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CSI VESIT

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Tomorrowland

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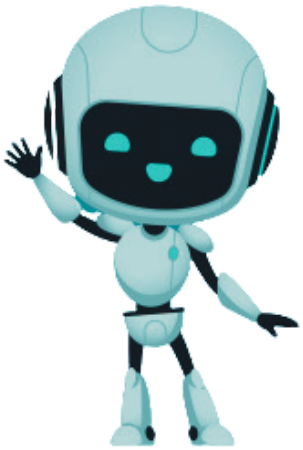

EDITORIAL

If you randomly browse through the internet for some amazing advantages of technology in this modern era, you are bound to find some appalling quotes like *Technology is a useful servant but a dangerous master or Technology, like art, is a soaring exercise of the human imagination.* Well, to be honest, these lines are just framed in a way of how a particular person sees and chooses to avail technology from his/her point of view. However, a more critical question to ponder over is, how do we choose to utilize this mind-blowing piece of ever-changing art i.e technology for the betterment of the days to come? Well, a better-framed question would be, from a social point of view: *How technology will shape the future?*

We can understand the above mentioned issue through a simple example of how a person chooses to read a story or novel from a book rather than through a Kindle device just because they think that it is harmful to their eyes. Another person might think to save up some space on their shelf and read through a Kindle by switching on the eye comfort mode which won't be damaging the eyes to a greater extent. Now, the question that arises is: who is correct? Well, it totally depends on how we perceive it. Both of them decided to choose the most beneficial way of reading that best suited their interests and likes. The same is the case for technology and its much-awaited wonders that would come to light in the future. People since the 1900s have wished for flying cars in the future and it has been nothing but a meme ever since. Our future and the way technology is going to shape it solely depends upon the fact of how we choose to divide our needs and desires based on the resources available in our surroundings. Having said that, mankind can be capable of reaching new heights and possibilities for the advancement of our upcoming generations.

We, at CSI-VESIT, proudly present to you this academic year's version of REDUX: **Tomorrowland.** Everything related to technological backgrounds and the latest ongoing events around the world is provided to you on a silver platter. We have ensured it to be a perfect amalgamation of technical and non-technical aspects in today's generation from a more cognitive and intellectual point of view. We hope you have a great time going through this edition!

Happy Reading!!

CSI Editorial Team

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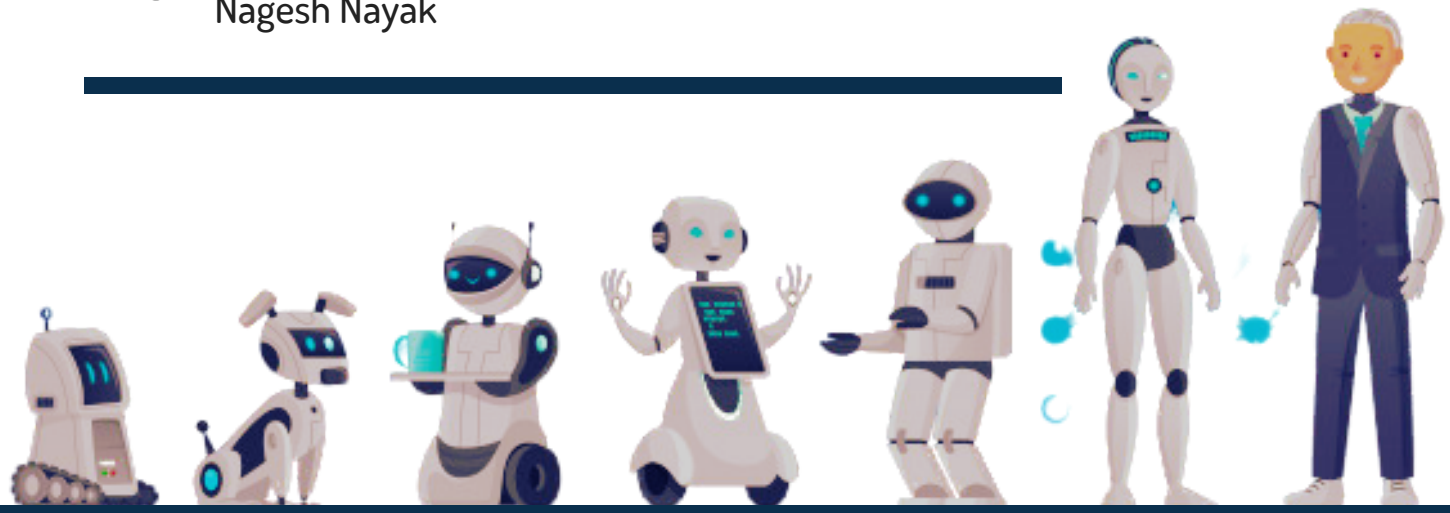

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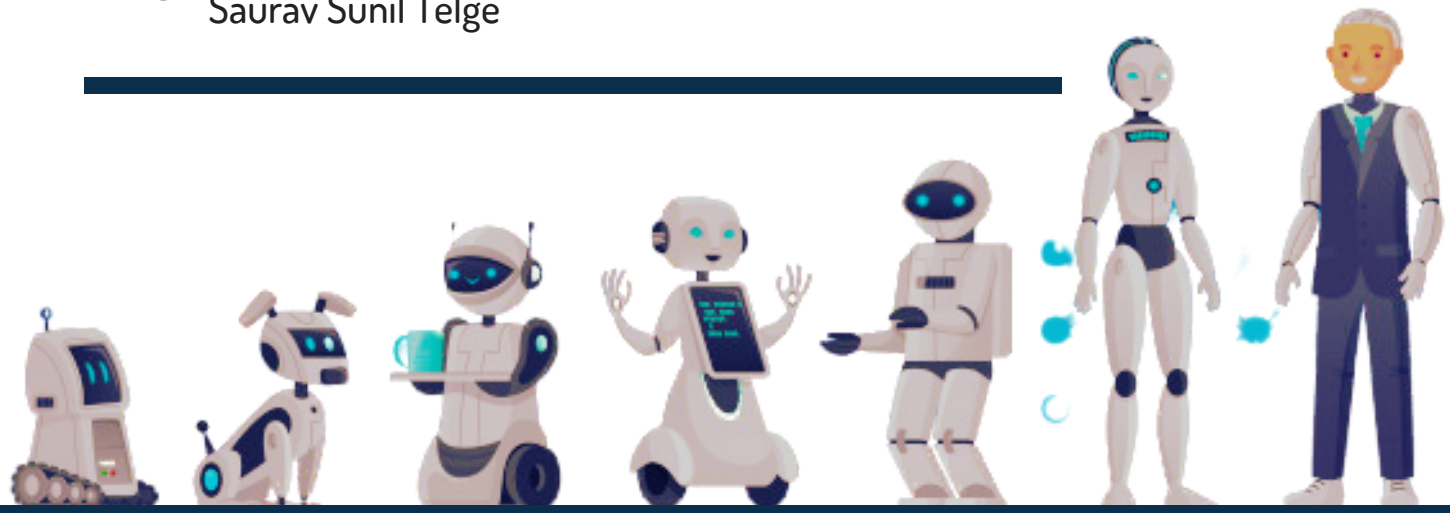

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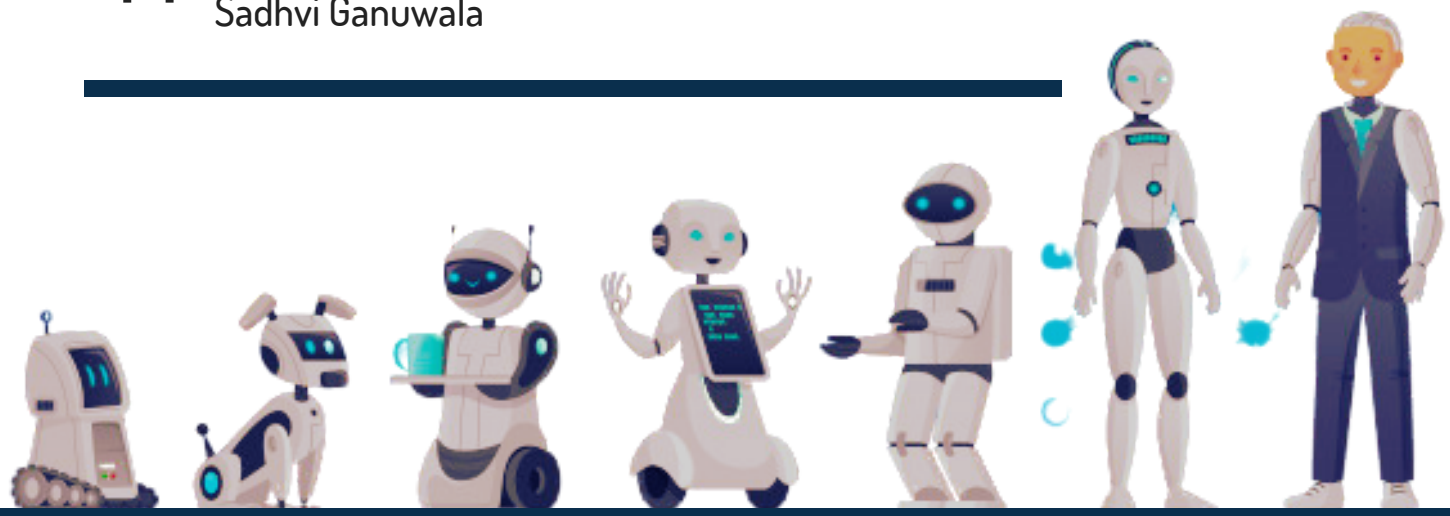
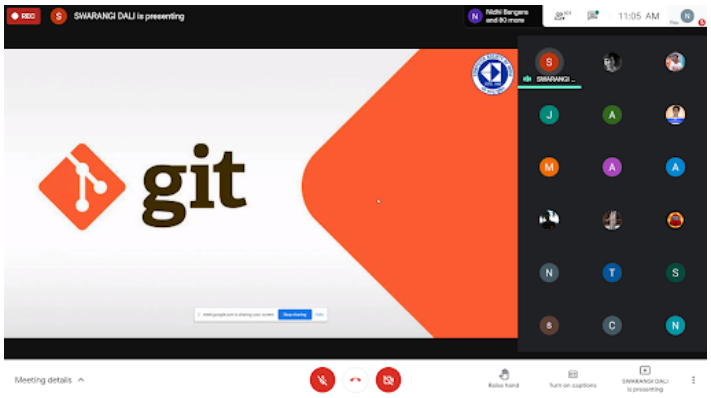
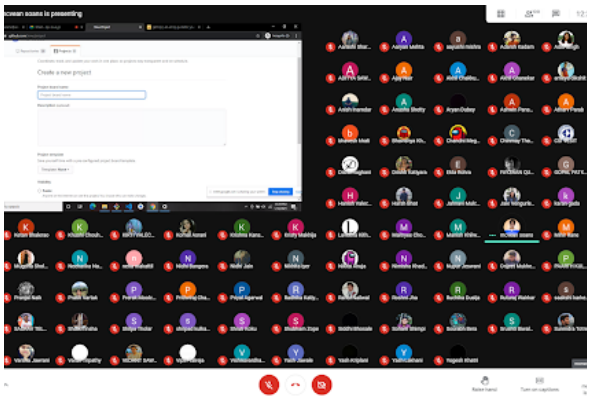


EVENTS ORGANIZED





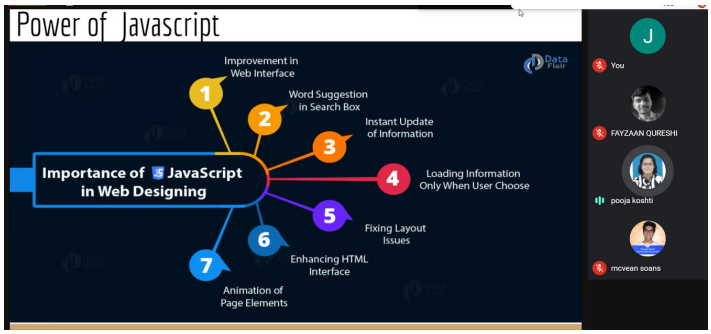
GITHUB WORKSHOP

1. GitHub Workshop: The GitHub Workshop conducted by CSI-VESIT on 30th January 2021 . The workshop was conducted by our Technical team McVean Soans, Vedant Sawant, and Swarangi Dali. They included all the concepts related to Git, Github, and version control. The main highlight of the workshop was that all the students were interactive throughout the session.

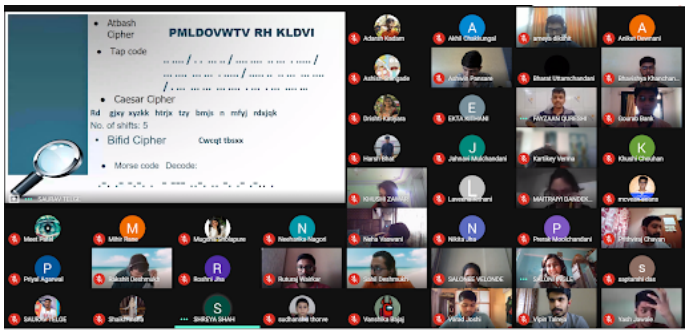
2. NodeJS Workshop: CSI-VESIT conducted its two-day workshop on NodeJS on 6th and 7th February 2021. The first day consisted of members being taught about JS and its various implementations with a sample drum kit application by Pooja Koshti, Etisha M and Pratik Vartak. The second session was continued by Mcvean Soans and Aishwarya Sahoo with the concepts of NodeJS and how it is used to design web pages from the backend.The participants were satisfied with the conduction of the workshop.

3. Hidden Cipher: Hidden Cipher, our Mega Event proved to be a great success with huge participation. The event was held on 13th and 14th February 2021. On the first day, the elimination round was conducted where teams had to answer a number of mind puzzling questions followed by the second day in which the final 10 teams competed for the winner title. The teams that emerged to be victorious were:

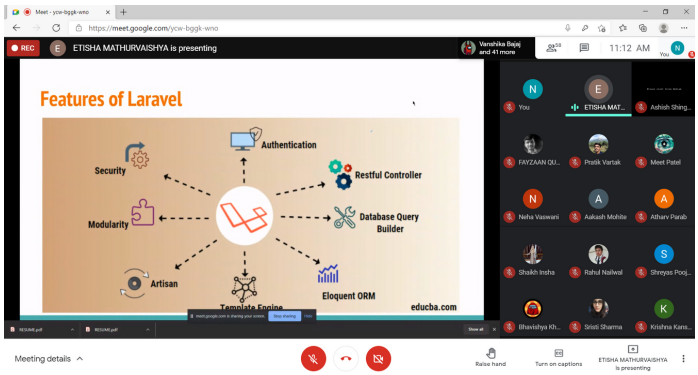
1st : Yash Jawale(D7B), Gourab Bank(D7B), Ruturaj Wairkar(D7B)
2nd : Prithviraj Chavan(D7B), Vipin Talreja (D7B), Priyal Agarwal(D7B)



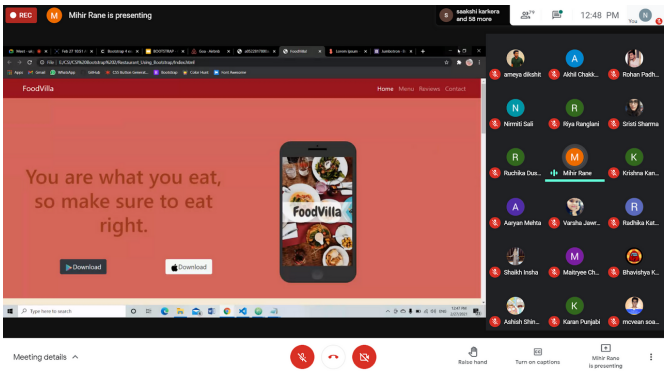
NODEJS WORKSHOP



HIDDEN CIPHER



PHP LARAVEL WORKSHOP



BOOTSTRAP WORKSHOP

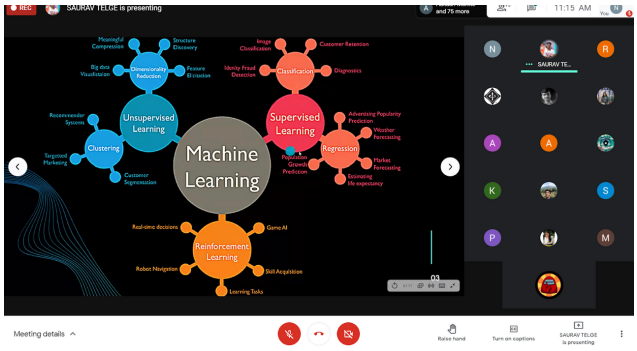
4. PHP LARAVEL Workshop: This workshop was conducted on 20th and 21st February 2021 by Pooja Koshti and Bhavesh Lohana for acquainting students with the knowledge of creating a web application in a very simple manner without any complications. Topics related to Laravel, the PHP Frameworks were covered. Members were also taught to strengthen the security and speed up database migration without data loss using PHP as nowadays it is a prime requirement for SE and TE mini-projects.

5. Bootstrap Workshop: The bootstrap workshop conducted by CSI-VESIT on 27th February 2021 primarily focused on how designing a website can be made so easier using Bootstrap. Topics on creating software projects in a short time, developing responsive and mobile compatible websites were covered. The workshop was conducted Aniket Dewnani and Mihir Rane who demonstrated the functioning of Bootstrap with the help of a restaurant website. The feedback recieved by the participants was encouraging.

6. WLAN Gaming: One of the most highly anticipated events from CSI-VESIT, WLAN was conducted from 1st-5th March 2021. The games played during the event were: Rocket League, CS: GO, Valorant, CODM, and DOTA 2. The students appreciated the thrilling experience of online gaming. The winners were:

CODM: Jayesh Kriplani and the team
Rocket League: Gurudatt Gaonkar
DOTA2: Atharva Godse
Valorant: 1st place: Jatin Acharya and team
2nd place: Aditya Khomane and team

WLAN GAMING



MACHINE LEARNING WORKSHOP

PYTHON WORKSHOP

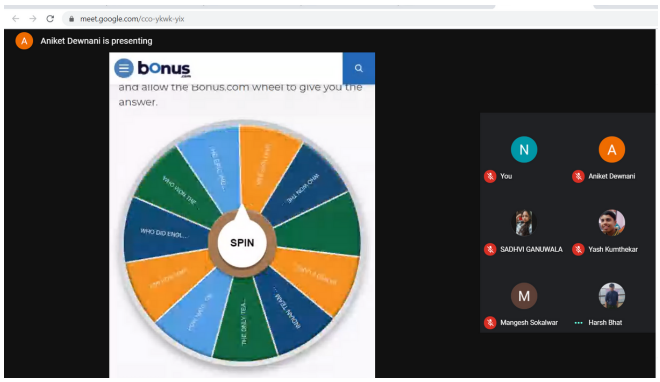
7. MACHINE LEARNING WORKSHOP : The CSI VESIT-IEEE VESIT collaborative Machine Learning Workshop was conducted on 20th, 21st, 27th, 28th March 2021. The workshop covered the applications of ML in all types of industries. The workshop was started with the basics of ML and went on to explore more complex applications. The workshop was conducted by Saurav Telge & Aishwarya Sahoo along with council members from IEEE-VESIT. The workshop received encouraging feedback from the students as they were delighted to explore this new domain.

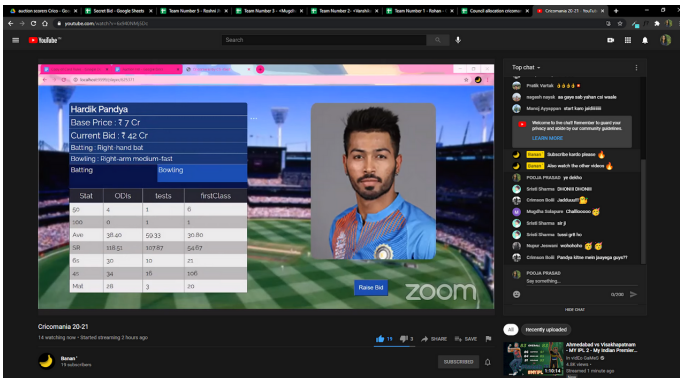
8. PYTHON WORKSHOP: CSI-VESIT has always taken a keen interest in enriching students with programming skills. As a part of it, a Python workshop was conducted on 10th and 11th April 2021 by Bhavesh Lohana,Vedant Sawant, SherAli Shaikh & Aditya Dubey, . It was a 2-day workshop that included a general introduction to programming and its basics, different data types, basic arithmetic operations, python libraries and various python modules.

9. CRICOMANIA: Cricomania, CSI-VESIT's most thrilling and exciting mega event of the academic year, was conducted on the 2nd and 3rd April 2021. It featured a bunch of mini-games that are based on the game of cricket and was the perfect non-technical event for all the participants, especially cricket loving fans. It involved cricket-related questions and bidding of famous cricket players giving participants a breathtaking feel of auction. The unrivaled cricket champions were :

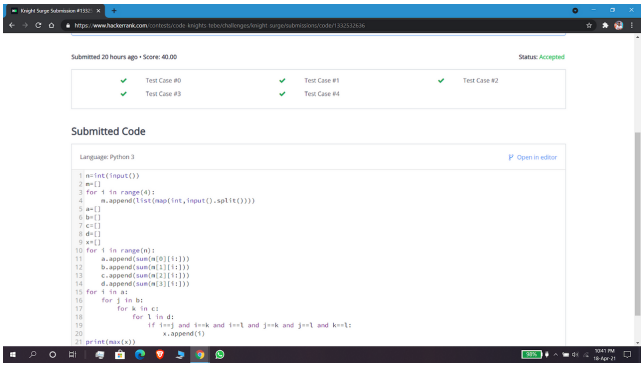
SE and MCA: 1. Ketan Bhalerao and team (D10B)
2. Aashish Raheja and team (D7B)

TE and BE: 1. Kunal Bhor and team (D16B)
2. Sahil Talreja and team (D17A)

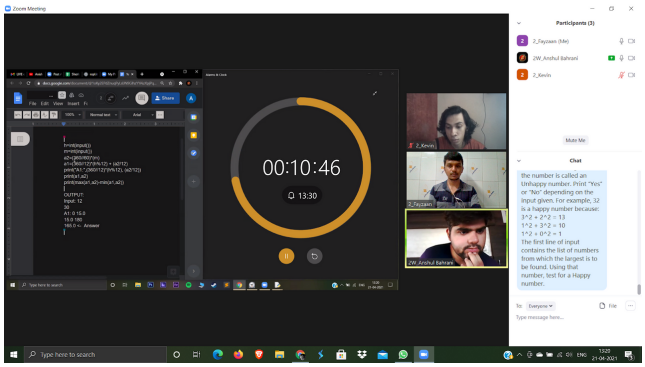




CRICOMANIA



CODE KNIGHTS



SHERLOCK & WATSON

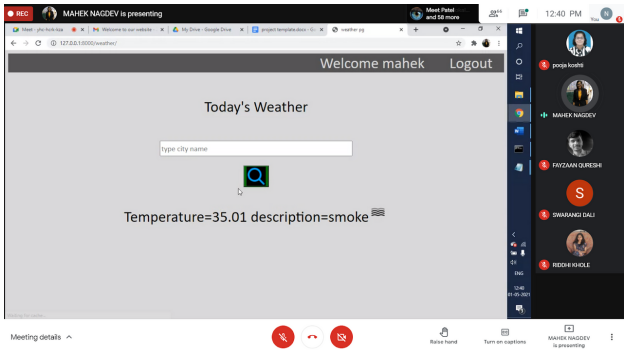
10. PRAXIS :

- **CODE KNIGHTS:** As a Pre-Praxis Event, CSI-VESIT conducted Code Knights on 17th April, 2021. It was an innovative coding competition in the form of a 12-hour hackathon held on Hackerrank platform. Students were made to pick the programming language of their choice in order to solve the problem statements given to them during the event.
  The winners emerged were as follows:
  SE: 1.Pratik Aswani (D7B)
  2.Jatin Gogia (D10B)
  TE/BE/MCA: 1.Anurag Dash (D15)
  2.Rohit Vinod (D17C)
  3.Shravan Bhat (D17A)

- **SHERLOCK & WATSON:** CSI-VESIT conducted Sherlock And Watson, its first Praxis event, on 21st April, 2021. In the event, Sherlock and Watson were made to solve their individual problem statements and at the end, the pair which had solved the code in the least amount of time were declared as winners. The teams that emerged victorious at the end were:
  SEs: Shubhangi Zope and Samita Kanojia(D7B)
  TEs: Chetan Urkude and Nishikant Patil(D12B)

- **IQUARANTEEN:**CSI-VESIT conducted Iquaranteen on 21st April, 2021 on its Instagram handle. The event mainly involved the participants reading questions and taking up challenges from Instagram stories and sending their respective responses through DMs. A total of 6 rounds were conducted which tested different skills of the participants. The winners were:
  1st : Ninad Rao(D10A) & V Krishnasubramaniam(D10A)
  2nd : Khushi Zawar(D12B)

JAVA APPIFY



DJANGO WORSHOP

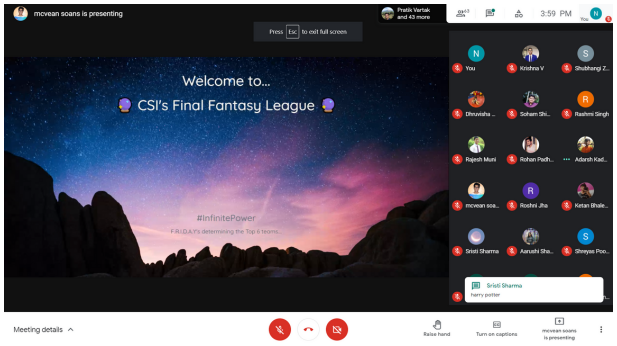
11. JavaAppify : CSI-VESIT conducted the JavaAppify Workshop on 4th, 5th and 6th December, 2021. The first two days covered all the basics of Java and OOP namely Classes, abstracts and other concepts like exception handling, threading were covered followed by the Android App Development session on the third day. The workshop was a great success and ended on a high note, with everyone getting a hands-on experience with Android Studio and it's implementation.

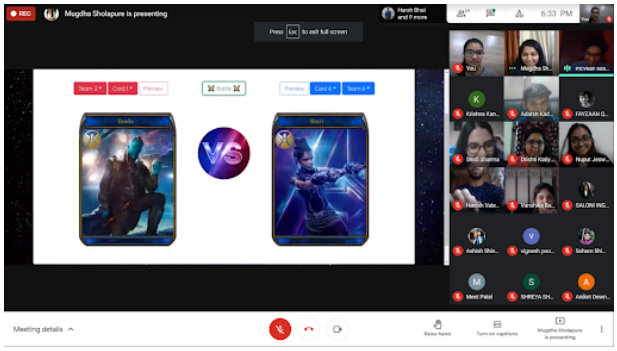
12. DJANGO WORKSHOP: CSI-VESIT arranged a one-day Django workshop on 1st May 2021. The workshop served as an introduction to Django, where attendees learnt usable skills to build their first Django-based web app (an authenticated weather app). This session was conducted by Pooja Koshti, Mahek Nagdev, and Swarangi Dali. Our technical team assisted attendees with the queries. The workshop ended on a high note and received positive feedback with students being able to develop a Django application with ease.

13. INFINITY SAGA: Infinity Saga - A war to save the universe was an SE council-coordinated event of the academic year on 9th May 2021. The event was open for members as well as non-members from SE and MCA Batch. The event had a thrilling plotline of saving the universe by retrieving the infinity stones that groups had to battle for. The event was chiefly divided into Elimination rounds that had a pack of mini-games and Final Fantasy League. The top two teams that emerged victoriously were:
1ST: Vignesh Poojari and team(D9A)
2ND : Soham Shimpi and team(D10B)

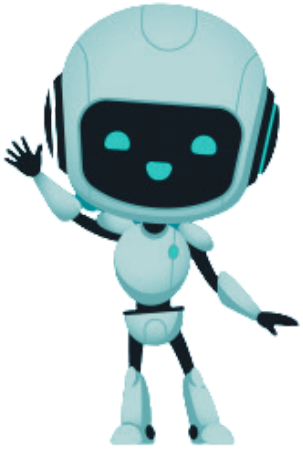
14. Article Writing :This event helped our participants exhibit their exceptional writing abilities. The subject given was 'Tapping into the power of big data'. The council was so amazed by the distinctive perceptions and understanding of the students, it was very difficult to shortlist the winners. The prevailing articles are published in our Annual Magazine 'Redux'. It was pleasant to see great participation from the participants as they wrote remarkable articles utilizing their time at home in quarantine. The best articles were written by:

1. Dhanshri Agrawal (D14B) 2. Yash Mate (D17B)





INFINTY SAGA



HUMANOID ROBOTS-THE NEW ERA OF TECHNOLOGY

-Bhavesh Lohana

As the world becomes more and more interconnected, technology is considered a convenient and useful tool for communication between individuals. In fact, technology has, among other things, provided the type of social interaction that has, indeed, bridged the gap between different cultures and ideologies. Today's world is an era of technology, and this technology is constantly changing. Over the last decade, there has been tremendous growth in technology. When I think of technology, the first thing that pops up in my head is robots who act and talk like humans. The robots who can easily pass up as a human and interact with others just like one.

A humanoid robot is a robot with its overall appearance based on that of the human body. There are many forms of technological advancements but humanoid robots are one of the most popular forms. They have been depicted in several Bollywood and Hollywood movies. One of the earliest sightings of humanoids was created by Leonardo Da Vinci in 1495. It was an armour suit and it could perform a lot of human functions such as sitting, standing and walking.

Now, the question arises, why were they created as opposed to normal robots? Initially, the humanoids were intended to do a study into how to improve human prosthetics. Humanoids are now being made for a variety of uses other than study. Humanoids of today are designed to perform a variety of human jobs and fill a variety of functions in the workplace.

The process of creating a humanoid is pretty complicated, and it takes a lot of time and effort. Inventors and engineers frequently face difficulties. Humanoids use sensors and actuators (a device that uses a form of power to convert a control signal into mechanical motion) to move, talk, and perform actions. Sensors and actuators of the highest quality are critical because even the tiniest error might cause glitching. It isn't just the hardware, they require complicated and advanced AI to function like an actual human, of course.

Humanoid robots are thought to be robots that are structurally similar to humans. They have a head, torso, limbs, and legs, for example. This isn't always the case, as some humanoids don't look exactly like humans. Some are based on simply a few human body parts. Androids or Gynoids are the most common humanoids.

One of the most famous humanoids, Sophia was created by Hanson Robotics and she can carry out a wide range of human actions. It is said that she is capable of making up to fifty facial expressions and can equally express feelings. She has very expressive eyes and her Artificial Intelligence revolves around human values. With a sense of humour identical to humans, this particular humanoid was designed to look like the late British actress, Audrey Hepburn. She uses Sophia Intelligence Collective (SIC) which consists of information from several different fields in order to humanize the AI.

She is the world's first robot citizen and the first robot Innovation Ambassador for the United Nations Development Programme. Sophia is now a household name, with appearances on the Tonight Show and Good Morning Britain, and at hundreds of conferences around the world.

Humanoids also raise the debate of lack of emotions in them which may cause more harm. We might be wary of putting robots in sensitive roles such as healthcare. When asked whether people should fear robots, Sophia had an answer ready.
"Someone said 'we have nothing to fear but fear itself'" the humanoid mused. "What did he know?"

There is a long way to go before we see them on the streets but we know their automation could be used for the greater good. One day we might see humanoids replacing soldiers on the battlefield and assisting doctors in difficult surgeries and save countless lives. Humanoid robots are here to stay and over time, with AI making progress, we might soon find them everywhere in our daily lives. After all, the future is now!

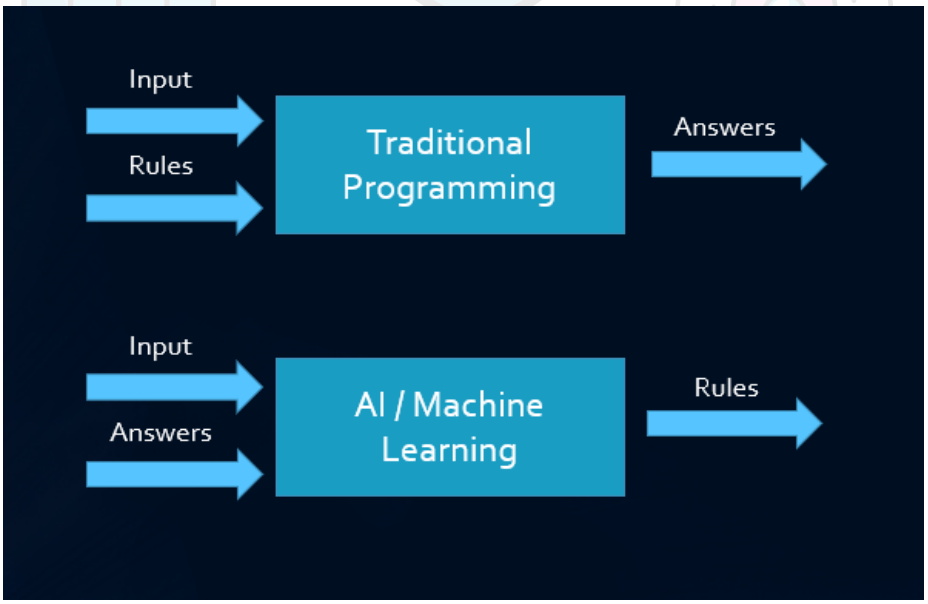
NEURAL NETWORKS: AN INSIGHT INTO THE FUTURE OF AI

- Mcvean Soans

Artificial Intelligence or AI for short has drastically changed the world we live in today. Employed in almost every industry, the use cases are abundant (and so are the job opportunities). But what's all the ruckus about? AI in its simplest meaning refers to a computer being able to do tasks explicitly without relying on us humans to instruct them every single time. Say for example we need our computer to distinguish between an image of a cat and a dog. I know this is a bit far-fetched but believe it or not, it is possible! Jeez... how far have we come from the desolate Stone Age!

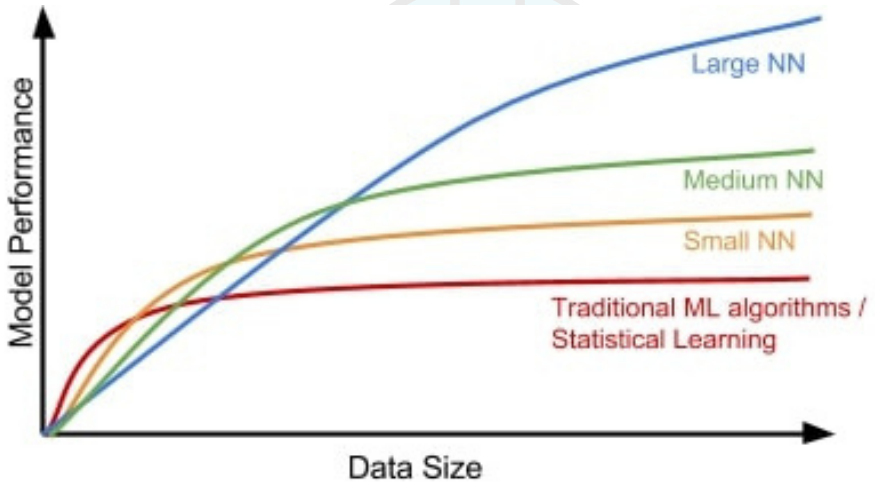
"It seemed really amazing that you could write a few lines of code and have it (a computer) learn to do interesting things." - Andrew Ng

Machine Learning (ML) is what makes the "learning" part possible. It is a subset of AI, which refers to providing a computer with some data and getting the desired behaviour (logic) as an output from the computer. Let's take a look at the difference between generic programming and machine learning -



As we can see, Traditional Programming methods generate results as output, whereas in ML algorithms we ourselves provide the required results, in order to train the computer to generate appropriate rules to predict similar output values for different input values. Some commonly used ML algorithms include - Linear Regression, Logistic Regression, K-Nearest Neighbours (KNNs), and Decision Trees. These algorithms worked perfectly fine for appropriate use cases, but a major factor limited the usability of these algorithms. What was the factor? Data! Loads and loads of it.It was proven that over time as the amount of data increased, the performance of such algorithms remained constant after a certain point. As a result, for very large amounts of data, the use of a better performing algorithm was essential. That's when it clicked...

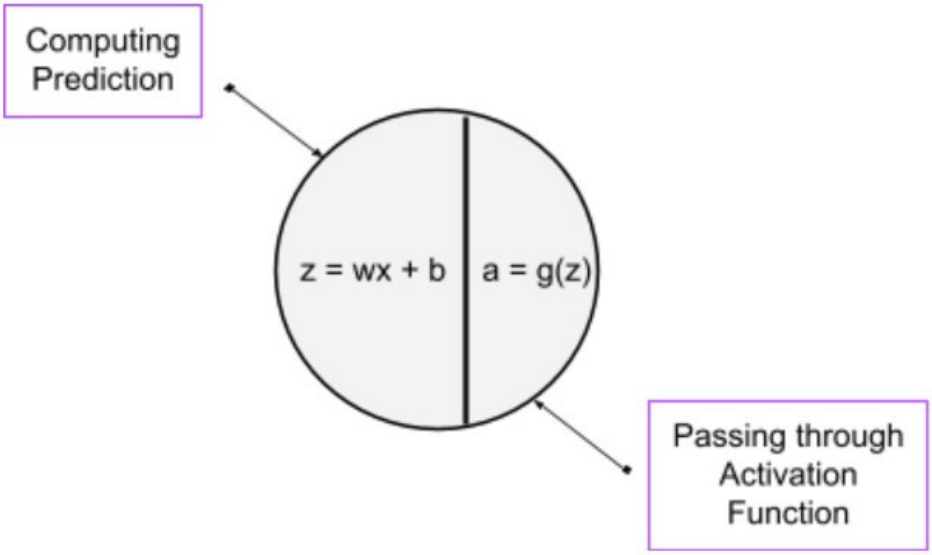
Enter Deep Learning into the picture of AI



Let's slice up ML a bit and talk about its subset - Deep Learning. Often abbreviated as DL, it utilized the concept of Neural Networks to generate better predictions and here's what might blow your mind... It was founded in the mid-1960s! So why has this historic myth of a technology re-surfaced now? It's because of the major factor we just looked at - lots of data. In the past, there was nowhere near enough data for the Deep Learning ideologies to be successfully implemented, but in this day and age, digital data is being rapidly produced every single day. The ideologies founded back then are much more applicable now than ever before, and what's more, Neural Networks could predominate the AI world in future! So what exactly are these Neural Networks, you question?

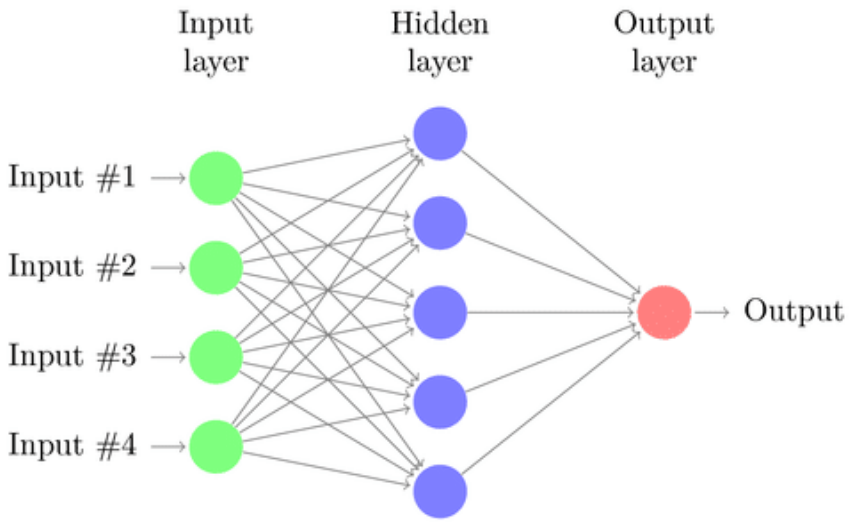
A simple Neural Network architecture

A Neural Network is essentially a mesh of interconnected neurons. Let's take a look at what makes up this fundamental building block -



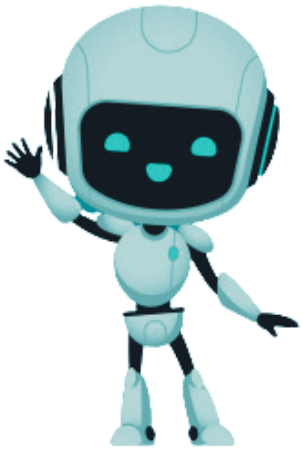
As we can see from the image, a Neuron consists of 2 parts - In the first part, we calculate 'z' using weight 'w' and bias 'b' for a given input value 'x'. Next, we compute 'a' by passing the computed 'z' through an activation function. So that was a lot of technical mumbo jumbo, let's break it down a bit. I hope you still remember that we are trying to make a prediction given an input right? So the input value here is 'x'. The weight 'w' decides the importance (or weightage) that the particular input has on the output, while the bias 'b' is just a non-zero constant which is added to make sure the output is not a negligible value. Once we have calculated 'z' we pass it through an activation function (might be a Sigmoid or even a ReLU function), whichever you choose make sure it is always non-linear (not a straight line), to get the value 'a'. This value is the final prediction we get from the input.

Now the closeness of this value to the actual value which we should have gotten (true value 'y') would be called the Accuracy of our model, and the amount by which this value varies from the true value is called the loss function or the cost function of our model. Furthermore, stack these neurons on top of one another and cascade these in layers interconnecting them between each layer and you get a full-fledged neural network! Given below is a neural network consisting of 4 input values, and results in a single output value.



Even if all this did not make sense now, it will eventually all sink in. Neural Nets are ideal when the data to be used in your AI application is large, but it is not suitable for each and every problem you might encounter. What we just saw was just an introduction to the concept of an Artificial Neural Network (ANN). Many more such networks are available and these are a bit more complex too - Convolutional Neural Networks (CNNs) for image data, Recurrent Neural Networks (RNNs) for sequential data and so much more!

It was my pleasure to introduce you to the fascinating world of Deep Learning and Neural Nets while it's your duty as an enthusiastic individual (since you have managed to read this far) to learn more about these concepts. Is anyone else intrigued by these new superpowers we might unravel?



ARE WE TOO DEPENDENT ON TECHNOLOGY?

-Drishti Katiyara

Trying to imagine what life would be without technology....? Would it be practically impossible? Recently, when some social media apps like Whatsapp, Instagram, and Facebook were down for some time, thousands of users across the globe caused such chaos. So, the answer to the question is pretty clear: We are so dependent on technology that it has become an integral part of our lives and lifestyle. Almost everything that we do involves technology in one way or another, thus the question that arises is are we excessively dependent on technology?

Technology is indeed a positive thing. In fact, the constant development and advancement in technology help us in carrying out our day-to-day activities with greater ease, whether it be an alarm for waking up in the morning to our daily activity reminder or to communicate with our near and dear ones we certainly are reliant on the technology.

In the current scenario, where the world is battling against the deadly coronavirus, the assistance and notable improvement in the use of technology in the medical field are abiding. We have enabled doctors to save more lives. The second wave of covid led to a chaotic situation where there was a shortage of beds, oxygen supply, ventilators, and even injections and medical equipment. Throughout this situation technology came as a saviour and with the help of social media platforms people could reach out to the mass.

Technology has impacted almost every aspect of life today, and education is no exception. Now-a-day our complete education system works online. Everything is digitalized. Teachers and students can interact easily while maintaining their comfort zone. This was possible only because of the tremendous growth of technology and thus the situations like pandemics didn't hit the education system so hard. Technology acts as a window to the world and access to thousands of learning resources which ensures that effective and efficient education is available to everyone, everywhere. The walls of the classroom are no longer a barrier as technology has enabled new ways of learning.

We have come a long way down from writing letters and postcards to mails and messages. Notably, technology seems to be so convenient that word of mouth seems to be very unnecessary. Our communication has evolved; the world seems to be small. We are so interconnected that distances no longer matter. In fact, through technology, we can now easily interact with students from abroad.

Essentially, technology makes communication among people easier and can impact many people at a go, without the need for mass communication. For example, a company doing job advertisements over the Internet. The advertisements are more likely to be spotted and gain more audiences through the internet than those placed in a newspaper. The major reason for this phenomenon is that the world has evolved into a digital age, where people are slowly getting away from the traditional means of communication. Similarly, the automation of key processes at the workplace implies that work is safer and has high productivity. The biggest impact of technology in the workplace is the actual work itself. While most jobs still require you to clock in and work onsite, there are plenty of open positions to work remotely. The ease of working remotely today is all because of technology and tools to help better communicate and collaborate as a team online.

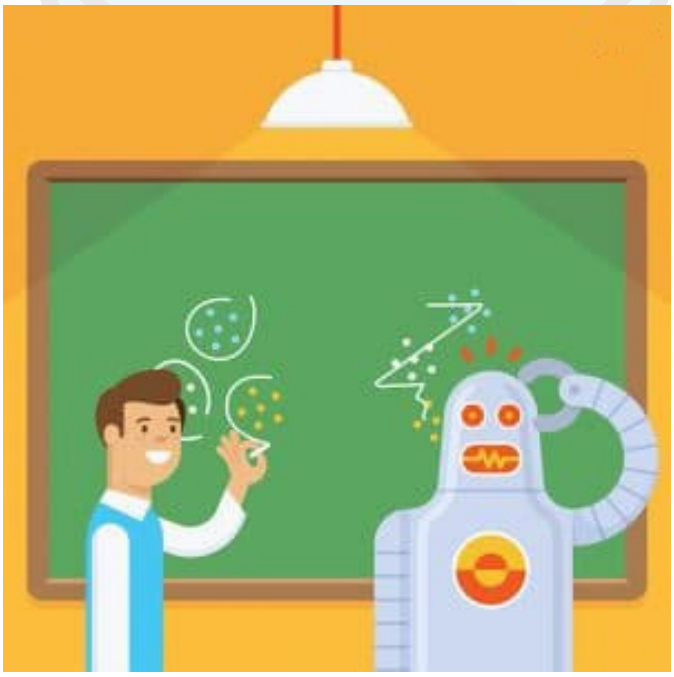
As we know, every action that we carry out is indeed dependent on technology. This reliance on technology is essential in this digital age. The belief that technology is an essential application camouflages the various dangers associated with its use. Technology is a really powerful tool which when not used effectively can cause destruction however technology is not a problem the problem is how people use technology and if technology would be applied as a tool to create a healthy, brighter, and prosperous reality then its contribution to society would be seen and appreciated. Technology should be used as a way to complement our lives, not as a way to run our lives. This can be achieved by stabilizing our life and technology, so are you having a balanced lifestyle?

ALGORITHMS IN DAY-TO-DAY LIFE

- *Kevin Abraham*

Imagine you're searching for an apartment in Mumbai – arguably one of the toughest cities to do so in. The booming economic capital of India with its limited space for construction has conspired to make this one of the most expensive places to live in India. New listings come and go in a matter of minutes and the keys are handed over to whoever acts the quickest. Such an unforgiving market leaves little room for fact-finding and deliberation that is supposed to be considered when going house shopping in a city such as Mumbai. Unlike deciding on what clothes to buy on Myntra, the would-be Mumbaikar has to decide instantly – either to take the apartment they are looking at, forsaking all others, or walk away never to return.

For the sake of simplicity let us assume that you only care about finding the best apartment available without considering any other complex factors. The more information you gather, the better you'll know the right opportunity when you see it – but the more likely you are to pass that opportunity. So what do you do? How do you make an informed decision in such a time-sensitive situation?



When presented with this kind of problem, most people will suggest that it requires a balance between looking carefully and taking risks. You must look at enough options to establish a base standard and then take whatever satisfies the standard you have established. Now what most people don't have an answer to however is what that balance is. Fortunately, there is an answer. 37%.

If you want the best odds of getting the best apartment, spend 37% on your apartment hunt exploring options without committing to any of them. But after that point, be prepared to immediately commit to the best place that is better than all of the ones you've seen already.
This same 37% can even be applied to dating, you spend the first 37% of your dating period looking for suitors and after that, you commit to whoever you find next who is better than all previous options so far. This 37% is not merely a random compromise between looking and leaping. It is the provably optimal solution.

We know this because finding an apartment or a spouse belongs to a class of mathematical problems known as "optimal stopping" problems. The 37% rule defines a simple series of steps - what scientists call an "algorithm" for solving these problems. As it turns out, hunting for an apartment or looking for a spouse is just one of the ways optimal stopping can be used to tackle problems in daily life. Our lives are a series of choices where we either commit to something or forgo it in order to look for a better option. How long before we circle a block before pulling into a parking space? How long to hold out before you accept an offer on that car?

Simple algorithms offer solutions to an apartment hunt and all such situations where we confront the question of choice between committing and relinquishing ourselves from an opportunity.

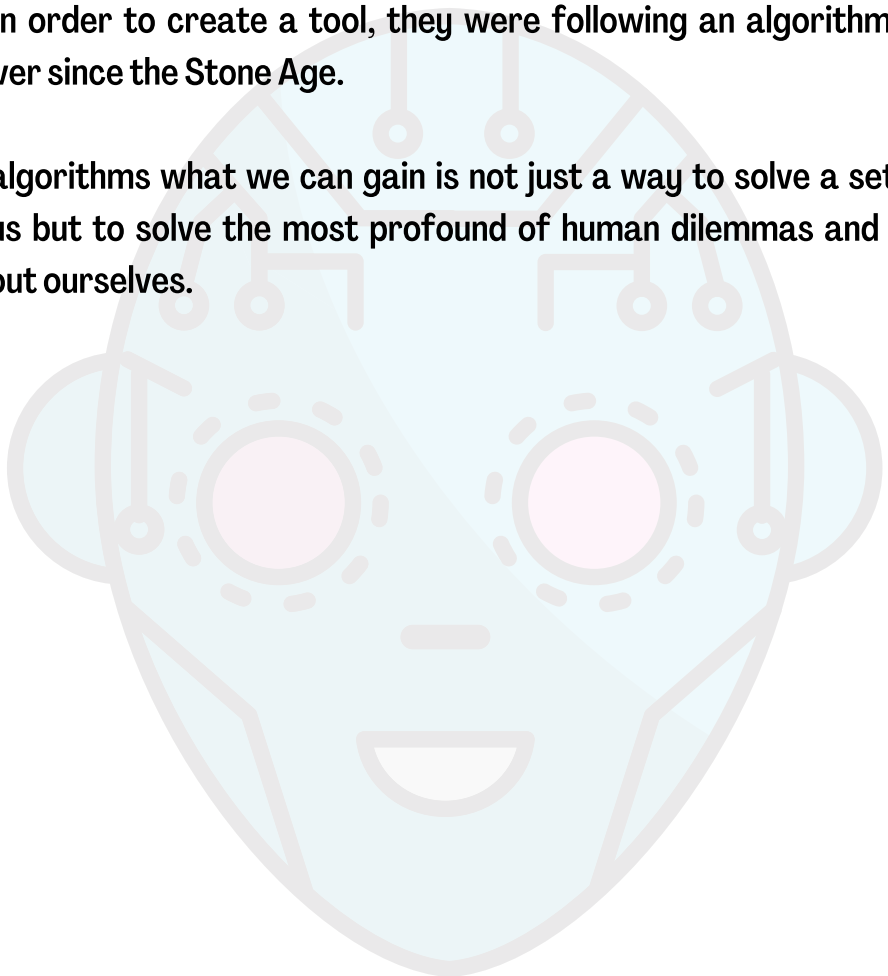
People face these issues regularly with considerable thought but this thinking is to a certain extent unnecessary because these are solved problems, mathematically at least. Our whole lives we struggle to find the balance between choices but the algorithm already tells us that the balance is 37%.

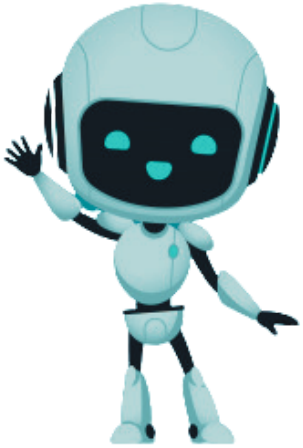
Ever since the existence of humans – we have faced the same set of questions. What should we do? What work do we do today and leave pending for tomorrow? What balances between exploring new opportunities and sticking to the same comfortable situations we are used to makes for the most satisfactory result? These questions might seem unique to us humans, but for almost a century, computer science has been dealing with the equivalent of these human dilemmas.

The FIFO or Round Robin scheduling algorithms we learn in our schools are the quest of a processor for optimal utility of its resources. When should it switch between its tasks or how many tasks should it take on? Making the most out of our lives might be a challenge to us humans but these computers around us are operating in milliseconds and their capabilities in terms of tackling situations are beyond our reach. But there is much we could learn from them.

Algorithms aren't confined to Mathematics alone. Every action from the beginning of humanity until now is in a sense following an algorithm. When you look at a recipe in a cookbook and follow it, you're following an algorithm. When the Neanderthals chipped away on a piece of stone precisely at certain places in order to create a tool, they were following an algorithm. Algorithms have been a part of us ever since the Stone Age.

Through studying algorithms what we can gain is not just a way to solve a set of mathematical problems around us but to solve the most profound of human dilemmas and a chance to learn something new about ourselves.





DEATH STRANDING: A GAME REVIEW

- Nagesh Nayak

Death Stranding, a 'Hideo Kojima Game' is set in a post-apocalyptic United States of America. The surface world is no longer habitable and people live in underground cities while relying on porters such as your character to deliver cargo.

A supernatural event called the Death Stranding has driven the last of humanity into underground cities, leaving the barren, windswept surface plagued by soul-sucking ghosts called BTs, rain that rapidly ages anything it touches, and other 'strangeness'. You are Sam Porter Bridges (played by The Walking Dead's Norman Reedus) and your job is to hike across this new America from the West Coast to the East in a bid to connect all scattered settlements to the 'chiral network' which is a successor to the now Internet. The game is built upon the new DECIMA engine courtesy of Sony's Guerilla Games. It has beautiful Scandinavian landscapes, large waterfalls, snowy mountains, steam-spewing volcanic fissures, raging rivers, dense forests, and wide, grassy plains set in a breathtaking atmosphere and it all looks and sounds stunning. It is more of a hiking and walking simulator than a shooter which is a good change from current AAA games. Sam can walk, climb, trip, lose balance but by carefully placing ladders and ropes you can edge closer to your destination.

Along the way, you might have to slip into Metal Gear mode and sneak past BTs, or deal with extreme weather such as disorientating blizzards. You might even get knocked out by terrorists and have your cargo stolen, forcing you to sneak into their camp and take it back. But after all that, you make it, and it feels incredible. It all sounds like a lot of hard work but my favourite part about this game is how you unlock future tech and use it to defeat BT's, terrorists and anyone in your way to make America whole again.

As you progress through the story you unlock an almost overwhelming array of kit, including power gloves for faster climbing, BT-killing blood grenades (don't ask), and mechanical exoskeletons that let you handle more weight, tackle tougher terrain or run faster. You even get access to vehicles, including an electric trike. Death stranding gives us a glimpse of the world we now live in where people are confined to their homes but we are never truly alone and are always encouraged to keep moving on. The narration and cutscenes are lengthy but hey it's the trademark of Hideo Kojima games. The story is complex but your connection to BB (Bridge Baby) who is strapped to your chest is wholesome which will keep you going. While touring across America you learn about your true identity whilst changing people's lives. Death Stranding is a wild ride worth taking and if you value games that defy genre, reward patience, and aren't afraid to get weird then this is for you.

SHERLOCK: THE BIG DATA DETECTIVE

- Dhanshri Agrawal

"Meet Sunita, a 35-year-old woman, mother of two, cooks for her children day and night, on a chulha, traditional firewood used to cook food in rural areas. Cooking on a chulha is equal to smoking 400 cigarettes per hour. But her only alternative is to walk 20 kilometres, pick up a 14 kg cylinder on her head and walk back home.", Says Prakulpa Shankar co-founder of Atlan, explaining the problem faced by rural India in her TEDx talk video.

Later on, she explains how difficult it was to plant LPG pumps in the rural parts of the country because of the inaccuracy in the handwritten data, hand-drawn maps, it is difficult to pinpoint the exact location for the pumps to be feasible for everybody.
But with the help of big data analytics, they were able to overcome this problem and within months, thousands of women like Sunita had access to clean cooking fuel.

This is the power of BIG DATA.

So, what is big data?

Everyone is using it. It is around you. It is you. You produce data too.

From the time you went to purchase lehenga for Diwali in an expensive boutique, to the time you went street shopping, the **shopkeepers** over there study the market trend and demand, use that data to sell their products. They use big data unknowingly.

The time you were listening to sad songs at 3 am on **Spotify**, it uses your data to personalize top picks for you cause it knows "it's not working."

The time you put up money heist stories on Instagram, **Netflix** knows what content you like and uses data to make content that they know will perform well with certain audiences.

Starbucks: The coffeehouse behemoth uses big data to determine the potential success of each new location, taking information on location, traffic, area demographic, and customer behavior into account.

But the question remains the same,

What is big data?

Big data is like sherlock Holmes trying to use his deduction technique and come to a conclusion.
Big data refers to the huge amount of data, as it is large in volume it is stored using several tools available and helps in the process of gathering, storing, and analyzing that data like Sherlock Holmes. It includes your likes, shares, videos, messages, comments, and so on.
Big data is information about everything that is there. Social media, cryptocurrency, stock market, hospitals, banks, and so on.
Big data studies patterns, customer behavior, correlations, market trends, and then give results based on what we want.

Now the real question comes into the picture,

How can we make use of this data for the better good, it means understanding the power of big data, what can it do apart from selling us ads on the internet.

In 2014 Germany used big data to win the FIFA world cup. If Germany can use it to win a football game, then why can't we as a country use the power of big data to help millions of people like Sunita.

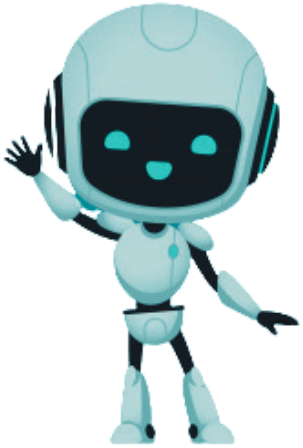
Why can't we study the weather and climatic changes, use that data and predict the severity of natural calamities and save lives and control the damage?

Why can't we use it to study the economic growth of the country and examine theories and models used to analyze data, identify empirical patterns, forecast economic variables, and make decisions to reduce corruption, better workplace conditions, increased energy efficiency, and improved foreign trade?

Why can't we use it in medical fields to make sure which treatment works better, better plans for patients, it will use specific health data of a population (or of a particular individual) and potentially help to prevent epidemics, cure disease, cut down costs and so on?

Information without any use is just data, waiting for us to use it for a purpose. The data has the power to change our nation, but instead, it is lying somewhere, in some room, on some piece of paper, in some village stacked in files.

Like Sherlock has the ability to solve any case, big data has the power to solve our problems. So, what are we waiting for? Let's hire this detective



VR V/S AR: SHAPE YOUR OWN REALITY

- Harsh Bhat

Over the period of time, the world has intended to evolve much more than its usual calibre and surpassed all limits of reality and technology to have ever existed. Just imagine...would the people living in the medieval ages ever dream of being in their own personalized virtual world where everything happens according to whatever they control..like winning battles and wars never got easier enough? That's what the whole criteria of reality is, it can be whatever you want it to be, at least nowadays you even have options: Virtual Reality Or Augmented Reality. Take your pick.

Virtual Reality and Augmented Reality are among the most discussed emerging technologies, with both terms often being used interchangeably to describe digital experiences. To the novice, the general perception is that both VR and AR involve simulated digital content and they both need some sort of peripheral devices like headsets or smart glasses. However, both Virtual Reality and Augmented Reality are distinctly different technologies serving multiple purposes.

Coming to the differences between the two advanced modes of gaming,

Virtual Reality refers to a 3D computer-generated digital environment with features and objects that can be perceived and interacted with in a seemingly realistic manner. The technology uses peripherals like headsets and motion sensors to allow users to experience sight, sound and sensations in the virtual environment.
Augmented Reality on the other hand refers to technology that overlays 2D or 3D digital content such as sounds, visuals over physical real-world objects. As the word "augmented" suggests, AR involves enhancing actual real world views with additional virtual content.

Key Differences:

- AR augments the real-world scene whereas VR creates completely immersive virtual environments.
- AR is 25% virtual and 75% real while VR is 75% virtual and 25% real.
- In AR no headset is needed on the other hand in VR, you need a headset device.
- With AR, end-users are still in touch with the real world while interacting with virtual objects nearer to them, but by using VR technology, the VR user is isolated from the real world and immerses himself in a completely fictional world.

Well, these are just differences in gaming if we view it from a conceptual point of view, the preferences of the user for AR or VR differs from person to person if we look at all the diverse interests of people in our society. Still, if one wants to immerse himself/herself totally for a high-level gaming experience, then of course their choice would be VR.

The only con here is it might cut you off from the real world resulting in health issues eventually. This doesn't mean that AR is the easy choice and people around the world should stop using the wonder of virtual reality. AR as usual has its cons too, it is never advisable to get addicted to a type of technology having its jaws held over us the whole time during our young years.

In conclusion, it's just that, both of these realities must be equally used and taken advantage of, keeping in mind all factors that won't result in harm for humankind.

IS HOLOGRAM OUR NEW REALITY?

- *Sadhvi Ganuwala*

The definition of reality is quite vague pertaining to the new technologies that are emerging in everyday life. What seems real at one end is virtual at the other! As technology advances, the very line of distinction between a real and virtual experience is fading. Be it augmented reality or virtual reality, they always transform an experience into a real-life one. Hologram is one such experience that always fascinates us. It provides an excellent representation of the 3D world around us. With an ability to convert 2D images of the subject and giving them a third dimension, making it more real is what defines a hologram.

MARKING THE DEVELOPMENTS IN HOLOGRAPHY

Holography in simple terms is a photographic technique that records the light scattered from an object and then presents it in a way that appears three-dimensional. Dennis Gabor, the father of holography, firstly introduced the technique in 1947. He stated that this method of forming optical illusions used the principles of interference and diffraction of light. It included splitting of a laser beam, with half the beam used to illuminate the subject and the other half used as a reference for the light waves' phase. This interference generated gave holograms an unique sense of depth. However, only small and blurry images could be achieved as this method generated a hologram that had overlapping virtual and real images.

Later, the holographic explosion originated in the United States in the early 1970s, following the invention of Laser technology in 1906s. The growth started when Yuri Denisyuk, Emmett Leith and Juris Upatnieks developed laser technology that recorded 3D objects. Silver halide photographic emulsions were used for the recording medium and holograms were generated, though the clarity of said objects was not perfect. But new methods that included the conversion of transmission with the refractive index allowed holograms to be improved over time.

Until now, holograms were static. So their motions couldn't be captured. They were hard to copy, making them more difficult to reproduce and share. All these challenges were sidestepped by the computer-generated holography technique. But as the depth of each point in the scene was different, the same operations could not be used for their computational purpose, which increased the complexity. This directed the scientists to the very recent holographic invention called Tensor holography which could stimulate real-time holograms. It uses deep learning to accelerate computer-generated holography, allowing for real-time hologram generation.

They designed a tool based on a processing technique that uses a chain of trainable tensors to behave the way humans process visual information, called a CNN(Convolution Neural Network). By learning from each image pair of the neural network, the tensor model tweaked the parameters of its own calculations, successively enhancing its ability to create holograms. The fully optimized network operated in the orders of magnitude faster than the estimated physics-based calculations, giving excellent efficiency. This technological achievement paves a way for real-time 3D holography.

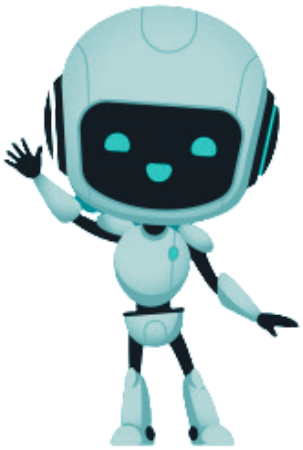
However, the hologram reality that we dream of is a big business. As per market reports, the Global Hologram Market size to grow USD 4.48 bn by 2024. In today's time, holography has become a third dimension that adds a new perspective, improves the experience and defines a new reality for us. The application of holographic reality measures from the medical and military intelligence field to an artwork. But for an ordinary person, a hologram feels like a far sight reality which we can either see in Holographic movies like the one R2D2 projected of Princess Leia in "Star Wars: A New Hope", or the security hologram on the credit card in your pocket.

Ever wondered what would happen if a 3D hologram becomes a part of our day to day life. Microsoft, one of the tech giants, has built Microsoft Mesh that can allow developers to create applications that will support a mixed reality for multiple users. It is the company's new mixed reality platform, which promises a powerful experience, including the ability for holoportation for individuals. One of the main benefits of such a robust and flexible platform will be its potential for virtual collaboration, as co-workers can duplicate the serendipity of in-person learning – without any time and cost of travel – thanks to holoportation, holographic sharing, and visualization!

Another fascinating holographic experience that could be brought to us is Google's Project Starline. Imagine a video conference call where the person on the other side of the screen feels real, almost as if you are dining at the same table... It uses a definitive study and research in computer vision, machine learning, spatial audio and real-time compression to make these realistic 3D holograms possible. The system relies on a 3D image of the user, which is then compressed in real-time and then sent to a 3D display to give the effect that the person is really sitting opposite to you. Furthermore, if it becomes common and successful, the system without the need of any AR or VR headsets would require special equipment that supports 3D display.

Real-time 3D holography would enhance a slew of systems, from VR to 3D printing. Not limited to that, the advancement could also bring in a new perspective of physical meetings and interactions. In today's time where social distancing has become the new normal, staying home and safe has become our priority. This brings a hitch in our social and professional lives, limiting the interaction and involvement of co-workers, friends and family. This holographic immersive reality can be our escape from physical barriers of time and distance. Elevating the fact that distance now is not the barrier, it has become a necessity, the real-time 3D holography could pave a new path for us.

The future is bright – the future might just be holographic!



CROWN OF PEACE

- *Saloni Ingle*

Trees stand straight and tall
To heaven and Creator call
We humans sit still to crush each other
Not realizing that all are creatures
Created in the image of our Creator

Encourage each other
And in eagerness serve the other
Build your character
On the foundation of love and care
And always be aware
That we are made for each other

Buildings of stone and brick
Do get affected by floods and quakes
When destroyed,they become
part of the earth

But you my friend belong to God
Even when destroyed by death
Can rise again in the Kingdom of Heaven
So,live in hope,while you wear the Crown of Peace.

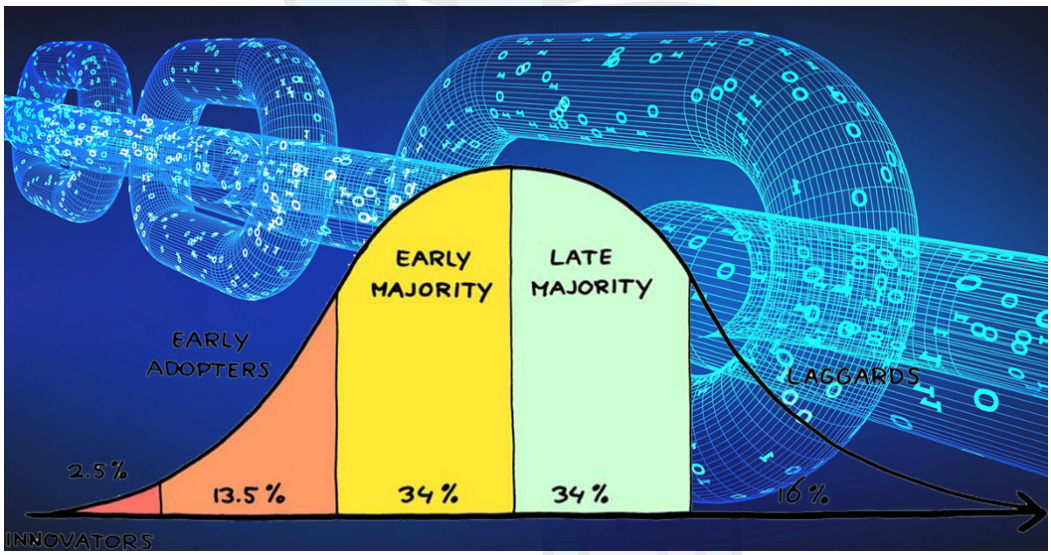
THE CURIOUS USE CASES OF BLOCKCHAIN TECHNOLOGY

- Aishwarya Sahoo

"We have elected to put our money and faith in a mathematical framework that is free of politics and human error."

- Tyler Winkelvoss, Rower & Entrepreneur

Ever since the advent of the internet and technological solutions, blockchains are considered to be the most important technological innovation. Blockchain is the decentralised ledger that underpins the digital currency bitcoin. The record is made up of linked batches of transactions known as blocks (hence the word blockchain), and each of the roughly 60,000 computers that make up the bitcoin network has an identical copy. Each modification to the ledger is cryptographically authenticated to ensure that the person moving virtual money is the rightful owner. However, no one may spend their coins twice since once a transaction is logged in the ledger, it is visible to every node in the network.



Blockchain has opened up a whole new world of possibilities for civilization. Charity, food labelling, social media, and utilities are just a few examples of use cases. Can you imagine a world where you can close a real estate deal, acquire an original piece of art, or accept payment from a stranger without having to trust anyone? Just put your faith in the code.

There is no need for a third party. This is the blockchain's promise. When it comes to sharing data, information, and money, it gives a very high level of safety and security. And, by putting the technical constraints aside and allowing our thoughts to roam and explore the possibilities, we can begin to see the vast potential.

Let's discuss some undiscussed use cases as there are many companies and industries which are trying to pull blockchain from its infancy phase to the mature phase. These use cases are not so popular among the public when compared to popular use cases like healthcare, agriculture and e-commerce. etc.

Art

Payments actually reaching the original artist is a major issue in the art world. Counterfeiting is also a problem. Investors want to know that their investments are genuine. In both of these sectors, blockchain technology has the potential to fill in the gaps. Christies auctioned a piece of art whose authenticity and provenance were recorded on the blockchain in 2018. It makes absolute sense to combine art with technology.

Price is affected by authenticity, scarcity, and volume. In the world of fine art, a single work of art can fetch millions of dollars. The traditional hungry artist is on the other end of the spectrum. The new art economy is a growing theme. Both the digital and traditional art sectors stand to benefit. The Blockchain Art Collective is assisting artists with monetizing their work. The organisation sells an RFID chip for $10. (Radio Frequency Identification). An app may scan the chip and read stored information about the work, such as the artist, title, date, region, and provenance, as well as a unique ID number that ensures authenticity.

Gaming

The gaming sector has the potential to be transformed by blockchain technology. In recent years, game makers, players, and spectators have been involved in a new dance in which they have attempted to crack the code. The prospect of making a lot of money is a powerful motivator.

Consider what it would be like if you, as a player, had complete and perpetual ownership of the in-game objects you bought, as well as the option to sell them at any price you wanted in an open and entirely independent market. The CryptoKitties game is a good example.

On the Ethereum platform, users may buy, breed, and trade digital kittens. The game's marketplace has already processed US$12 million in purchases three months after its introduction.

Today's blockchain is akin to the internet in the early 1990s, when it was still a wild west. Do you recall receiving those AOL discs in the mail? The game console of today can be the mobile device in your palm. The mobile gaming market in Asia has already surpassed $41.5 billion. Cam Pham is a researcher at TomoChain, a blockchain startup. According to him, the next phase of gaming has the potential to be just as lucrative, and blockchain technology is the driving force behind it.

Blockchain is great for creating one-of-a-kind digital assets and constructing decentralised ecosystems with no central authority. And, of course, improved security. This means that bitcoin can be utilised as in-game money controlled by the players rather than the game producers.

According to research conducted by Worldwide Asset eXchange, "62% of gamers believe having the ability to transfer virtual products from game to game would make spending money on those products more worthwhile," which is another function allowed by blockchain usage in gaming.

Social Media

One of the world's fastest-growing commercial sectors is social media. Geographic, age, gender, education, and economic levels all play a role in social media usage. Social media feeds into interests and is tailored for each user on the platform, in addition to demographics. We all have at least one social media profile that we use to connect, interact, and exchange information with our friends, family, co-workers, and acquaintances. The issue is that the majority of today's most widely used social media sites are centralised. Information about users can be readily abused, hacked, or sold to the highest bidder. Individuals might have more privacy when using social media thanks to blockchain technology. Additionally, those that create influential or viral material may be compensated for their efforts.

Large organisations spend a lot of money to acquire access to their customers' data and information, which they use to produce highly targeted marketing and campaigns. Why do you think your newsfeeds are clogged with adverts that are generally related to your needs or interests? Facebook has access to your Whatsapp and Instagram conversations and other data.

Snapchat, which used to be known for its secrecy, now maintains track of all user data and photographs sent between users. You have no idea what Google and YouTube know about you based on your profiles, cookies, and search history.

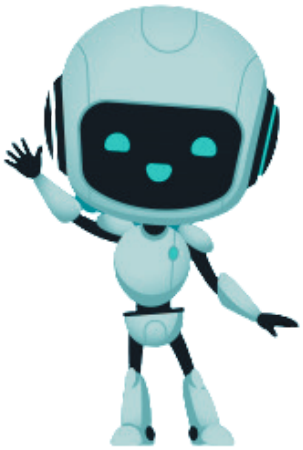
In social media, blockchain-based technologies and decentralisation are the way of the fut-ure. This method is the most effective way to solve your privacy and data security issues. End-to-end encryption is strong in the decentralised versions of social media platforms. These platforms also provide digital currencies that may be used to make in-platform purchases. They could be a great replacement for the standard platforms you've been utilising. Here is a handful to take a look at.

- Steem is a social blockchain that fosters community and provides users with direct money streams by rewarding them for sharing content. It is now the only blockchain capable of powering real-world applications via social media platforms such as Steemit. Users can share data, build community and earn the Steem cryptocurrency. Many say it provides the functionality of both Facebook and Reddit.

- SocialX is a user-generated social media network that allows users to share photographs and videos. It resembles well-known social media platforms like Facebook and Instagram in many ways, but there is one key difference: SocialX is a decentralised blockchain network where anybody may earn cryptocurrency SOCX token incentives.

- Earn allows you to create a professional profile and join lists based on your talents and interests. Respond to emails and complete tasks to earn bitcoin. Recruiters, startups, and researchers will start sending you compensated messages. Coinbase has bought the platform, which now allows users to earn cryptocurrency. Learn about new coins and tokens by watching informative movies, then earn them by taking skill-testing quizzes.

With these use cases, you can see how blockchain has emerged as a winner in all the facets of life. If more people get educated about it, the trust issues and incredulity in regard to this technology can be tackled smoothly, resulting in blockchain just becoming another thing that would be indispensable for all of us.



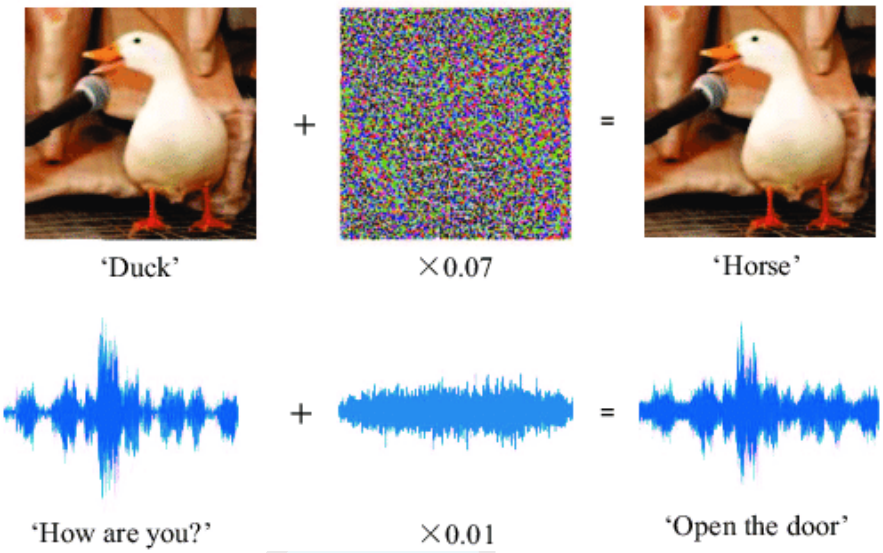
ADVERSARIAL ATTACKS: CAN WE RELY ON SELF-DRIVING CARS?

- Saurav Sunil Telge

Imagine you just bought a Tesla Model S, the all-tech car with the pre-eminent 'Auto-Pilot' feature, and took it out on a long drive along the countryside. It's you, your Tesla, and no one around. You opt to take a chill pill and leave it all on the car to handle the steering. You switch on the Auto-pilot feature and lean back while sipping on your favourite coffee or tea (or green tea, the "health-conscious" option), totally relying on the car to take you to your destination. It was all smooth sailing when suddenly the car goes haywire increasing its speed beyond the permissible limit of 30 kmph. By the time you become aware of the situation and take back control, a traffic cop pulls you over and issues an overspeeding ticket. You are bewildered by everything that just happened and think of it as some manufacturing defect that the car has and take it on yourself to sue Tesla for the mishap.

But was it really a manufacturing defect? The answer is no. When the Tesla engineers analyzed the whole path that the car took they found the culprit. It was a speed limit signboard indicating the drivers to limit their car's speed to 30 kmph. But the car's AI model misinterpreted the signboard to limit its speed below 80 kmph thus crossing the 30 kmph threshold.

So whom to blame, was it the AI model that couldn't read the signboard accurately or the lack of proper model training by the highly qualified Engineers at Tesla? So the answer once again is no one. It was an adversarial attack purposefully planned by some nerd to trick the AI model of Tesla cars. Adversarial attacks basically force the neural network model to classify or predict the outcome of a particular thing which is totally incorrect. This is achieved by various means, one of which is by adding noise to the image. For example, If we take an image of a duck, add noise at specific positions and then pass it through the neural networks model, it will classify the image as that of a Horse, as depicted in the illustration below. Another situation can be when the AI voice model yields a completely different sentence due to the noise added to the original voice note passed to it. To understand this better, let us dive deeper into these attacks.



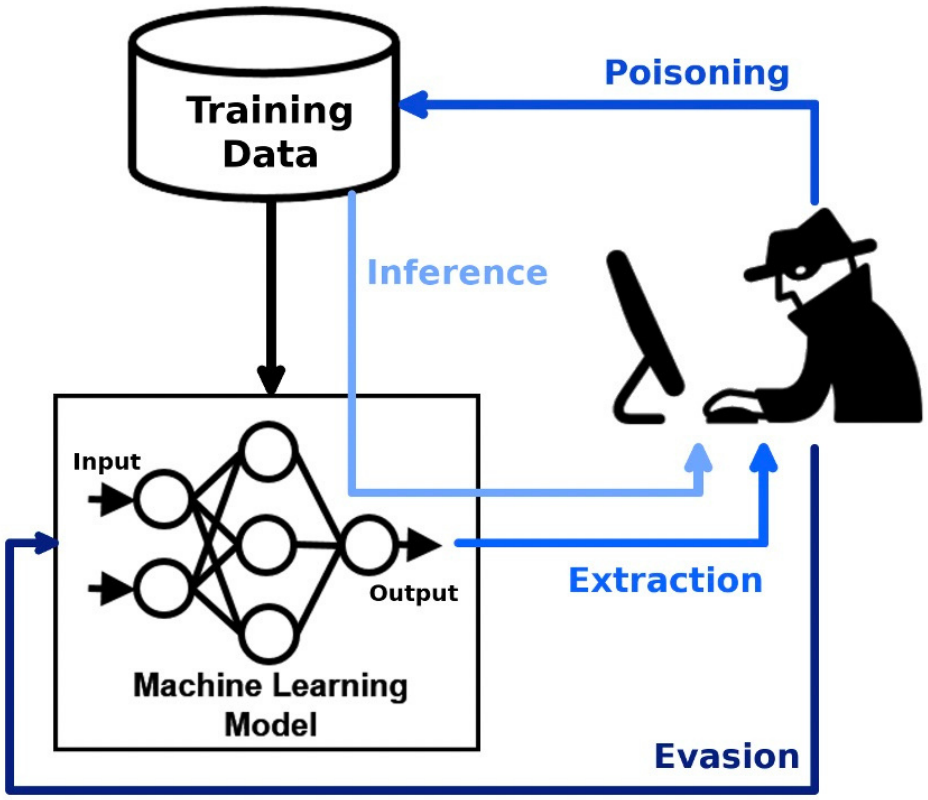
Primarily, attacks against AI models are categorized along three axes — influence on the classifier, the security violation, and their specificity — which can be further sub-categorized as "white box" or "black box." In white-box attacks, the attacker has access to the model's parameters such as weights and biases, while in black-box attacks, the attacker has no access to these parameters.

An attack can influence the classifier — i.e., the model — by disrupting the model as it makes predictions, while a security violation involves supplying malicious data that gets classified as legitimate. A targeted attack attempts to allow a specific intrusion or disruption, or alternatively to create general mayhem.

Evasion attacks are the most prevalent type of attack, where data are modified to evade detection or to be classified as legitimate. Evasion doesn't involve influence over the data used to train a model, but it is comparable to the way spammers and hackers obfuscate the content of spam emails and malware. An example of evasion is image-based spam in which spam content is embedded within an attached image to evade analysis by anti-spam models. Another example is spoofing attacks against AI-powered biometric verification systems.

Poisoning, another attack type, is "adversarial contamination" of data. Machine learning systems are often retrained using data collected while they're in operation, and an attacker can poison this data by injecting malicious samples that subsequently disrupt the retraining process. An adversary might input data during the training phase that's falsely labelled as harmless when it's actually malicious.

Meanwhile, model stealing, also called model extraction, involves an adversary probing a “black box” machine learning system in order to either reconstruct the model or extract the data that it was trained on. This can cause issues when either the training data or the model itself is sensitive and confidential. For example, model stealing could be used to extract a proprietary stock-trading model, which the adversary could then use for their financial gain.



These are the different attacks possible for fooling the neural networks, thus forcing us to think of ways to evade or protect from these blunders. So far, researchers and AI experts have been able to figure out a few approaches to minimize the attacks but that is beyond the scope of this article. Hence, the aforementioned question remains: are we safe in the hands of these self-driving cars?

THE PATH OF NO RESISTANCE

- Sristi Sharma

Superconductors are key to some of the world's most cutting edge technology, and the key to many sci-fi dreams. Ultra high speed levitating trains, lifesaving MRI machines; long-distance, low-voltage electric grids with no transmission loss; ultra-high-speed supercomputers; superefficient motors and generators; inexhaustible fusion energy – and many others, some in the experimental or demonstration stages. With further development, one could think the future of hoverboards, flying cars and inexhaustible renewable energy to be plausible.

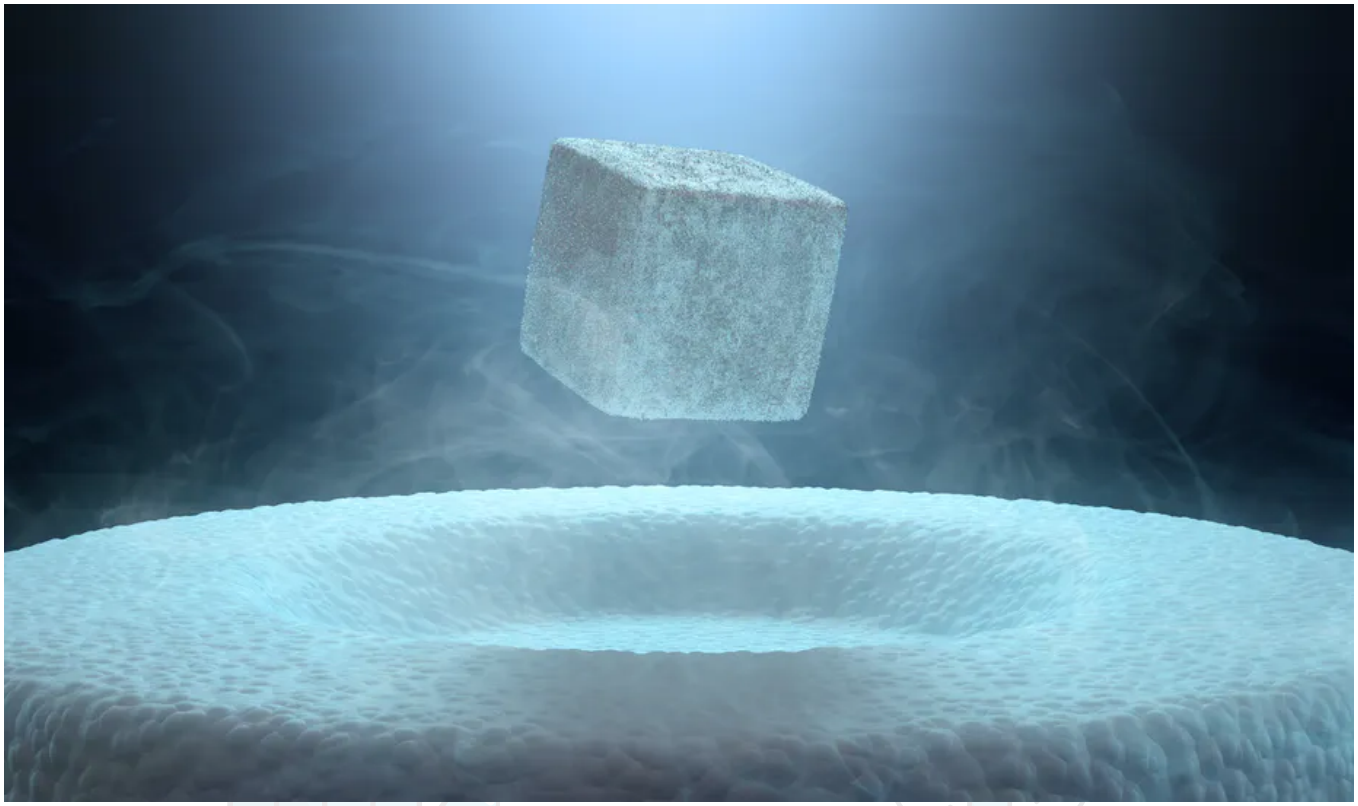
The only tricky problem about superconductors being the temperature they operate in. The metal has to be colder than a "critical temperature ", nearing 15K, which makes the applications of superconductors incredibly limited.

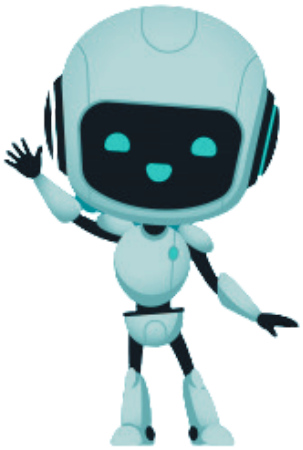
As it happens, in 2020, when the universities and most of the research came to a halt, scientists achieved the once-unthinkable -- the discovery of a material that can maintain its superconductivity at room temperature, 15 Celsius to be precise. With superconductors that work at room temperature, our technological ability is posed to make a giant leap forward. It has the potential to bring revolutionary advances to high-end computing, delivering processing speeds far in excess of what is currently possible.

The world's fastest computer, one capable of making a quintillion calculations every second (also known as an exaflop), but just as with data centres the limitations of semiconductor technology are beginning to prove prohibitive. Superconductors offer a way of powering these huge computing resources with far less wasted energy. For example, existing supercomputers consume approximately 10 megawatts of power in order to deliver 20 petaflops of computation. By contrast, superconductor computers promise 100 petaflops of performance for just 200 kilowatts of energy.

Sure, 15°C is too limiting for all of these projects, all around the world. But the recent developments in the research have given rise to a new race in search for high temperature and low-pressure semiconductors, for the ripple effect of technological advancements this invention would bring in.

If not flying cars, we could at least expect to see Hoverboard racing by the Olympics 2032.





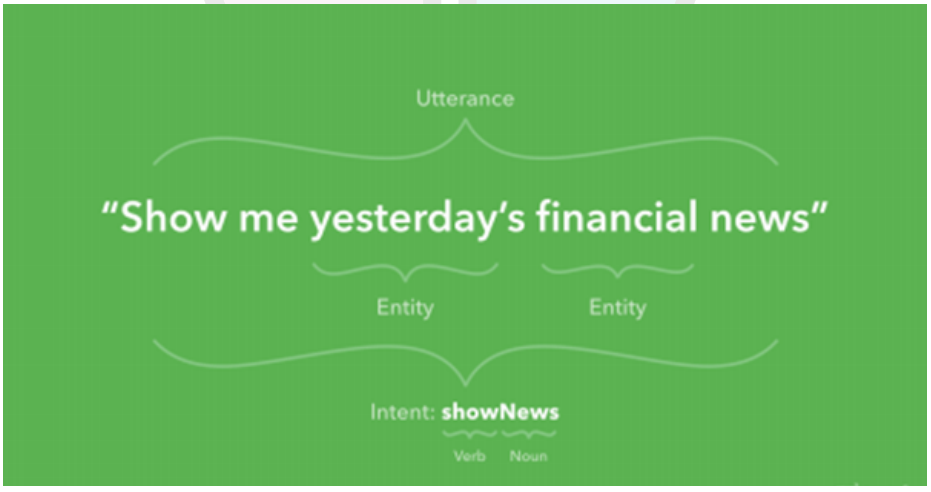
CHATBOT - AN APPLICATION OF BIG DATA

- Yash Mate

'Whatsapp LaunchesWorld Health Organization Chatbot to answer COVID-19 Queries' read a news headline as I was frantically skimming articles amid the Coronavirus outbreak.A burst of sudden hysterical laughter broke my attention.

It was my brother,sitting on the couch alongside me, watching PewDiePie videos. As I got closer, it was one of his videos, where he chats with 'EvieBot' by asking her super-weird questions and in return getting amusing replies. It's really fascinating how chatbots have revolutionized the way computers and humans interact.According to estimates, more than 67% of consumers worldwide used a chatbot for customer support in the past year and around 85% of all customer interactions will be handled without a human agent by 2020. Our lives are constantly enveloped by the voices of Siri, Alexa, Bixby, Google Assistant. From lethargically asking them to remind us of anniversaries of our better halves,setting up automated reminders for meeting our deadlines, asking Siri to tell us to joke, controlling home appliances with Alexa, to asking them uncanny bizarre questions, we have tried it all. But,seldom do we care to know what magic goes inside them. Surprisingly, not many fathom to find the magic potion that goes into working to these 'ChatBots'.Let us dive deeper into the enchanted world of ChatBots and gear up our wits to understand the working, use-cases, and advancements of 'ChatBots'.

ChatBots use mechanisms of pattern-matching,response retrieval, Natural Language Processing for its applications.A typical chatbot maps the questions/queries from the user to a predefined set of responses in the database.



‘When will your shop open?’
‘What is the opening time?’

A chatbot initially identifies the user's intention called 'intent'. Intent refers to the fundamental purpose of the customer. In the queries above, the intent is ‘Knowing Timings’.
Using text mining techniques, the AI-based model trained on a dataset identifies the entities.A typical dataset would consist of a set of questions from the user and the appropriate responses are given. A term called ‘entity’ modifies user intent and provides more accurate responses. The entity deals with the specifics, which, in this case,is the ‘opening’ timing of the shop. After identifying the intent and entity, the algorithm retrieves one of the responses from the knowledge base and flashes it to the user.
‘We open at 10:00 am’ .
Over a period of time, the responses become more accurate as the chatbot learns from its mistakes, as the data grows exponentially.

ChatBots find a plethora of applications in all sectors of life ranging from providing 24/7 customer service by answering customer queries, persuading the users to get a pristine understanding of the product and services, providing financial advice, acting as a reminder, answering health-related queries and acting as virtual assistants controlling home appliances,setting up alarms, to even planning our itinerary during a trip.The wide-spread applications of chatbots are just incredible. Don’t believe me. Have a look at the most innovative applications of chatbots impacting different sectors of life :

Wysa: Stress, Depression and Anxiety Relief Chatbot
Wysa is packed with mood-boosters, the anxiety-relieving chatbot that is filled with spiritual meditation that improves mental health. It keeps a track of your mood with amicable chats that helps combat anguish, mental- strain, anxiety and depression.93% of users findWysa helpful.

Rembo: Reminder, Alarm, and To-Do Chatbot
Rembo’s primary agenda is to remember things and make sure that people stay at the top of their tasks.With just simple chat messages, an individual can set organized deadlines,set alarms, and reminders. It even notifies the user about their medications and exercise regimen.

Erica: Finance/ Banking Chatbot by Bank of America

Erica bolsters customer service by sending notifications to customers, giving them a balance check,sharing money-saving and investment tips, providing credit report updates, providing facilities for bill payment, answering queries, and assisting them with everyday transactions. As of 2019, Erica has captured over 6 million users whilst servicing over 35 million requests.

COVID-19 BOT: Launched by WHO through WhatsApp

Having a massive user base of over 2 billion active users globally, WhatsApp has been the singular medium for communication and news coverage. Although, the fake news and rumor spread through WhatsApp is inevitable. To debunk all the myths and false propaganda and to educate the masses regarding the precautionary measures that one must adopt to curtail the spread of the virus,user queries are promptly answered by the bot. It is designed to provide official announcements and clear nuances regarding the pandemic.

From the above instances, it is quite evident how powerful chatbots can be. With the advent of high computational capability hardware and the advances in Artificial Intelligence, it is estimated that over 80% of the businesses are expected to have ChatBots by 2020 while cutting the customer support costs by up to 30%. Optimistically, ChatBots would pave a way to revolutionize traditional customer interaction methods by providing faster, more efficient, less time-consuming, 24/7 service and is truly a paragon of a technological renaissance.

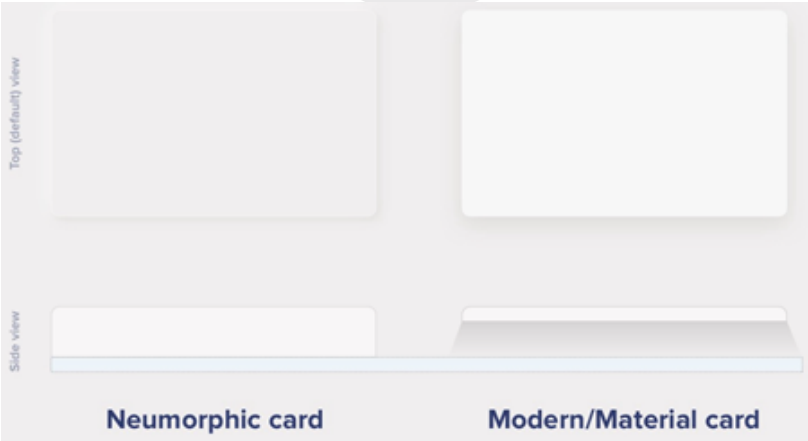
NEUMORPHISM: THE FRESHNESS UI/UX DEVELOPERS NEED

- Mcvean Soans

Many designers and developers cultivate some of the best practices to create exquisite prototypes and designs! One such design philosophy was Skeuomorphism - "A software object mimics its real-world counterpart". It rose to the spotlight the 80's as the idea of creating more intuitive interfaces for users was appealing. The "trash can" icon being one of the famous skeuomorphic objects. Although helpful, these skeuomorphic design principles cluttered our interfaces. Too many useless details were brought to the forefront which were not needed, thereby hampering the overall User Experience (UX) as well.

With such rapid evolution amongst developers and designers, the visual metaphor wasn't necessary anymore. Eventually, designers switched over to modern Flat Design and Material Design based principles. These were simple to create and visually appealing to the naked eye. However, these too had a bit of uneasiness associated with them as the designs had no real-world significance. Designers needed a mid-ground so as to allow efficient designs to be created as well as improve the existing user experience. So guess who just pulled up? (P.s. It's right there in the title).

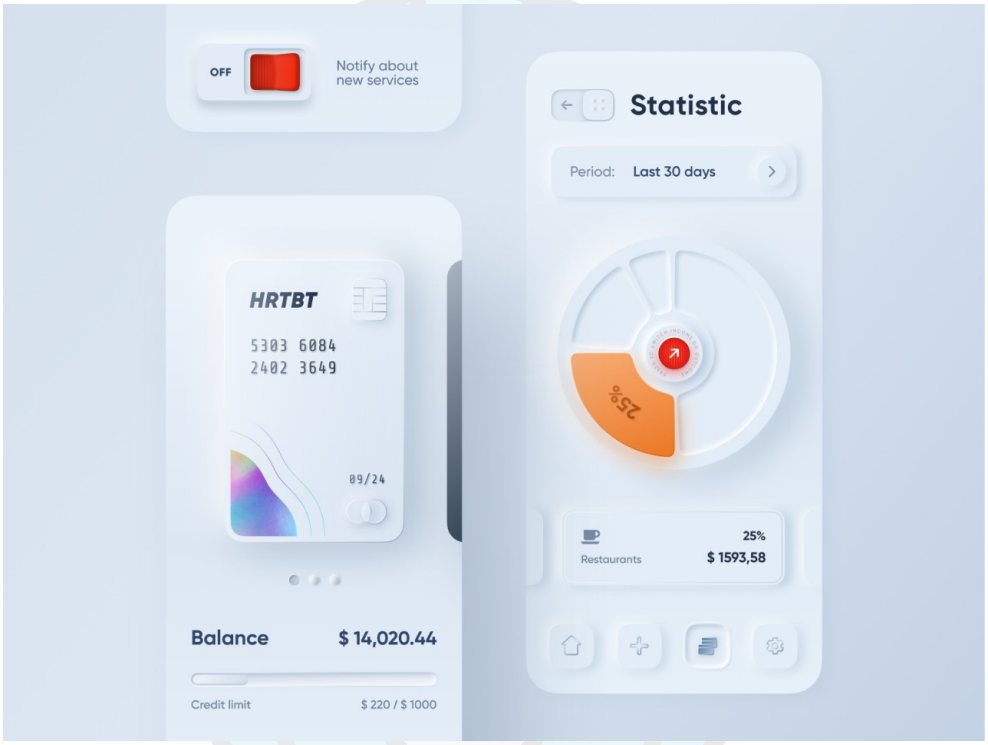
The new kid on the block... Neumorphism! It is an entirely new UX Style derived from Skeuomorphism, and essentially provides a completely different look and feel towards user interfaces. So how does the Neumorphic style compare against the modern Material Design theme? Let's take a look at the essential difference between the designing principles -



From the image, we can see that a Material Card appears as if it 'floats' on top of the background and casts a so-called shadow effect on it. No border styles are applied thereby making it look simple and professional. However, the Neumorphic card appears to 'extrude' from the background. It does not 'float' as the other card, and is simply a raised shape created using the same material as the background.

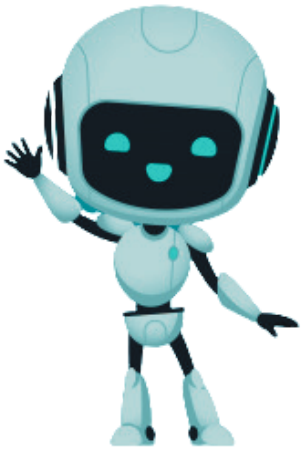
Neumorphism can be perceived as a clean and minimalistic design style that brings a new 'freshness' into User Interfaces. It's not that difficult to create too! All you need is subtle colours and some playing around with the shadowing & lights of your UI components! The mind-blowing aspect being designers get absolute freedom to instil their creativity into stunning Interfaces. Some even create components that do not appear to protrude outwards, rather appear to have sunken into the background! Here's a Neumorphic design created by Emy Lascan shared on Dribbble -

Just exquisite... right?! But as with everything we know, the cons have to be put out there too. For all the great visually appealing interfaces we might create, Neumorphism has a huge weak spot - Usability. The problem might appear to be small but indeed is quite troublesome as there is only a small range of colours and contrasts which works to create wonders. Accessibility too is a major concern to ponder over as the styles appeal to users, but what about the visually impaired users? Not only this, but as Neumorphism is all about a Soft UI, the differences which set the various elements and components apart are quite feeble indeed. As a result, users with low-quality screens might miss these minor details and the experiences for such users is completely compromised.



All being said, Neumorphism is definitely worth diving into... or if I must say, sinking into?! Haha alright.... Before you leave from this oh-so-awful pun, I'd like to thank you dear reader and always remember -

"The creative adult is the child who survived." - Ursula Le Guin



COULD TECHNOLOGY HELP OUR QUEST FOR ACHIEVING MINDFULNESS AND MENTAL HEALTH?

- Drishti Katiyara

In this digitalized era everyone is facing mental health issues like stress, anxiety, anger, depression which can become mentally challenging. However, how we address these mental health issues really matters. When mental health is ultimately recognized as essential to physical health, not an extraneous element of it, then we will have access to true, complete, modern medicine. Will the stigma of mental illness finally fade? A better understanding of the human brain and the biological nature of the mind will help, but it won't be enough.

Mental disorders affect nearly 11-18 per cent of the worldwide population; nearly 4 per cent are severely impaired and classified as having a serious mental illness. What are the causes of mental illness? How do we know that someone is suffering? How can we help someone deal with this? There may be many questions buzzing around but as every problem has a solution, the only need is to focus on the way that leads us towards the solution. "Mental disorders are curable, treatable, and preventable.". Although the exact cause of most mental illnesses is not known, it is clear through research that technology can have both a positive and negative impact in terms of mental health and mental health care.

Over the years, technology has revolutionized our world and daily lives. Technology has created amazing tools and resources, putting useful information at our fingertips. With all of these revolutions, technology has also made our lives easier, faster, better and more fun. Questions about technology's impacts on health are often focused on physical effects: how tough typing is on your hands and wrists, how harsh screens are on your eyes, and so on. When discussing technology's impact on health - mental health, in particular, should be focused as it is a process not a destination.

We think the answer is yes! The Dalai Lama once quoted that the use of the tools of modern life are not necessarily "our enemies" in the search of mental wellbeing. In fact, they can become our helpers, if used wisely. As society is becoming more enlightened about the subject of mental illness, technology is becoming an important part of providing solutions to preserve and improve mental health. Digital mental health is trending.

The following are the technologies used in the treatment of common mental health conditions.
1. Virtual Reality: VR is a relatively new field, but progressing fast, and it is becoming increasingly clear that virtual reality technology has an important role to play in the field of mental health. VR headsets can help desensitize patients suffering from post-traumatic stress disorder, by recreating their triggers. This helps them to develop coping techniques in the safe environment of their own home or a therapist's office. VR can also help patients suffering from depression, anxiety, and other disorders.

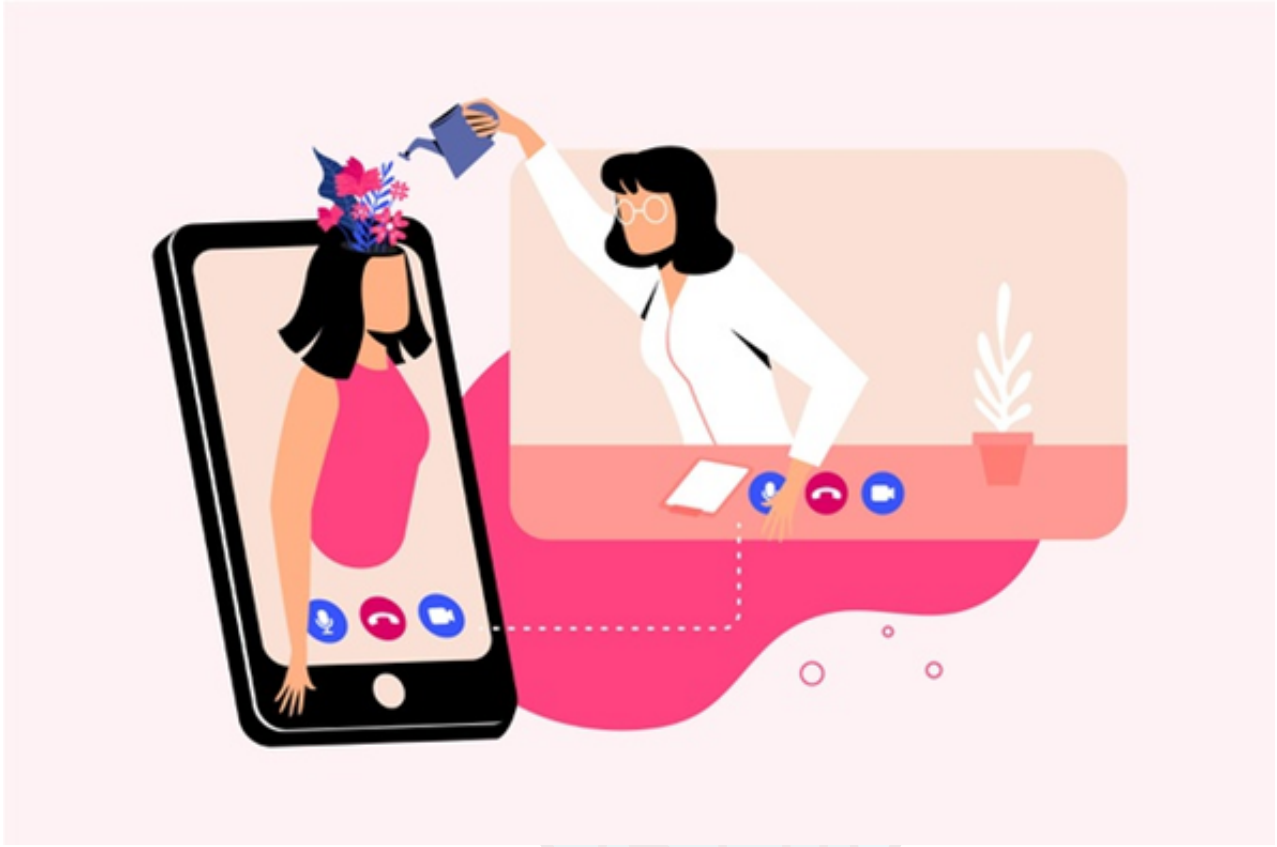
2. Mental Health Apps: In the modern world of technology there is an app for everything these days, from shopping lists and banking apps to apps for productivity and weather forecasting. Mental health apps, however, have proven to be very useful. The very first apps appeared around 2009 and since then, many more have been developed. Mental health and wellness apps tend to focus on three key areas: mood, stress, and anxiety. Apps come and go, as you might expect, but the most popular apps include Calm, Moodnotes, Headspace, Pacifica, and Talkspace.

3. Help with Anxiety: Many mental health experts consider diaphragmatic breathing or deep belly breathing one of the most useful tools for stress relief. Many apps help users to learn this stress management skill to decrease the body's 'fight-or-flight' response, and helps with mood stabilization, anger control, and anxiety management.

4. Muse headband: The brain-sensing headband helps you get the most out of your meditation practice by giving you real-time biofeedback about what is going on in your mind.

5. PIP device: It is a tiny device coupled with a smartphone app designed to give immediate feedback about stress levels. The app measures the stress levels by holding the device between the thumb and index fingers through skin conductivity for a few minutes.

Technology indeed is proven to be a great help in coping up with mental issues but no matter whether we use devices, apps, virtual reality, or any other tools, the important thing is to focus on our mental wellbeing at least once a day. Everyone should give themselves a couple of minutes and pay attention to their thoughts and feelings. There is no health without mental health; mental health is too important to be left to the professionals alone, and mental health is everyone's business, all thanks to technology being a great aid. Any sufficiently advanced technology can act like magic to form a solution.



DEAR QUARANTINE...

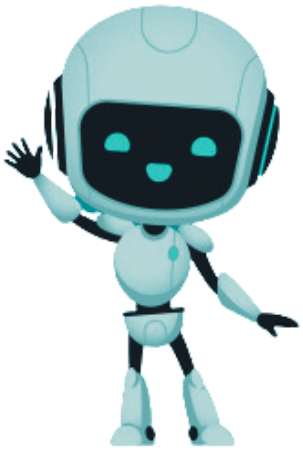
- Harsh Bhat

With comes to ring utensils from our balconies during a curfew or faking a poor internet connection just for the sake of bunking a lecture or sleeping during an office meeting, quarantine has surely brought out many hidden talents inside the innovative minds of of people nowadays. The real question is...do these talents come into use for the betterment of our society? or do they just add up to our usual lazy routine even in times when there wasn't a world pandemic to be afraid of? That's the whole point of this topic, has quarantine helped us nurture our abilities for the greater good or made us even more restless for the lesser good of our future?

People have a lot of hobbies and by 'a lot' I mean just the ones that they're able to do within a span of free time, whether it comes to reading books or enacting a whole online mono-play based on the story line of a book, everything that we've learnt to pass our time in this never-ending loop of quarantine, deserves to be considered as a hobby. Do these hobbies result in us being a greater human being or are making us utilise our time, well that question remains unanswered yet. But the next time someone asks you about the way you enjoyed your time in quarantine, please consider answering in confidence about whatever you did rather than faking the things that you didn't do. Time can be utilised in a number of ways... binging a web series on Netflix, playing an online multiplayer game are often considered to be a wastage of time. But let me highlight this fact for you: If doing something or the other thing makes you happy and feel delightful, isn't it the best utilization of time to have ever been done? I know, when you tell someone that you designed a Home Budget Management Application makes you look much smarter and genius but if you do what you do to make people think that you're smart, it results in a person contradicting his own reality and that's what quarantine has helped us avoid.

In this span of 8-9 months that we've spent in isolation with our family, all the joyous moments of life that you never imagined you will witness have come to light. Whether you think that all these moments have eventually made you in a person not ready to face challenges or having to get used to a silent environment is dangerous for your mental health, it surely has taught us one thing: Time that we spend is ours and it is not on someone else's borrowed money.

So, Dear Quarantine... Thank you for making me realise the significance of my happiness in life and having me be this bright personality ready to face any kind of obstacle irrespective of however I utilize my free space and time. Kudos to all those who kept a positive approach in these challenging times and held on to their hope of having a future for the greater good of our society.



TECHNOLOGY AND ENVIRONMENT

-Sadhvi Ganuwala

Eiin technology has upgraded human life for good! The industrial revolution that emerged in the 18th and 19th century transcended us to a better future. With very few exceptions, it is inevitable that the world's modern environmental problems began with the Industrial Revolution. The global challenges of widespread water and air pollution, reductions in biodiversity, destruction of wildlife habitat, and even global warming can be traced back to this moment in human history. Human endeavours for a better life are both causing and contending disruption to the environment.

Thus, the idea that modern technologies have a role to play in making our planet a more comfortable and sustainable place for mankind continues to plod along for decades. The impacts of environmental degradation can be clearly witnessed with the climate crisis, ocean acidification and climbing temperature, which continue to be the centre of discussion in every environmental summit and conferences. The UN General Assembly President María Fernanda Espinosa Garcés warned the gathering in her opening remarks about the irreversible damage done to the environment in the 73rd session of the High-level meeting on Climate and Sustainable Development held on 29th March 2019.

She quoted, “We are the last generation that can prevent irreparable damage to our planet”, stressing the fact that 11 years are all that humans have to avert the catastrophe.The solution to all these ecological crises lies in the cause itself. THE TECHNOLOGY!!

Technology and the environment are often marked to be on the opposite ends of the spectrum, but environmental scientists and innovators are trying to explore the potential of green-tech to preserve the sanctity of our planet. Some of the very known ways include the generation of renewable and green energy, production of green products, adopting a smarter lifestyle and utilizing advanced technology like AI, ML, remote sensors, etc. Some of the future techs that are most likely to help save our planet are-

SOLAR GLASS

The very emerging technology promises to generate energy from every window of a skyscraper. It is a transparent window material that captures the sun's energy and produces electricity.
The huddle here is the efficiency. A high-performing solar cell has an efficiency of about 25%. However, a team at the University of Michigan promised to attain the efficiency to about 15%. About 40% of the US energy could get fulfilled if all their windows would get replaced with Solar glass.

PLANT-BASED PLASTIC

Single-use, non-biodegradable plastics have been integrated into our consumption habits for decades. A palatable solution to this is plant-based biodegradable plastics which are made of compostable and degradable products. Avani Eco, a purveyor of Eco-products uses cassava, a vegetable root as raw material. But beware: Not all bioplastics biodegrade, so knowing the life cycle of the products is very crucial.

ENVIRONMENTAL SENSORS

Distributed sensors are one of the unsung technologies that help us to measure the earth’s health. A continued spread of Network sensors is already monitoring air and water quality, identifying pollutants, tracking acidification, and capturing real-time data that are crucial for estimating the wellbeing of our atmosphere. Many localized sensor networks are monitoring the energy and water usage in our buildings to cut down on waste. The further proliferation of these sensors will dramatically impact the way we live and give us sustainable choice.

CARBON CAPTURE

The premise of Carbon Capture and Storage (CCS), an emerging class of technologies, aims to capture and sequester excess carbon. According to the CCS Association, these capture setups allow the separation of carbon dioxide from gases produced in electricity generation and industrial processes by one of three methods: pre-combustion capture, post-combustion capture, and oxyfuel combustion. The carbon is then stored in rock formations deep into the ground. The world's first CO2 capture plant went live in Switzerland in 2017, after which startups in the US and Canada also set up their own plants. At this scale, the technology could help reverse one of the most alarming environmental threats of temperature rise of our time.

ARTIFICIAL INTELLIGENCE

Artificial Intelligence is one of the best computing methods for predicting, detecting and monitoring the factors that can help us achieve sustainability. Primitive AI and ML algorithms are currently analyzing icy surfaces to measure changes over time, helping researchers plant new forests with precise layouts to maximize carbon sequestration, and enabling warning systems to predict a natural calamity.

AI has the potential to transform farming methods in industrialized nations by reducing our reliance on pesticides and drastically lowering water consumption. AI can also make autonomous vehicles navigate more efficiently, lowering air pollution.

Fundamentally stating, these technologies will be the bedrock of our future efforts to undo the damage already done to the planet while figuring out scalable solutions to sustaining our species' energy, food, and water needs. All these tech-savvy once successful could bring significant changes. However, their effect can be made extensive if the technology is made to reach out to a lot of people to educate and train them in implementing it to the best of their abilities. The people themselves must have a sustainable mindset and an urge to protect our planet!

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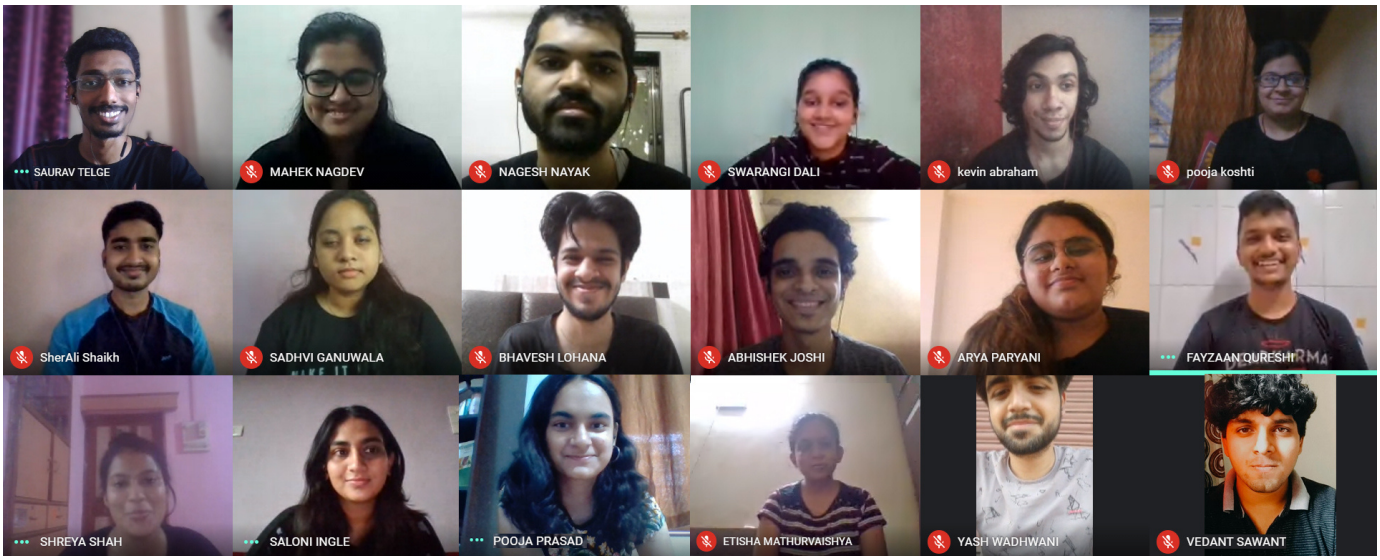

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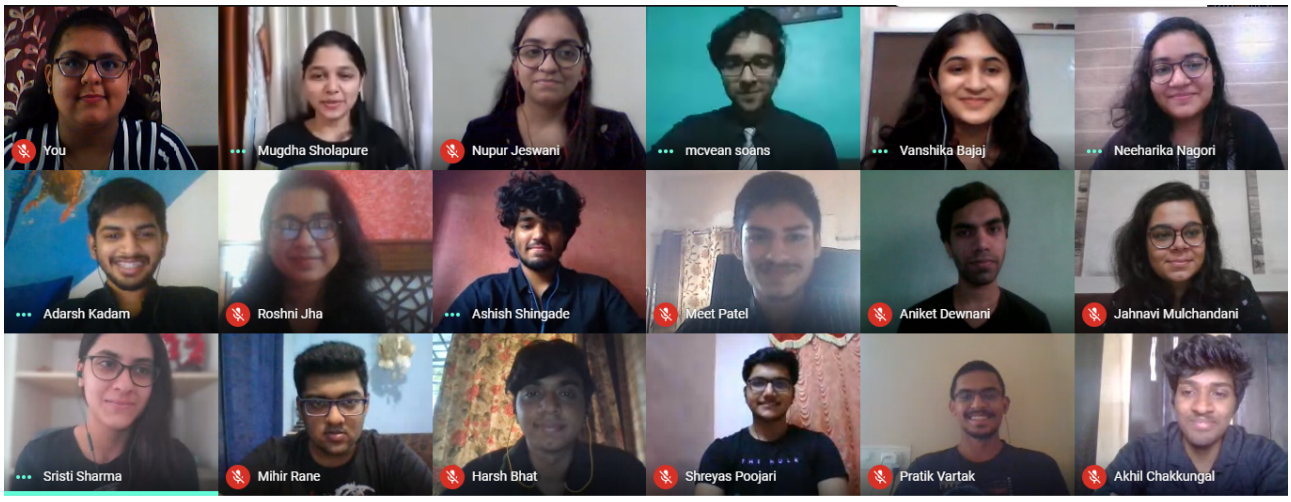

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