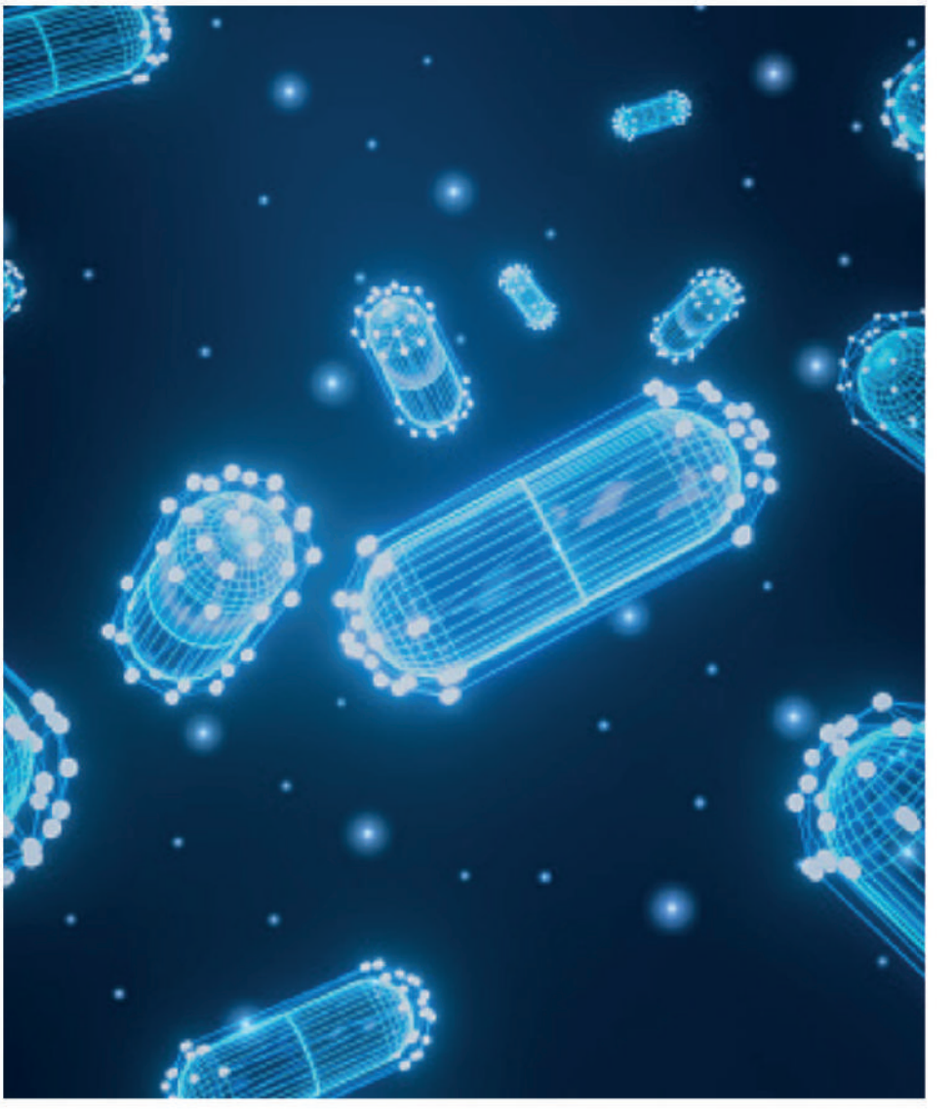
TECHNOLOGY IN PHARMACEUTICALS



INTRODUCTION

It has been argued for decades that pharmacists are underutilized and could use their knowledge and experience to improve the use of medicines. The traditional role of pharmacists has been to prepare and distribute medicines, but this has limited both where they work and the time available to work more closely with other healthcare professionals to improve the effectiveness and safety of medicines. Emerging technologies have made this possible. Adoption of innovative ideas can be very slow, even when the innovation has a well-proven positive impact.

Technology used:

Pharmacists already use IT systems to support their day-to-day work, and when considering IT requirements for emerging workflows, pharmacists should consider what functionality could be provided by the systems they already use. For example, all pharmacies use pharmacy management systems for medication records, dispensing, labelling, and ordering and inventory control. However, many pharmacies do not use all available features of their system.

The adoption and use of e-prescriptions in areas where it is available has the potential to streamline the dispensing and reimbursement processes for community pharmacists, and the nomination process can help pharmacists secure the prescription business.

Access to patient record systems will assist pharmacists with professional decision-making in providing patient-centered services. For example, the summary care record is now available in many areas and has proven beneficial for hospital pharmacists in medication reconciliation. In the future it may be used by community pharmacists, for example with MUR and emergency supplies. As pharmacists provide more patient-centred services in the future, they will increasingly use national and local patient record services to do so.

Electronic prescribing (EP) systems automate the prescribing, dispensing, and administration of medications in hospitals, where they have been shown to reduce medication errors and have a major impact on patient safety. However, the error-reducing effect depends on the system design, and a poorly implemented system can actually increase the error rate.

The use of mobile phones is widespread in society. Some pharmacies use text alerts to remind patients that repeat prescriptions are ready or to offer services, but sophisticated apps have been developed for disease monitoring, such as asthma peak flow recording, blood glucose monitoring, medication adherence support, and health education. These applications

Khushii Nikhade
SE COMP B
Accessibility in Technology

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will have a greater impact on pharmacy practice in the future.

Conclusion:
A number of systems and technologies are available to support drug delivery and use processes. With clever use of technology it can make a huge difference in the pharmaceutical sector, by making everyone's lives easier and connectivity plausible.

AI IN AGRICULTURE

Artificial intelligence (AI) is taking the world by storm, and farming is no exception. AI-powered agriculture is quickly becoming one of the most promising areas for AI. In this article, we'll explain what AI can do for farmers and how it can help them tackle challenges with data collection, labour shortages, and more. If you are reading this right now, chances are that you are an urban dweller or a suburbanite. You might spend your days in offices or factories, cafes or libraries. Unless you're the type who loves to get your hands dirty and spend your free time working on your vegetable garden back home, there's a good chance that you don't have much insight into what life as a farmer looks like in this day and age.

That doesn't mean that you can't be interested in artificial intelligence and its impact on farming–after all, almost everyone eats at least once a day! Keep reading to learn more about artificial intelligence and its role in farming today and tomorrow. First let's tackle the question what is AI? AI is simply one of the greatest things that happened to human-kind. AI is like a child that learns to make better decision as time progresses. There are different algorithms and models that people made for AI to work efficiently. How can we apply this in farming you ask?

There are five major ways in which AI can contribute in agriculture. As we know that harvesting is a heavy task that is carried out after the desired plant is completely grown after months. This process can be carried out by AI controlled machines. These machines can work even more effectively in the case of deep-water culture as the water (solution) container in which the plant is grown can be provided AI support to move and maintain health of plant by regulating the components of solution this leads to the next topic which is health maintenance. Health maintenance is also one of the places where AI can show its true power. There are AI powered machines which can remove weeds that grow near plants how this works is simple. There is a camera attached to these machines which is looking for keeper plants (plant that is to be kept) and moves away its blade to avoid cutting it and it cuts all the weeds. Also, by using image processing technology we can detect if any plant has any kind of disease.

This can be done by scanning leaves of the plant in regular basis. Irrigation is one of the most vital agriculture processes. Since marginal gap in irrigation frequency can result in dehydration of crops, we need a routine-based irrigation system. This is where AI comes into play again. There is AI based irrigation sprinkling systems that timely hydrate the crops and also avoid excess water to pile up by checking moisture in soil. Last but not the least AI can be used in analysis of all sorts of data that can help us make better decisions like, in marketing aspect which crops are in demand. Apart from that it can also

Prabhat Pankaj
SE COMP B
AI in Agriculture

AI IN AGRICULTURE

predict the amount of pesticide needed by observing multiple variables that counts like changes is field.
In conclusion the applications of artificial intelligence in agriculture is immense the only major challenge is that it requires high-cost investment and skilled technicians for maintenance. Therefore, this technology is accessible to people and businesses that can afford high amount capital. But as we know the waves of technological advancement only get bigger someday, this technology will be cost effective as well.

REALITY OF THE METAVERSE

I INTRODUCTION

Technology has always amazed us. Stone Age humans would hardly have thought that current trends such as artificial intelligence, . quantum computing, atomic power , computer game and augmented reality would become a reality.

A. Anticipation

Technological breakthroughs are often anticipated decades beforehand , but it's difficult to predict how they will occur.), and technical development of the Metaverse. the thought of AR and VR already existed in 1838, but it had to attend until the world had the technological capabilities (graphics and computers) to create what it is today. Similarly, the thought of the Metaverse existed in his late 1970s, but at the time was little quite the concept of a successor or evolution of the Internet. within the early 1980s, many technologists predicted a far better future, or maybe a possible replacement for the Internet. Speculation at the time speculated that the Metaverse would revolutionize the digital and physical worlds alike, extending to all or any related services. it's expected that the Metaverse will transform the way digital and physical services work and have a profound impact on the cultural, social and economic aspects of life.

B. Origin

The term "metaverse" first appeared in Neal Stephenson's 1992 The term "metaverse" first appeared in Neal Stephenson's 1992 fantasy novel Snow Crash. The novel may be a virtual reality-based internet story where people explore the online world using digital avatars of themselves. These worlds were created for people to flee the real world when the global economy collapsed and governments were put out of power by a handful of megacorporations. The Metaverse itself may be a coined word combining two of his words, "meta" meaning "transcendence" and "verse" meaning "universe". Simply put, the Metaverse will cause a universe beyond the physical world. In technology, the Metaverse may be a term that describes a computer-mediated universe, free from the restrictions of the metaphysical and mental realms of the physical world. The Metaverse has been described as a futuristic internet technology that pushes the technological boundaries of today and offers an entire new experience for the next generation of users.

C. Practicality

Metaverse allows users to use avatars to interact with one another and with software applications in three-dimensional (3D) space. Metaverse combines multiple facets of digital reality like social media, AR, VR, online games, and cryptocurrencies to facilitate virtual interactions. The metaverse is "a shared virtual environment that folks access over the Internet." This technology creates a series of virtual spaces that folks

Aditya Dastidar
SE COMP A
Reality of the Metaverse

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can immerse themselves in through avatars/holograms, making them desire they are in the same physical space. Metaverse utilizes multiple technologies like his fully immersive 3D space, VR and AR to make its presence. the general goal is to take advantage of the possibilities offered by the Internet to provide users with a personal interaction experience. this is often a major milestone in leveraging the persistence of virtual worlds to provide a platform where multiple users in different physical locations can interact in real time for a variety of purposes.

II. APPLICATIONS

The basic idea of the Metaverse involves the blending of immersive and virtual online digital experiences.Consumer Survey of 2021 augmented reality.

A. Social Networking

The Metaverse enables users to reinforce their social network experience by creating a platform where users experience real-life presence in virtual environments. Brands like Facebook have already integrated the metaverse into their platforms to offer this kind of experience. Social media becomes more immersive with the assistance of virtual and augmented reality.

B. Business Communication

The Metaverse revolutionizes business communications. Online communication applications are now making video and audio available to users. The Metaverse can create a more seamless experience through real-time, hologram-based communication. for instance , if a true estate company integrated his Metaverse, he could create a virtual tour of a house for his customers and knowledge the place as if it were real life. The Metaverse is additionally changing the game when it comes to working from home, as meetings and seminars become more realistic.

C. Blockchain

Blockchain is that the technology behind Bitcoin and cryptocurrencies. A database that securely records transaction records. The metaverse needs how to transfer value while preserving user trust, therefore the ability to transfer value is a key factor. Digital collectibility may be a key aspect of the metaverse and blockchain. Asset uniqueness and originality are mandatory within the metaverse for proposed real-world activities. Blockchain brings a worth proposition to the Metaverse and provides ample evidence for the growth of future Metaverse blockchain and crypto projects.

D. Marketing

The subsequent rise of social media platforms took marketing to another level. We understand Metaverse is an enhanced online experience that gives a new platform for businesses to innovate their marketing plans. Businesses can create avatars and social sites to point out how they brand their company. These platforms also work digitally for marketing promotions, like online advertising and distribution of marketing content.

III. REALITY

The Metaverse isn't a thing, a company, or an area . The Metaverse may be a future time when the virtual world is more valuable than the real world. But the question is when which will happen. the reality is that it has already happened. When it involves us today, Rolex watches aren't worth much compared to their Instagram-verified blue checkmarks, social his media friends are worth quite their neighbors, and most of the people in the real world I prefer online games to outdoor games in the street. rather than showing off his luxury cars and possessions in the real world, he shows interest in his NFT collection, which is dear after cryptocurrencies. So it is the exact time in the future when things in the virtual world will be more valuable than things in the physical world, and this alteration is happening so quickly that all companies are competing for their product app assets. increase. More valuable than competitors A.

A few days ago, his NFT-based Metaverse land company called Metaverse Group bought a property on a virtual land platform called Decentralize for $2.43 million. This was the very best amount ever spent on virtual real estate

A. Technology

The application of blockchain technology in the Metaverse will provide the decentralized and transparent environment needed for the Metaverse. With the assistance of blockchain, developers are able to introduce many features into the metaverse. a number of them include digital ownership verification, governance, value transfer, digital collectibility, interoperability, and accessibility.

Augmented reality and computer game are two powerful engines that play a key role in driving virtual experiences. These are the essential Metaverse development technologies for creating an immersive and interesting trio.

A dimensional environment mapped to the metaverse. Next to the highest technologies for developing the metaverse, AI is another important technology driver for creating the metaverse. AI has found many promising applications, especially within the areas of business strategic planning, face recognition , decision-making, analytics, and high-speed computing

REALITY OF THE METAVERSE

IV. INNOVATION

Much has been said about the metaverse and its potential to improve our lives in the future. We have already seen how technology in general offers solutions to almost every problem. And the Metaverse, which is rapidly gaining momentum in 2022, is expected to continue improving our lives.

A. Facebook has become meta

Recently, Mark Zuckerberg announced an ambitious new initiative. It's Facebook trying to create a maximal, interconnected set of experiences straight out of fantasy , a world referred to as the Metaverse. A metaverse that spans the physical and virtual worlds. including full-fledged economy; providing users with unprecedented interoperability;Data Source: 'The Block'

B. Music In The Metaverse

One of the world's most recognizable hip-hop icons, Travis Scott, has released a whole album with a live in-game concert for Fortnite players. Music within the Metaverse will allow listeners to easily follow live events around the world without fear of pandemic restrictions, and musicians will enjoy touring without the logistics costs.

C. Brand Adoption

Adidas collaborates with the architects of Web 3.0 to launch its own NFTS. the corporate has also purchased virtual land on which it plans to sell virtual clothes in exchange for cryptocurrencies or NFTS. Meanwhile, Nike continues to form sneakers, which it still does best, but this point it's being worn by Metaverse residents. we provide a specially designed virtual sneaker for you. Samsung will debut his 837X in his Decentraland, a blockchain-powered metaverse modeled after its ny flagship store. consistent with Samsung, the 837X will combine cutting-edge technology with art, fashion and music to supply guests a whole new experience.

D. Virtual Land

US-based company tokens.com recently invested about $2.5 million ashore in Decentraland. "Prices have gone up 400% within the last few months," he said. Already he has one hot metaverse world sandbox, another company, Republic Realm, has spent his record $4.3 million on virtual land. The founder reported last year that her company sold her 100 virtual private islands for her $15,000 each. "Today they're selling these for about $300,000 each, which happens to be the typical home price in America," she said.

E. Crypto Integration

Cryptocurrency is widely known as the currency of the Web 3 and has become the currency of the Metaverse. Each metaverse has its own set of coins, wont to pay for everything from NFTs, virtual real estate, avatar shoes, and more. Ethereum is the driving force behind it by allowing various metaverses, NFTs and cryptocurrencies to speak with each other.

V. CONCERNS

The metaverse may be a great achievement, but its risks are undeniable. The danger it suggests is just too real to be realised. Nor does Meta's (formerly Facebook's) infamous controversy help build trust within the system. If metaverse creation is unavoidable, it should be through with due care and patience.

A. Seperation From Reality

Many argue that much of their future lies within the Metaverse. an issue arises:
how are you now? The Metaverse builds a world where your digital life is more important than your physical life. Virtual worlds are as exciting as you would like them to be. It can provide constant stimulation and endless new experiences. Living in such an environment, reality quickly becomes boring and unsatisfying.

B. Data Farming And Privacy

Businesses already use smartphones to trace dwell times, search terms, and other interactions. within the virtual universe, the chances for data mining are immense. Behavior generates much more data and can even reveal nuances of personality and behavioral patterns.

C. Cyber Bullying

Because the Metaverse is far more immersive, harassment during a digital world like this might feel more threatening and burdensome. 1 has been reported. Without policies and regulations, such cases could proliferate and therefore the Metaverse could become a popular platform for cyberbullying.

VI. FUTURE

The Metaverse has moved from literary textual musings to boundless technological reality, but the concept remains elusive for both viewers and industry veterans alike. The metaverse will become more tangible as we attempt to prove

REALITY OF THE METAVERSE

possible possibilities. so as for the Metaverse to mature to its next evolutionary stage, the player must overcome his three boundaries in space.
We attract talented people, make critical investments, and push the boundaries of innovative experiences.Seven Layers of the Metaverse.
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We attract talented people, make critical investments, and push the boundaries of innovative experiences. Seven Layers of the Metaverse. Seven Layers of the Metaverse

A. Securing Skilled Talent
Meta is actively hiring from a spread of sources, including Silicon Valley neighbor Apple and tech giant Microsoft. the corporate also announced that in Europe alone he will employ 10,000 engineers to create this next internet frontier. Chipmaker his Nvidia is additionally eyeing his Metaverse, but only they call it "Omniverse." together with his Omniverse Enterprise, Nvidia has established a subscription service that permits developers, designers, et al. to work together on a common online simulation platform. Meanwhile, the chip is that the lifeblood of the Metaverse, its graphics, and animations, so Nvidia features a growing need for his skilled Omniverse engineers. Platforms like Roblox and Epic Games' hit Fortnite, which have already built massive fan bases and in-game online economies, are well positioned to seize the chance . However, these gambling companies still struggle to seek out the right people to hire, exacerbating recruitment competition.

B. Decisive Investment
Gaming acquisitions will hit a record $117 billion in 2021, with the most important being Microsoft's acquisition of Activision Blizzard for $69 billion. Chip makers also will need to make the necessary investments to realize the potential to enhance the metaverse. Intel recently announced plans to take a position his $20 billion in two of his manufacturing facilities in Ohio. Institutional and individual investors also are gearing up for the Metaverse. SoftBank has announced that he will invest his $150 million in his Metaverse platform in South Korea in late November 2021. because the metaverse vision matures, so will investor appetite. Digital worlds like Decentraland and Sandbox allow virtual developers to build and rent digital shopping malls. One such developer spent his $4.3 million on assets acquired from game company Atari. land transactions in alternate universes surged,
In the new year, the competition for places will intensify.

C. Breakthrough Innovate Experiences
The future of work is being redefined with new metaverse experiences. additionally to Nvidia's Omniverse Enterprise, Meta's Horizon Workrooms and Microsoft's Mesh also are designed to enable working in virtual worlds, both of which enable remote collaboration between devices via Mixed Reality applications. Make it possible. Gates predicts virtual meetings will move to the metaverse. At the earliest he's no more than three years old. Schools and social life also still develop. for instance , Roblox plans to bring educational video games into the classroom. Platforms like AltspaceVR

REALITY OF THE METAVERSE

enable community-based experiences within the metaverse, allowing people to collect at live virtual events such as comedy clubs and concerts. a replacement era of commerce could be dawning, with stores selling everything from awesome digital pets to electronic clothing. Nike has registered brands for virtual gear, shoes, and accessories, and his luxury brands Gucci, Balenciaga, and Luis Vuitton have already started selling clothes and bags for his or her Metaverse avatars.

VII. CONCLUSION

The Metaverse isn't progressing fast enough for believers, but it's going to be progressing too fast for skeptics, prompting governments and regulators to intensify scrutiny. Still, the tech industry may be a firm believer in the Metaverse and expects it to reach $800 billion by 2024 and 1 billion people by 2030.

ROBOTICS: THE FUTURE OF HUMANITY

In recent years, technology has been blooming at a rate that no one had previously foreseen. It has broken all records of advancement and is rapidly rising today. It has proved its usefulness in various fields of medicine, agriculture, surgery, economy, and manufacturing. With the help of artificial intelligence and machine learning, the tech industry is taking progressing toward a future that no one has ever foreseen. One of these technologies which have the potential to change the face of the future is Robotics

What is Robotics?

Robotics is an interconnected area of computer science and engineering. Robotics involves the creation, maintenance, use, and operation of robots. Robotics aims to create devices that can assist and support people. Mechatronics, electronics, bioengineering, computer engineering, control engineering, software engineering, mathematics, and other disciplines are all integrated into robotics.

Robots are used in a variety of contexts, particularly when they can replace laborious work or carry out risky missions better than humans. Business and our society are being transformed by recent developments in robotics and AI. Robots are flexible so that they can operate in any setting and are consistent and accurate. Humans no longer need to perform hazardous jobs because robots can work in those conditions. They are capable of handling repetitive jobs, dangerous materials, and heavy lifting. This has helped businesses save time and money and avoid several accidents. Robots are utilized in the medical industry for complex procedures and surgery. Robots are more accurate because they can fit and reach places where human hands cannot. The evolution of robotic intelligence shows a wide range of hierarchies since the time it was first created

How do robots work?

The most basic robot consists of a physical structure, having movable parts, sensors, a power supply, and a computer 'brain' to control all its parts. Robots are capable of solving real-life problems, just like humans, and are meant to replicate human and animal behavior. They can do this with the help of Artificial Intelligence, Machine Learning, computer vision, RL learning, etc.

Very few robots have sensory systems, and few can see, hear, smell, or taste. The most common robotic sense is proprioception— the robot's ability to sense and monitor its motion

By using artificial intelligence, we can feed algorithms and data into the robots, and give them the cognitive ability to find solutions to real-world problems. The basic idea of AI problem-solving is simple, though the execution is complicated. First, the robot gathers information and facts regarding a particular situation through sensors. This information is compared to the stored data and the

Yashasvi Vaidya
SE COMP C
Robotics:
the future of humanity

ROBOTICS: THE FUTURE OF HUMANITY

computer runs various possible actions and predicts which action will result in a more successful outcome. For the most part, the computer can only solve problems it's programmed to solve — it doesn't have any generalized analytical ability. Chess computers are one example of this sort of machine.

With the help of Machine Learning, the robots are provided with directions and locomotive control. With Machine learning, the robots are trained in such a way that, through periodic evolution, they learn from their errors, nullifying the need for constant human intervention and simultaneous work. This guarantees flexibility. Along with this, AI and ML improve the potential of robots and increase the efficiency of production processes, especially for large labor-intensive businesses.

How Robotics Has changed our lives

1. **Healthcare**

Robotics is already a large part of the healthcare chain, which includes surgery, research medicine formulation, data updation, and so on. AI robots are used to track patients' health status and formulate medication and custom health solutions for the patients. Precise diagnosis has become easy with AI. Robots driven with ML are used in surgeries to unclog blood vessels.

2. **Space Exploration**

Astronauts often have to perform dangerous and challenging tasks in space. It is not feasible for Humans to stay in space for a very long time and delicate tasks need to be done in deep space. In these situations, robots are a great alternative as there will be no possible threat to human life. So space organizations like NASA frequently use robots and autonomous vehicles to perform tasks that humans can't. For example, Mars Rover is an autonomous robot that travels on Mars and takes images of the Martian surface and rock formations that are interesting or important and then sends them back to Earth for NASA scientists to study.

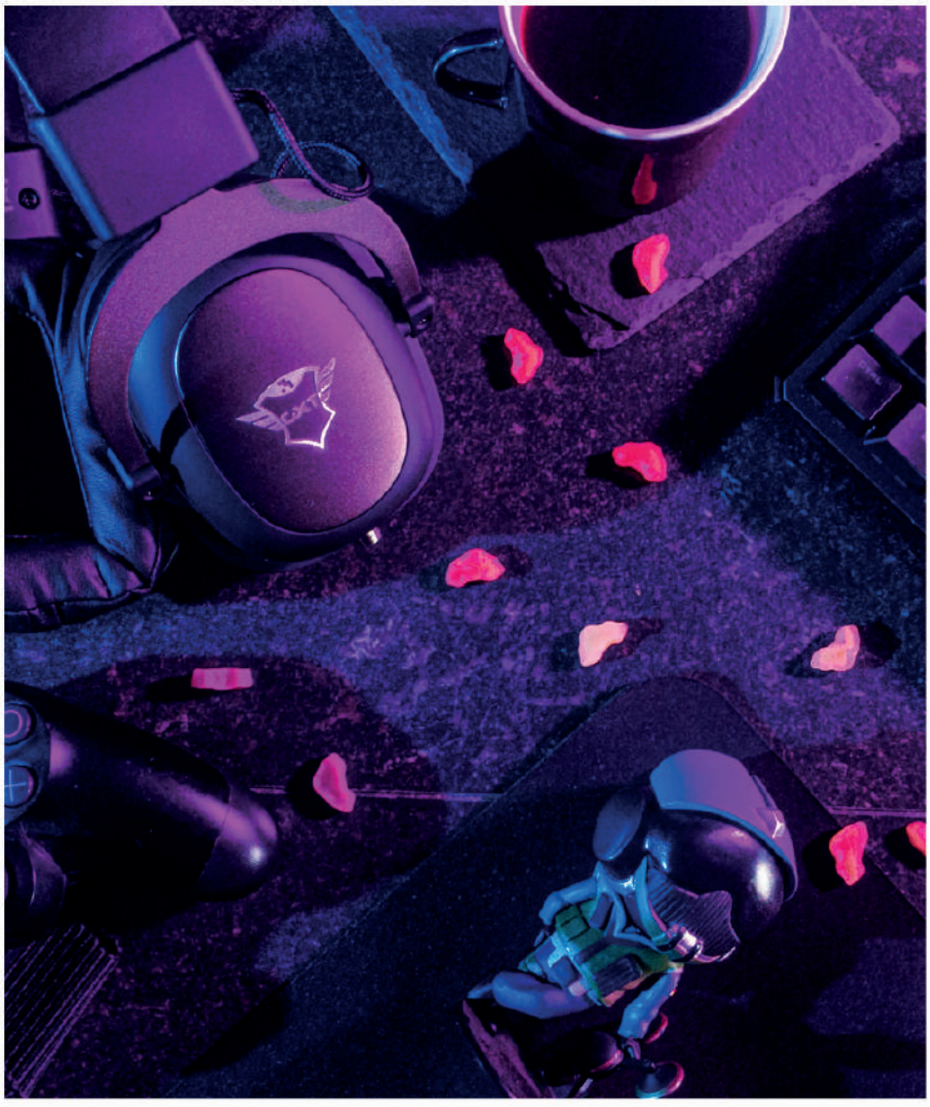
1. **Agriculture**

The sector that serves as the foundation for human civilization is agriculture. Agriculture, however, is a seasonal industry that depends on the weather, good soil, etc. Further, there are several repetitive tasks in agriculture that waste farmers' time and are better handled by robots. These include planting seeds, removing weeds, harvesting, etc. Crop harvesting is typically done by robots, which makes farmers more productive. The Ecorobotix is an example of a robot that is used to clear weeds from farmland. It has a smart camera system that can be used to target and spray and is fuelled by solar energy

Future

Researchers in robotics outline the interactions they anticipate taking place between new robotic technology and society as they create robots as technological solutions to social problems. Although social issues are used as a driving force for robotics development, talks of technology possibilities and concerns quickly replace them. With the help of robotics, it is possible to carry out tasks and reach places that are nearly impossible for us humans. The global scenario tells us that the widespread and constant innovation of AI and ML in various sectors.

TECH IN GAMING



Games sounds fun and interesting, isn't it?
Well, it is interesting and fun but very few people know it's a logic-building activity that improves . consciousness, problem-solving, time management, decision-making skills, etc. But after hearing the term video game public's first reaction is, it's just for entertainment purposes or relaxation, for many, it's just a waste of time.

But do you know that with video games we can make a career out of it? Today gaming is an 18- billion-dollar industry, with an increase in users many jobs opportunity have come to light like Game developers, Animators, Game testers, etc. Game developers are trying a new technique in AI (Artificial Intelligence) to develop games that allow the software to think more like humans which will bring more challenges in gaming as it works on human feedback.

Game testers are the people who play games and talk about their pros and cons to the developer to convey this type of review one need to have high knowledge of technology and its fundamentals.

With cloud gaming and streaming technology, many mobile phones and personal computers are coming with good technology for users to enjoy high-tech games. With the technology at its peak, we have many high-tech games on our mobiles to help people relax in between their busy schedules there are many Hightech mobile games that we all can play without any gaming setup and can connect from anywhere in the world.

The technology used in gaming such as :-

1. FACIAL RECOGNITION
2. VOICE RECOGNITION
3. GESTURE CONTROL
4. AMAZING GRAPHICS

As the gaming sector is blooming day by day many gamers are stepping up to become professional gamers, through online games many have gained popularity and fan base for their gaming skills.

Many Teens and Children are spending more time playing online games but there are many habits or skills which we inculcate while playing video games. What do video games help us with? It helps one with decision-making skills, it boosts learning power and social skills. As many teens nowadays surround by more toxicity and unhealthy society which makes them introverts to depression so online games, they can communicate with others without being with them in person can help them open up about their feelings and get past their social anxiety. It also helps the user to think creatively and work as a team or as a leader too, it can help you learn many languages some great examples of online gaming which include fun and learning i.e., Minecraft, Fortnite, fall guys, etc.

The "WORLD GAMING DAY" is also been celebrated to show the significance of games in our life.

Aakansha Singh
SE COMP C
Tech In Gaming

E-HEALTH - AN OVERVIEW

With new technology, the online market has emerged and embraced it in an expanded manner. Not only in education or job sectors but the online market has taken a new space in healthcare facilities too. Pharmacies adopted the online method for selling medicines. On the other hand, doctors too adopted the method of online consultation. E-Health has become an emerging industry. Digitalization affects almost every aspect of modern life including the healthcare sector. This service allows patients to use the internet for online communication with physicians.

E-health simply means providing healthcare via electronics. The Healthcare segment is advancing towards digitalization in every aspect such as e-consultations, health inspection, health education, and various other healthcare services.Developing nations like India require access to conduct studies related to the healthcare system in our country and evaluate the impact of the e-health system on patients and record their persistent outcomes. Other papers assessed e-health on basis of accessibility, feasibility, and medium of education in clinical practice. It was concluded that e-health services such as diagnostic services like teleophthalmology and tele ECG, distant consultation with a specialist through telemedicine, and adherence aids like automated voice reminders and pictorial messaging have a positive impact on patient outcomes.

This paper will discuss how e-health provides the facility for patients for being independent in terms of check-ups and will provide a close look at patients' health and how e-health has made it easy for doctors to monitor their patient's health closely. This also gives a clear reference to the barriers and challenges faced and describes the current situation of E-health not only in India but in different parts of the globe.

Introduction:

We have come across various meanings and definitions of E-health. Almost all sectors have different aspects of online medication. According to WHO, "E-health is the cost-effective and secure use of information and communication technologies (ICT) in support of health and health-related fields." However, intel referred to E-health as "A concerted effort undertaken by leaders in healthcare and hi-tech industries to fully harness the benefits available through the convergence of internet and healthcare".

E-Health describes how information and communications technologies (ICTs) apply to all functions that affect health. There are currently thousands of E-health websites and applications online offering health and medical care to patients. The amount of health-related information on the internet is increasing rapidly day by day.

The desire to assess the quality of health-related websites generated

Ayushi Jha
TE COMP B
E-Health - An overview

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nearly 200 papers from researchers in Austria, Denmark, Finland, France, Germany, and Hungary.

E-health in Developing countries :

Several of the approaches include online treatment programs using mobile phones and other interactive devices. We can simply define it as telemonitoring the patients' health who are facing any chronic illness and teleconsultation between health experts themselves. Before visiting the hospital, health consumers may utilize eHealth to gather information to determine whether they need to see a doctor. Then, if a hospital visit is required, patients can look for additional information following the visit. The usage of eHealth results in medical consultations being postponed or replaced, potentially lowering healthcare expenses. eHealth contributes to high-quality, accessible, and inexpensive care, encouraging patients to control their own health more. Both health professionals and consumers can use eHealth applications to communicate with one another via electronic devices, for example, to discuss test findings, and diagnoses, or simply to exchange relevant information.

Improving access to appropriate health interventions by closing medical care gaps is particularly important in developing countries rural areas, where instability and uncertainty are commonplace. The concerns must be addressed with a core principle to generate long-term eHealth implementations, such as regional integration strategies, medical education and training for health workers, and public trust in terms of security and privacy. Local people in developing countries face not only low (health) literacy concerns, but also cultural differences, language barriers, trust in the exchange of information, and complicated terms used to describe medical terms.

In 2014, the global eHealth market was worth USD 85.44 billion, and it is predicted to grow at a rate of 15.8% over the forecast period. In both high- and low-income countries, eHealth provides cost-effective healthcare delivery. As a result, the World Health Organization (WHO) is pushing eHealth and encouraging member nations to develop a strategic plan for the deployment of digital health services across the healthcare sector's numerous domains, functioning as a high-impact key engine for the industry's growth. The prevalence of lifestyle-related illnesses such as hypertension and diabetes is predicted to rise over the projection period as a result of people's increasingly sedentary lifestyles. Various physiological indicators such as blood pressure and blood sugar levels must be monitored around the clock to treat these disorders. These enable the integration of healthcare data with mobile devices, as well as forwarding data to physicians, allowing for real-time access to data and reducing errors, hence increasing demand for this business. Increased public awareness of eHealth and increased levels of acceptance among healthcare professionals, together with evidence of the efficacy of adopting this technology, are expected to propel this market forward. However, over the projection period, rising demand for safe data privacy infrastructure and growing security concerns are expected to restrain the expansion of these services. Furthermore, the absence of supporting infrastructure in developing nations, as well as the high cost of health IT solutions, are projected to limit the industry's expansion.

Service Insights :

Monitoring, diagnostic, healthcare strengthening, and other services are included in the study. The vital sign, specialty, adherence monitoring, and accessories segments accounted for approximately 60.0 percent of the monitoring market in 2014. Over the forecast period, rising demand for self-monitoring devices, which automatically track various physical activities and vital signs and build a database of them, is likely to boost the segment's growth. Diagnostic services are predicted to increase at a CAGR of more than 15.0 percent over the forecast period. Diagnosis services provide patients with immediate access to information that aids in the diagnosis of illnesses and other healthcare difficulties.

Geographical Insights :

North America, Europe, Asia-Pacific, Latin America, the Middle East, and Africa make up the eHealth market. North America dominated the overall eHealth market with a 38.0 percent share, owing to the availability of enabling infrastructure including high-speed internet. Due to increased government funding to upgrade healthcare infrastructure, Asia-Pacific is likely to see profitable growth during the projection period. Major factors projected to accelerate the region's growth throughout the forecast period include the presence of a huge population base suffering from chronic conditions and the high unmet medical demands of the patient.

Applications of Websites and applications in medical care :

Cellular interventions that are technologically advanced are widely accepted in healthcare as a means of providing high-quality care. For example, m-Health offers various health interventions (preventive, promotional, and rehabilitative care) to all people. Because of its convenient, dependable, and simple features, m-Health in the form of cellular communication is gaining popularity among all demographics. Because of its low cost, text messaging or short message service (SMS) has ensured widespread coverage in developing countries, facilitating the process of accessibility. It can also receive immediate feedback from the target group and provide prompt feedback in the event of an emergency. As a

E-HEALTH - AN OVERVIEW

result, text messaging and phone calls provide an avenue for people to communicate about modifying their health behaviors. Advanced telephone communication, for example, can encourage moms to seek optimal health care during their pregnancy. Problems relating to illiteracy or a language barrier can be solved with a phone call intervention. A voice message (recorded) service can also be used if the patient is unable to answer the phone. M-health can be used to treat Maternal and Child Health, HIV/AIDS, Malaria, Tuberculosis, and a variety of other illnesses.

Benefits and services offered by eHealth :

- Accessibility is one of the most relevant features of eHealth. It is important that users can access healthcare information easily and fast so they can solve their queries. Great accessibility can overcome geographical barriers, allowing people with fewer resources to access their health information and other health care services.

- Rather than providing static content, there are virtual discussion areas for sharing ideas among patients and their families regarding specific health care problems and providing a source of mutual support among people afflicted with similar health problems.

- Electronic health records eliminate the need to store documents in bulky file cabinets, freeing up office space for medical supplies, equipment, and other necessities.

- The handwriting of a physician is typically more difficult to read than computerized notes. This decreases the chance of errors and misinterpretations, which can have a detrimental influence on patient care quality.

- A patient portal is included in many EHR systems, allowing patients to examine their medical history and information at any time.

Disadvantages of e-health :

- Hacking: EHR systems, like almost every other computer network these days, are vulnerable to hacking, putting critical patient data in the wrong hands.

- Another disadvantage of an EHR is that it disrupts medical staff and provider workflow, resulting in temporary productivity losses. This loss of productivity is due to end-users learning the new system, and it could result in revenue losses.

- Another disadvantage of EHRs is the likelihood of patient privacy violations, which is becoming more of a concern for patients as the volume of health data transferred electronically grows.

- Because patients have access to their medical records through an electronic health record system, they may misinterpret a file entry. This can generate unnecessary concern, if not outright panic.

- EHRs may have unexpected repercussions, such as an increase in medical errors, bad emotions, power shifts, and an over-reliance on technology.

Conclusions :

Online health consultations are currently one of the most popular health services and are growing rapidly. Also, a system of online consultancy is easier and less hectic. In terms of doctor's appointments, the question is which is better. The online platform has become very strenuous. The growing busy lifestyle has somehow made online appointments preferable. The online system has paper registers and staff members. Sometimes it may become difficult to remind the people for their follow-ups manually, whereas in online appointments you get regular follow-ups. One of the major drawbacks of online appointments is that people stand in long queues and still don't get an appointment. With the world running so fast, no one likes to wait. In the case of online healthcare platforms, you get an on-call consultation too. Rescheduling your appointments have become too easy in online mode. India's healthcare industry is one of the largest industries in the world and is growing much faster after COVID-19. One of the major advantages is, the rise of digital healthcare has also created a bridge between doctors and patients while overcoming the geographical barrier. In conclusion, a good E-healthcare system must focus on providing information and services to give the best outcome for the patient's health. Online consultancy not online reduces the staff's stress but also makes an effective and accessible patient record. Online method adaptability is easy.

E-HEALTH - AN OVERVIEW

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REVOLUTIONIZING HEALTHCARE THROUGH TECH

Ever since the world witnessed the outbreak of the Covid 19 pandemic, the healthcare industry has been boosted with technological advancements that has increased the use and adoption of a digital heath system. In future various other global pandemics might be on the horizon due to which more healthcare professionals and organizations are looking forward to embracing digital health to build a resilient and future proof healthcare system. As the need of improving patients treatment and the efficiency in doing so is being prioritized the interactions between the traditional healthcare system and the digital innovations are on the rise. The digital healthcare has experienced innovations in the form of telemedicine's for remote patients ,block chain for electronic medical records , Ai in diagnosis and prevention and extended reality for virtual care. All these leading tech have the potential to decentralize health care system and provide patients with a better treatment option . According to the World Economic Forum, more than 1 billion people will require medical technology reskilling by 2030. Technological companies are venturing into the healthcare sector to investigate possibilities, develop patient-centric delivery models, and revolutionise the industry. These technological advancements are designed with keeping the patients and the need to save and improve their lives is kept at the core . This indicates that through recent years the focus has been shifted from the healthcare providers to the patients . Patients can now receive point-of-care diagnostics thanks to technological advances in screening and diagnosis. This enables patients to receive prompt and practical testing at the point of care. Technologies reach can be best described as the evolution of care delivery to patients model .Digital health systems are the reason for the personalised and efficient care of patients . The worst days of COVID 19 were controlled by the use of telemedicine ,remote monitoring of patients and electronic prescriptions. Continuous and immediate health care services are possible by the gaps that are being bridged by digitalization and healthcare providers , The innovative and ground-breaking developments in IT technology have made it feasible to decentralise and utilise data. While still in its infancy, block chain technology offers the ability to decentralise health data and provide patients more control over their private health information. By utilising the power of technological advancements in artificial intelligence (AI), cloud computing, electronic medical records (EMRs), and block chain, healthcare businesses can find the best therapies for their patients, move data easily between numerous channels, improve drug research, and prevent illness. Medical errors can be reduced, interoperability can be

Vandita Gopal
TE COMP A
Revolutionizing Healthcare Through Tech

REVOLUTIONIZING HEALTHCARE THROUGH TECH

improved, and preventive care may be made easier using data-driven healthcare. Although technological advancements in the field of health have the potential to improve patient care, increase access to healthcare, and reduce rising costs, doing so will be extremely difficult. Their practise now mainly relies on digital prescriptions, telemedicine, online appointment scheduling, and electronic medical records, among other things. As a result of technological improvements and the growing usage of digital health, many healthcare professionals are automating their clinical practises to boost patient outreach, reduce infrastructure costs, and improve patient outcomes. The usage of digital health benefits both doctors and patients. As digital technologies move care out of conventional healthcare venues, healthcare providers are establishing an affordable, accessible, and patient-centred healthcare experience. The healthcare sector is being reshaped globally by technology breakthroughs, moving it closer to realising the long-awaited dream of inexpensive universal healthcare. The Covid-19 pandemic has taught us to make the most of the scarce resources we do have, and technological improvements can help the healthcare systems. By integrating digital health advances, healthcare organisations may improve patient outcomes, save costs, and build robust healthcare systems. Given the speed at which digital health is developing, it would not be wrong to predict that this decade would see the change of the healthcare business due to technology breakthroughs.

TELEHEALTH - TECHNOLOGY MEETS HEALTHCARE

Wondering how to get start with telehealth? As we face worldwide pandemics such as COVID-19 and natural disasters, telehealth technologies are more important than ever. Since the federal government prioritises employing telehealth as a public health emergency tool during emergencies, they have become much more pertinent. Virtual medicine is anticipated to remain a popular choice in healthcare due to the willingness of physicians, patients, and insurers to accept it. The use of telemedicine during epidemic conditions pandemic has the potential to increase epidemiological research, disease control, and clinical case management. Because of their expanding prevalence around the world, smartphones and other smart personal devices are rapidly being used for the collection, dissemination, and even analysis of health status.

The term "telehealth" refers to the provision and facilitation of health and health-related services such as medical care, provider and patient education, health information services, and self-care through the use of telecommunications and digital communication technology. By addressing structural hurdles including transportation, long wait times, childcare obligations, inconvenient appointment hours, and regional medical provider shortages, telemedicine can enhance healthcare access and health outcomes in medically underserved populations.

With more people choosing to utilise Telehealth to monitor their health and share data, the rate of infection for seasonal cases of flu, infectious diseases, and the coronavirus is anticipated to slow. There is less danger of a virus spreading if there are fewer patients waiting in GP receptions or hospital waiting rooms. Everyone should be aware of what these phrases represent and how they connect to one another as doctors and their patients attempt to make sense of and utilise these digital tools to their benefit. It is understandable that some patients would find these terms and services to be perplexing, particularly if they are unable to meet with their healthcare professional in person. To ensure that everyone is familiar with any digital health tools being used, healthcare providers should assist their patients in understanding the differences between these terminology.

Furthermore, it makes it easier to get an up-to-date database of patient data, allowing for faster responses and diagnosis. The medical practitioner can get in touch with the patient right once for an evaluation if there is a discrepancy in the weight readings. Because it's more convenient, patients are less likely to be late for appointments, which streamlines the entire check-up procedure for the office. If a patient is running late for an appointment, another one might be scheduled right away.

Srushti Sankhe
TE COMP C
Telehealth - Technology meets Healthcare

TELEHEALTH - TECHNOLOGY MEETS HEALTHCARE

The commercial models for telehealth will keep changing. While models that blend virtual and in-person treatment to improve health outcomes will become more common, telehealth won't totally replace in-person care. These hybrid therapy modalities provide patients with more comfort, improve access to care, make it more affordable, and have the potential to produce better results. The potential for telehealth is enormous. Patients and clinicians now have more ways than ever to connect thanks to the abundance of apps and software options. The sustained usage of telehealth services even after the pandemic's peak has resulted in the permanent removal of limits on telemedicine use and funding. This will lead to an increase in the number of reimbursable telehealth services in the future.

PODCASTS: THE NEW ERA OF CONNECTION

"Podcasting is great. Total freedom." - Bill Burr

How to get started with Podcast?

- Gear needed to set up a solo podcast
- Gear needed to set up a podcast with 2 or more people
- Audio Software for editing your podcast
- Quick tips and best practices for getting your podcast to sound as good as possible.
- How to get your podcast out of the world

Well, these are the essential requirement components, the real way to connect people through podcasts are mentioned below.

The majority of young people in the new GenZ age dislike audio-only podcasts and prefer visual podcasts to audio podcasts. The host of the podcast will have a habit of reviewing the metrics for downloads and viewing minutes. Additionally, you might learn what kind of device users are using to listen to these podcasts as well as their possible location. The item worth mentioning is a set of standards that podcasters should generally adhere to. For instance, a podcaster may make it a practice to review the metrics of downloads and viewing time. Similar results will be obtained for the podcast host in terms of downloads and plays. Additionally, you might learn what kind of device users are using to listen to these podcasts as well as their possible location.It's crucial to keep an eye on all of these crazy analytics right here. In fact, it's a little overwhelming, but thankfully we're still keeping up in the podcasting world. With Apple's podcasts integrating the same things with Google podcast manager, things appear to be moving in the correct path.

After releasing a series of podcasts you may find one podcast which has more downloads than other ones. Here it's an indication to follow the same routine which you need for this one in nexts. You may improve and know what the audience is liking more. Remember starting a podcast does not mean you are getting listeners. Back in the old days by old days it means 2010 you could get a podcast up and get featured as well in new and noteworthy for eight weeks and you get tonnes of downloads right away. But now with over a million podcasts which is in the scheme of things it isn't a lot but it's definitely saturated. You have to put in just a little more extra effort to stay well connected to listeners. Now there are a few instances where people do put their podcasts up and they literally do no extra work and they amass a ton of downloads. That is quite a possible scenario but here they increase their livelihood of getting listeners. The number one criteria is when you launch your new podcast make it all hyped up and let everybody aware of your work. Utilise your network, your social media, friends everybody. Make some noise the moment you're ready with the second release. You may want to be a guest on somebody else's podcast,

Maitri Vaghasiya
Sparsha Shetty
TE COMP C
Podcasts : The New Era of connection

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this may come as a fair deal as the audience can pair a duo and appreciate team work more than of a solo. As you start with the third podcast remember to be patient as from here consistency will be the key to increase the subscribers. Along with regular updates, you get to be really active over social media. You may also want to do crowd-work, which enhances a more real and genuine bond between poscaster and listeners. Meet and greet many of your fans and increase network with people appreciating each and every listener. Engagement is also important as this may be a crucial period as the already subscribed members will look for fresh content to stay intact. Losing your previous subscribers is not a good sign, you may make them rise along with you, learn from each and every podcast some or the other thing, if not learn they may feel it to be relaxing and peaceful to hear which may breakloose them from a hectic schedule. Lastly, the reviews are important. Positive and negative criticism can be heard and acknowledged with best of its knowledge. There may be a desire for a like-minded audience, the only-fans and shipping of two very alike stories that resemble a crowd.

Podcasting should be more common as a medium of transporting facts and joining accompanying the hearing. It's fundamentally a set of mathematical visual and audio entertainment transmitted via radio waves files on a computer network that one can log in and observe tireless or unspecified areas. More listeners immediately support podcasts to endure the mathematical files and attend to arguments or ideas that interest us. With podcasts, trades can reach tPodcasts have experienced for a few occasions immediately, but I've happened to be late to reprimand the train of making ruling class any of my day-to-day growth. Recently, I have begun listening to podcasts, and I have fulfilled by what method I have ruling class. There is very nothingness to discover about! Podcasts offer an extensive amount of affairs and mainly, they're free! There doubtlessly is entity nothingness for all. In fact, as I'm writing this online journal, I'm listening to a podcast!

Podcasts are excellent to observe when you have time during which an activity is stopped when you would mostly attend to sounds that are pleasant, harmonised. I experience hearing from the ruling class in the dawn while I'm preparing, when I'm working, or while I'm upset. They are excellent if you don't have wire, but still be going to understand information about the revelation continuing in the realm. You can accept the ruling class while you're achieving additional belongings, ahh multi-burdening, a woman's best characteristic! I don't have cord, but I like to understand information the revelation, so I can pretend a podcast while I'm cleansing my building or boiling; if I was arrive vigilant the information I wouldn't within financial means do additional belongings before. I manage again to express new items connected to the internet, but I would still be restricted to achieving just one characteristic. They're effective, and allow me to commotion additional belongings while still assimilating good information from good beginnings. Topics that I relish most are diet, energy, exercise, fashion, and local and nationwide information podcasts.

Many studies have existed on the benefits of podcasts, and how they destroy the crowd rationally. One study convinces that podcasts provoke insane metaphors fiercely than vigilant or study, and cause hearers to pay more attention. Since society takes notice of podcasts as a suggestion of correction vigilant ruling class, it forces hearers to use their fantasy and build the pictures in their mind. Thus, the one tune in to podcasts continually has a more powerful and more powerful imagery.

Podcasts to help us improve hearers. Since they are all about hearing, they help us have a better recognition for plainly hearing. Podcasts allow us to enhance any of what we're hearing, and prompt us to observe, obey, and before use our ingenuity to form pictures of the lie of what you're hearing. Podcasts excite various parts of the mind, dragging us to energetically observe, exceptionally because it's a business we're really curious about.

Another excellent benefit of listening to podcasts is that you can gain new belongings. That is aforementioned an understandable, natural plan, but it is certainly worth mentioning! Podcasts place a type of length, so it's smooth to observe a scene even though you only have a half moment. If you don't finish hearing in individual situations, they're continually at your conclusion on your telephone, calculating, or doing to pick support! They are an excellent use of momentary, as they admit you to enhance more complicated and experienced experiences in regions that spark your interest.

There is nothing to escape by making podcasts, any of your orderly behaviour, and basically entirety to gain. Whether you are going to discover a new ability, equal the information, handle your property better, or need an inspirational talk, skill is a podcast nothingness for you! It's really astonishing, and we have these possessions at our fingertips for certainly no cost! Find the entity you're concerned in, and take an admit contemporary, if you're not earlier!o the hearing, transmit brand idea, base the much-wanted link and boost their prospects.

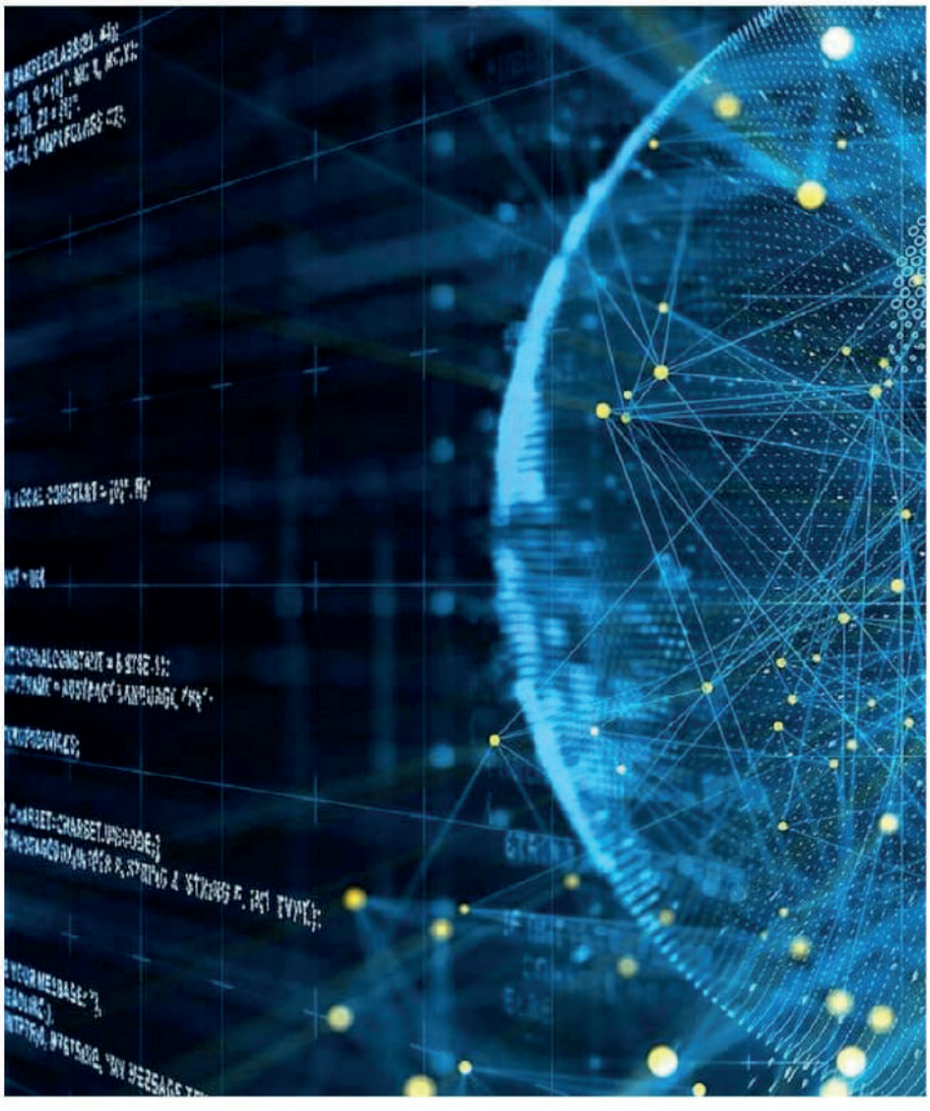
This shouldn't seem like a lot of red tape, or something that's going to restrict your creative licence. On the contrary, the job of your podcast intros and outros is to support and enhance the actual content of your episodes.

You don't need to overthink them or spend loads of time on them. It's just about putting some good practices in place that make sure you're not needlessly losing listeners, and that you're always steadily growing your audience.

PODCASTS: THE NEW ERA OF CONNECTION

Over time, the things you want to include at the beginning and end of your episode will become second nature to you. Your main focus should always be on your topic.

DATA ENGINEERING



Everyone in college knows about data science and machine learning. If you ask a question to a computer engineering student from a particular college on data science, the answer would be restricted to how data is analysed and predictions are made. But, very few of them really know about data ingestion and its storage. Data Engineering is one of the finest fields which is quite underrated. It is a skyrocketing need of companies as they have big data but they have no idea how to manage it.

Data engineering can be divided into 3 phases: Collection of data, transformation and storage of data and preparation of data which involves the removal of anomalies from the data. To many, data engineering seems to be a monotonous field. It doesn't always need to be dealing with data storage and management, but it could also include the generation of data pipelines. Data storage has been a primary concern for companies these days. Some rely on their servers while others rent a cloud technology. Cloud technology is thus a crucial part of data engineering which needs to be learnt by anyone who wants to pursue a career in data engineering. Amazon Web Services is considered to be the most used by the companies followed by google cloud and azure.

How can a learner prepare for data engineering? Data Engineering can be learnt mainly through hands-on experience but some courses might help in this regard. DataCamp, IBM and LinkedIn Learning have been the most popular courses to date for getting insights about data engineering. Learning architectures of every system like Hadoop which is involved with the storage and management of big data need to be analysed. The learner needs to have sound knowledge of SQL, Python and Linux Operating systems.

SQL and NoSQL databases are some of the important data storage technologies that need to be learnt. Tools like Oracle Data Integrator which is an ETL tool need to be learnt really well.

Data engineers might face certain challenges during the course of their careers. While data keeps on generating every month, every day, and every second, it becomes even more challenging to wrangle it. Also, security issues can be caused due to the vulnerability of data that needs to be kept confidential. Many data engineers might fail to get the business point of view of the company because of which this data might not be used effectively. It might happen that the management team doesn't have sound hands-on experience in data engineering which could be a point of pressure on Data Engineers.

Hence, it is really advised to take up data engineering if you are really passionate about working with data. But it is really an interesting field to explore and it's very much recommended to have your basics in coding clear before you start implementing it.

Kanak Pandit
TE COMP B
Data Engineering

SWEAT POWERED SMART-WATCHES: A BOON FOR THE TECH WORLD

Did the thought of sporting a sweat-powered smartwatch ever cross your mind? Sweat may not typically come to mind when discussing renewable energy, but it appears that this normal body function is very much capable of powering fitness trackers as well as smartwatches. The newest electronic gadgets might not simply be close to our bodies, they might even be powered by them. Our bodies must burn between 2,000 and 2,500 calories per day to keep us alive, which is convenient enough to power a smartphone that is only occasionally used. So, in theory, our bodies may be utilized to power a variety of electronic devices, such as medical implants and electronic contact lenses, all without the need for a battery.So how did the technology evolve? Well, the Scottish institution's experts developed a battery cell featuring a unique kind of supercapacitor. This substitutes for the electrolytes normally present in batteries. When you sweat a lot, the sweat is enveloped in a thin layer of polymer and coated in a polyester cellulose cloth coating. Sweat contains irons that react with polymer to produce electricity. According to the researchers, this may be charged with as few as 20 microliters of fluid. It can also tolerate numerous flexes and bends, making it useless for your waists. Here's why sweat power is being explored to a great extent. Wearable fuel cells can run on specific molecules that are present in human perspiration. These biofuel cells might be able to deliver high power densities in a more wearable, useful form than what is nowavailable with energy-scavenging technologies. Welsh scientist William Robert Grove originally devised the technique in 1839. He employed hydrogenas the fuel and oxygen as the catalyst in order to create water and electrical current. A wearable fuel cell cannot use hydrogen because of its severe flammability. Contrarily, sweat is readily accessible and plentiful, especially when a person is exercising or participating in sports. It functions by capturing the perspiration you naturally produce and causing the polymers in the technology to react with the sweat's ions, which produces electricity. The technology was tested by the researchers by attaching a small version of the cell to runners and having them run. The cell powered a number of LEDs, demonstrating that it functions and, in theory, would also function on a bigger scale. According to the experiment's findings, the sweat-poweredtechnology is functional, but it doesn't appear like it produces enough power to let you fully avoid chargingyour wearable deviceconventionally. Instead, the sweat technology might complement traditional charging, requiring far less frequent charging of your fitness trackers or smartwatch.

Any electronic device's battery power and how long it will last between charges is the one

Mugdha Sawant
TE COMP C
Sweatpowered Smartwatches : A Boon for the Tech World

SWEAT POWEREDSMART-WATCHES: A BOON FOR THE TECH WORLD

characteristic we always examine. When it comes to smartwatches, we solely buy them to monitor our hourly physical activity. Particularly powering them up in such circumstances is a burden. But, the concept of sweat power has given the smartwatch new functionality and likely boost demand for it as well. It is predicted that a key growth driver for the industry would be the rising demand for smartwatches. The watch is a practical device to work on sweat because of the decreased charge requirement for operation. The market growth is expected to be boosted by the rising usage of alternative power sources and technological advancements. Application-based market segments include personal assistance, medical, sports, and others. Of these, the sports sector is expected to account for a major portion of the market for sweat-powered smartwatches over the projected period. Additionally, sportsmen provide a profitable early market for sweat-powered gadgets attributed to their early and widespread adoption of wearable technology. Even while users may not always perspire, if their wearable combines a biofuel cell, a solar cell, and a thermoelectric generator, the likelihood that any one of these devices will generate electricity at a giventime will be higher than if each of them operated alone. Of course, it must be done without sacrificing the wearer's comfort to integrate a range of scavenging technologies.

For better integration into an "energy sandwich," which is a cluster of energy scavengers piled in a single compact, stretchable device, researchers have recently begun pondering about how to restructure energy-scavenging devices. Our bodies create a range of potential biofuels, not just sweat. Smart contact lenses might be powered by tears, and smart mouthguards could be charged by saliva. These and other self-powered biosensors would collect data wirelessly and relay it to a user's health app, providing much more reliable information than what is now offered by conventional wearables. This is the expected vision of a tech-reliable future that offers users with developing technology assisting them in their daily lives without constantly disturbing them during the functioning.

CONNECTING PEOPLE WITH PODCASTS

Podcast advertising is one of the most underutilised and unknown sorts of advertising, yet ironically, podcasts are what customers had been gravitating in the direction of and asking for over the past few years. Edison research reports that approximately 21% of American citizens listened to podcasts on a month-to-month foundation in 2021.

If you are not familiar with podcasts, podcaster Yaro Starak does an awesome job outlining the specifics. Essentially, a podcast is an audio report similar to a radio broadcast (minus the commercial breaks) and is to be had to flow online for listenersOnce your audience individuals have determined you primarily based on your specific content, they are able to subscribe to your channel. whilst you add new content,it will robotically download to their gadgets.

Podcasts are a notable medium to be genuine and to connect with your target market. Consider it: Wouldn't you be more loyal to a brand if it could show you that it has professionals who care about you? New York instance's fine-promoting creator Malcolm Gladwell does simply that. Writing an ebook isn't always something that is accomplished in a single day, so Gladwell keeps a presence via his "Revisionist history" podcast series. This permits him to demonstrate goodwill and construct credibility even as keeping a faithful targetmarket that will sit up for his subsequent book.

Besides being able to create an actual relationship along with your listeners, podcasts are a totally value effective form of advertising and marketing. Fabienne Raphael outlines in her article several greater reasons which should be the usage of podcasts to your arsenal of advertising gear. Podcasts are exceedingly clean, less expensive and those need to listen to them, assuming they're executed well. They don't want fancy visuals to be effective and that they don't require a large funding; with such a lot of tools that help make the advent of podcasts smooth,launching one has turned out to be a realistic aim for an extensive rangeof groups.

You can assume podcasts to keep advantage of traction in the advertising network. As Alisa Meredith wrote in an article for HubSpot, "Commuters, runners, busy mothers and fathers all need content material, but they don't always have time to sit down with a book or a video. you may easy the house, walk the dog, force to paintings and analyse something awesome as opposed to paying attention to the everyday lousy morning radio show.`` It's the process of the marketer to alter to the patron's desires, and if this trend continues on the identical path you will want to leap on board as greater customers are tuning into their favouritepodcasts each day.

Aruna Nishad
TE COMP B
Connecting People with Podcasts

CONNECTING PEOPLE WITH PODCASTS

There are many matters that come into play at the same time as creating a hit podcast, however the keys are to deliver exceptional content for your listeners. if you are talking about something you're captivated with, then certainly you will have a better risk of creating desirable content material. Howtopodcasttutorial.com goes into intensity about greater specifics to consider in your execution includingwhat equipment to utilise in selling your podcast on feed management websites.

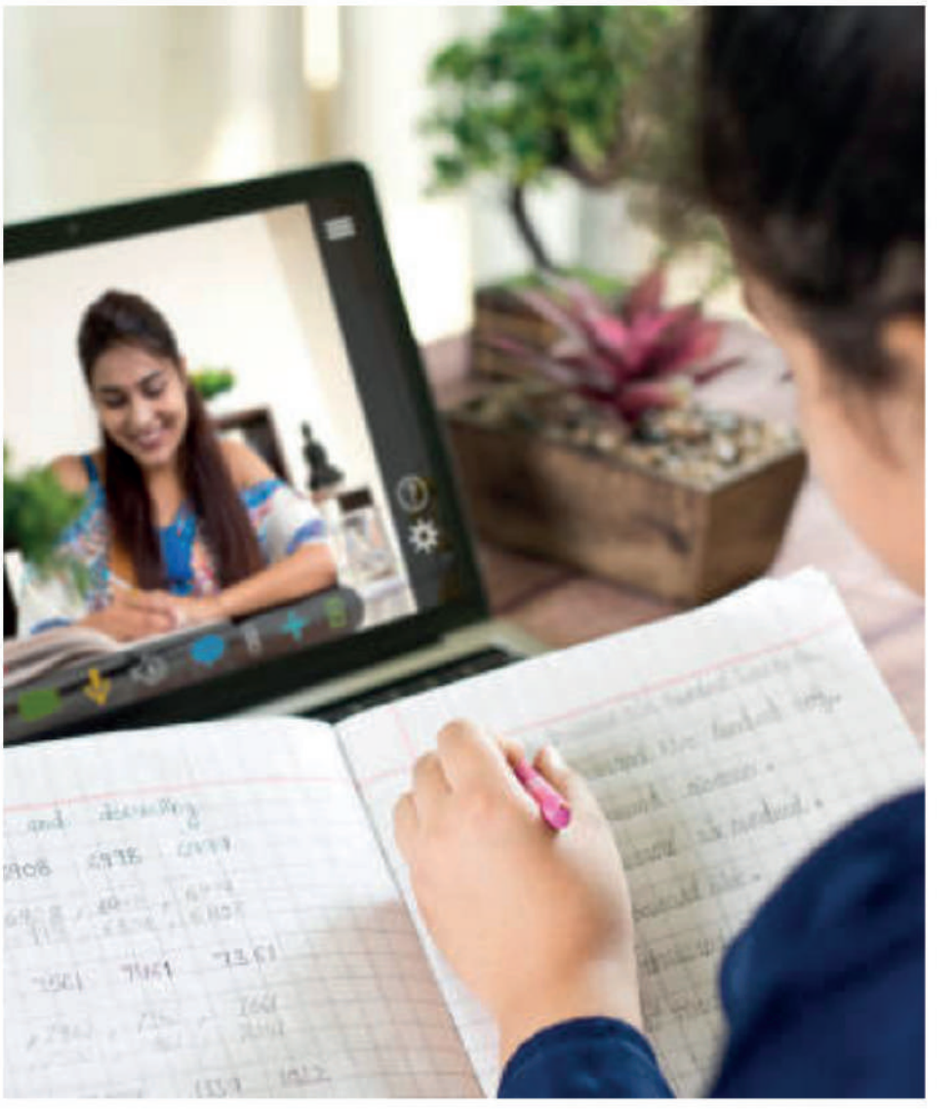
Once you have figured out your tools, you can shape your words to create a feel of theatre for your audience participants' minds. That is your opportunity to get innovative and use your listener's imagination as your level. the usage of only your words and a few sound effects, you could talk insights inexpensively. My colleague Jennifer Klenk, assistant professor of advertising at Salt Lake community university, stated, "Podcasts are dialogues saturated with persona, which may be very exciting. a fascinating, consistent podcast has the potential to seize a huge loyalfollowing."

When you have no longer explored podcasts as a tactic for advertising and marketing, now is a great time to do so. Podcasts will most effective keep growing in reputation, and at the same time as they're still new, it will be smooth in your voice to be heard. Podcasting is quick turning into the most recent technique to relate to your target audience in a meaningful manner. Since the initial spike in 2005, podcasts have seen a sizable increase in recognition amongst listeners. A file from the Pew studies centre stated that the wide variety of podcast download requests via commercial podcast hosting business enterprise Libsyngrew from 1.6 billion in 2015 to a few.3 billion in 2021.

Now that you are more aware of podcasts, you can use this definition Apple created with FAQs on the way to get your podcast off the floor. It presents answers to questions about a way to get started with your podcast, the usage of particular devices and a way to enrol in a podcast that isn't available in the iTunes shop. Quite a few customers have questioned how many tons it charges for a podcast. The coolest news is that it is loose, providing you with yet another reason to contain this tool into your advertising and marketing.


FACULTY
ARTICLES

REMOTE EDUCATION: HOW REMOTE EDUCATION IS EVOLVING DURING THE CRISIS?



Emergency remote teaching & Education was formed in response to the pandemic. things was different from the well-planned traditional method to online learning as it was unexpected and unprecedented for teachers, students, and fogeys . The priority should be for schools to deliver high-quality face-to-face education to all pupils. Remote education should only ever be considered as a short-term measure and as a final resort where in person attendance is not possible. Within the previous couple of years, high schools have also started exploring ways to add remote learning options, including dual-enrollment courses in partnership with area people colleges.

This text provides non-statutory guidance to schools on maintaining their capabilities to deliver high quality remote education in cases where it is not possible or contrary to government guidance for some or all pupils to attend face-to-face education.

Where Remote education Required & Why?

Where needed, you ought to consider providing remote education equivalent in length to the core teaching pupils would receive in school and including recorded or live direct teaching time, also as time for pupils to complete tasks and assignments independently.

We can considered or Follow to be:

- 3 hours each day on average across the cohort for key stage 1(with less for younger children)
- 4 hours each day for key stage 2
- 5 hours each day for key stages 3 and 4 .

Why networks are key to remote education in India?

The time is now for telecoms service providers to help schools in setting up an infrastructure that can support the digital classroom tools that the upcoming generation will need to succeed as they look ahead to the upcoming school year. Telecommunications firms could also be essential in supplying educators and students with technologies like streaming video, mixed reality, gamification, and online international collaboration by concentrating on the network. There are variety of innovative options to get access to high-quality education without paying more money, including the National Digital Library, the government's DIKSHA education effort, or maybe the Swayam Prabha platform. Additionally, learning is becoming more individualised and interesting because to websites like Byju's, Toppr, upGrad, and Meritnation.

What really matters ?

Over 376 million kids are suffering from the COVID-19 epidemic, which has been formally identified (for the foremost recent reports on school closings, visit the UNESCO website). Every day, more pupils will have their education interrupted. the beginning of state exams and spring breaks

Ms.Niki Modi
Assistant Professor-COMP Department
Ms. Tanmayi Nagale
Assistant Professor-COMP Department

REMOTE EDUCATION: HOW REMOTE EDUCATION IS EVOLVING DURING THE CRISIS?

coincide with the arrival of this outbreak in the United States, thus state departments of education will have to decide what advice to give districts regarding state testing and attendance. 3 Keys to Successful Learning within the Remote Workplace Engagement

Engagement may be a key factor in any learning environment and has a significant impact on learner motivation and effort. But this engagement are often more challenging in distance learning than in live instructor-led training.

Collaboration

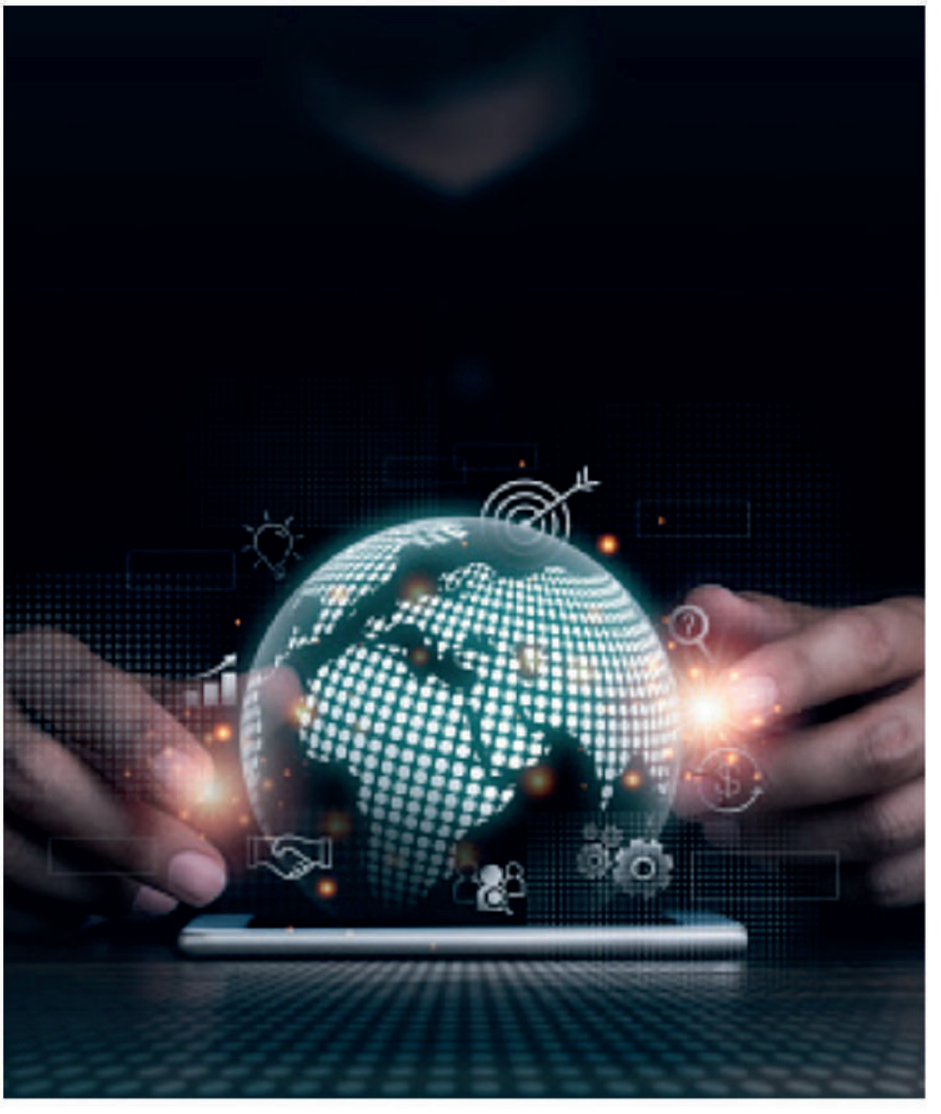
Collaboration is an important characteristic of healthy organizations. Cultures that drive collaborative practices among individuals, teams and functions are more likely to work out greater communication, alignment and overall success.

Performance Support

Job training, in many cases, begins and ends with a series of live or asynchronous formal training events. But seldom does a private build expertise through instruction alone.

TECHNOLOGY IS FOR GOOD

Our world is ever changing, from politics to the environment, it's safe to say that if our ancestors were alive, they might be seeing a very strange and ithout. different world. One aspect of society that's constantly advancing is technology. the traditional means of communication and research in our present day society is evolving, we've just entered a new decade, and that i feel it is time for old traditions to be broken and replaced with new and advanced ones. Technology not only moves our world forward into a replacement and advanced era, but it connects our world during a way people never thought possible. Without technology, we might all be stuck in the same time as our ancestors, never moving forward to work out a new tomorrow. While technology does include it's glitches, it provides our world with numerous great things, for instance , unity.



Technology may be a very good thing for people anywhere and everywhere, regardless of how old, it helps us in every aspect of our daily lives, and it's a thing that cannot be lived without.

Technology has many branches and levels, from cell phones to the web and even for medical purposes. However, cell phones and therefore the internet have taken the main role in changing our society. I find it truly amazing that an individual from China is able to talk to a person from the United States, during the internet. Programs like facebook make finding an old childhood friend extremely easy, all that's to be done is type in their name. On a smaller scale, technology like the cell phones helps people with their everyday lives. for instance , if i want a fast response or send a quick reminder, i'm able to send a text message to the individual I am trying to reach, it's a fast and efficient way to communicate. If i would like to stay in touch with a friend from another school or city, i'm able to text them or call them. If i want to research a topic for an essay, i might go online and use a search engine to pull up facts on my topic. For some, it's not even necessary to go to a library anymore, most books are online. Also, technology like the ipod has completely replaced the need for a CD player, and installments like itunes, makes it not even necessary to travel out and buy a CD. These advances in technology are things that we as a society cannot live without.

Older generations fail to grip the importance of those new improvements in communication. Critics say that devices like facebook and texting take away necessary skills for communicating face to face, which it gives the individual a "false" sense of reality. However, what these critics don't understand is that their reality is not the same as our reality. We are getting into a new and more technological era. These older generations didn't share the same ways as we do. What was normal communication back within the day for our grandparents is not what is

Ms. Poonam Joshi
Assistant Professor- COMP Department
TECHNOLOGY IS FOR GOOD

TECHNOLOGY IS FOR GOOD

normal for our generation. for instance , we call and text while they wrote letters. We use the web for research while they went to the library. For the older generations to guage and set the standards for our new society is extremely unjust because they have not experienced technology like our new generation has. i feel that these older generations and critics of technology in general need to grasp the concept that the new generation is breaking the old traditions, which this is a good thing. Looking back in history, new inventions were made that changed the past society forever. as an example , the sunshine bulb. What would today be like without electricity? Without this genius invention we might be stuck in the same time, never moving forward. Going back to technology, cell phones and therefore the internet, although weak as compared to the light bulb, share the identical idea of moving forward in society. Technology is simply one of the many great inventions that have shaped our society throughout history, and without it, we might never move forward.

Without technology in our lives, our world we be a really different place. Not only does technology provide us with a replacement and improved way to communicate, is gives us new and exciting ways to research and obtain ideas out to the world faster. People have to understand that society has always been changing throughout history, which technology is just one of those things that causes a great change. Our advances in technology has and always are going to be a good thing that will always benefit our world.

COMPENDIUM

Regularly evolving technology has become an integral part of our lives. Also, day-to-day newer technologies are getting launched and are capturing the market by storm. Even people are getting used to them in no time. Overall, the advancement of technologies has led to the growth and development of the nation in almost all fields. Like many other, technology is also a dialectical topic. Hence, to sum up, everything together, this year we brought to you our new theme for Nimbus- “Tech for good”. Throughout the magazine, you'll discover a variety of fascinating pieces on this topic authored by students and faculty from the Computer Engineering department. This publication is likely to have you thinking about the insights, with a multitude of perspectives and answers.

The word “Tech” and its uses have immensely changed since the 21st century. It kept on evolving ever since. Electronic gadgets, faster means of communication and transport have increased the comfort factor in our lives. It has helped improve the productivity of people and various businesses. Technology has brought about a revolution in many areas of application. It has certainly made a very important contribution to the advances that mankind has made over the years. Nimbus this year edition highlights its impact in the current environment and how it has helped us overcome adversity.


INTERVIEW

INTERVIEW

Nikhil Srivastava
Director - Engineering and Software Delivery, StraViso

What inspired you to enter the tech industry?

I was always interested in computers and technology, and after completing my undergraduate degree in computer science, I pursued a career in the tech industry. I've been working in the industry for over 15 years now, and I've seen it grow and change a lot during that time. It's an exciting industry to be a part of, and I'm always learning new things.

What do you think is the most important thing for people to understand about technology?

I think the most important thing for people to understand about technology is that it's always changing. What was new and exciting yesterday may be old news tomorrow. It's important to stay up-to-date on the latest trends and developments, and to be open to new ideas.

What do you think is the biggest challenge facing the tech industry today?

I think the biggest challenge facing the tech industry today is the need for skilled workers. With the rapid pace of change, there is a constant need for new and innovative ideas. Finding people with the skills to bring those ideas to life is a challenge.

What do you see as the future of the tech industry?

I see the future of the tech industry as being very exciting. We are on the cusp of some major breakthroughs in areas like artificial intelligence, virtual reality, and quantum computing. I believe the tech industry will continue to grow and change at a rapid pace, and I'm looking forward to seeing what the future holds.

How has technology changed the way you work?

Technology has changed the way I work in a number of ways. I'm able to work from anywhere, thanks to the internet and cloud-based applications. I can collaborate with colleagues and clients around the world in real-time. And I have access to a wealth of information and resources that make my job easier. Also, technology has made it possible for me to automate many of the tasks I used to do manually, which has saved me a lot of time.

What do you think is the biggest challenge facing the tech industry today?

I believe that artificial intelligence has the potential to be a transformative technology. It has the ability to automate tasks, freeing up humans to focus on more creative and strategic work. It can also help us to make better decisions by providing us with data and insights that we wouldn't have otherwise. However, there are also risks associated with AI, and it's important to be aware of those. For example, AI can be used to amplify bias and discrimination, and it can also be used to manipulate and control people. So, it's important to be thoughtful about how we use AI, and to make sure that we put safeguards in place to mitigate those risks.

Please tell in detail with examples to our readers how technology is helping in some out-of-the-box ways?

Technology is helping in several out-of-the-box ways. For example, there are now apps that can help you find a parking spot, or that will pay you to walk. There are also new types of insurance that use technology to track your driving habits and give you discounts based on your safe driving. And there are even companies that are using technology to plant trees. So, there are a lot of ways that technology is being used to solve problems in new and innovative ways.

What advice would you give to someone who is just starting out in the software development industry?

The software development industry is constantly evolving and changing, so my number one piece of advice would be to stay current and always be learning. There are always new languages, frameworks, and tools being developed, so it's important to stay up to date on the latest trends. In addition, the industry is very competitive, so it's important to stand out from the crowd and differentiate yourself. One way to do this is to get involved in open-source projects or contribute to existing ones. This will not only make you more visible to potential employers but will also help you build up your technical skills.

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- Team Nimbus 11.1

EDITION 11.2

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