Keshav Mahavidyalaya

NACC Accredited 'A' Grade Cycle 2
University of Delhi

ISSUE 7

e- BLITZINE 2023

**Department of Computer Science**

INFORMATION AGE 2.0

- Edge Computing
- Technological Updates
- Recos and Puzzles
- Decentralization

CONTRIBUTORS

Principal
Prof. Madhu Pruthi

Teacher In-Charge
Ms. Maulien Pathak

Convener, BLITZ Society
Dr. Roli Bansal

Convener, Editorial Board
Dr. Anjali Thukral

Editorial Board (Faculty)
Mr. Ashutosh Singh
Ms. Jyoti Kumari

Editorial Board (Students)
Keshav Saini
Shivanshi Gupta
Smrati Sharma
Abhishek Kumar
Ayush Kumar Jha
Chetan Yadav
Dhavni
Eshaan R. James
Lipika
Siddhi
Simran

Special mentions:
Saloni Chauhan (Cover Page Art)
Pratham Arya (Photographs)

Photo by: Mohd Yasir Ali

FROM PRINCIPAL'S DESK
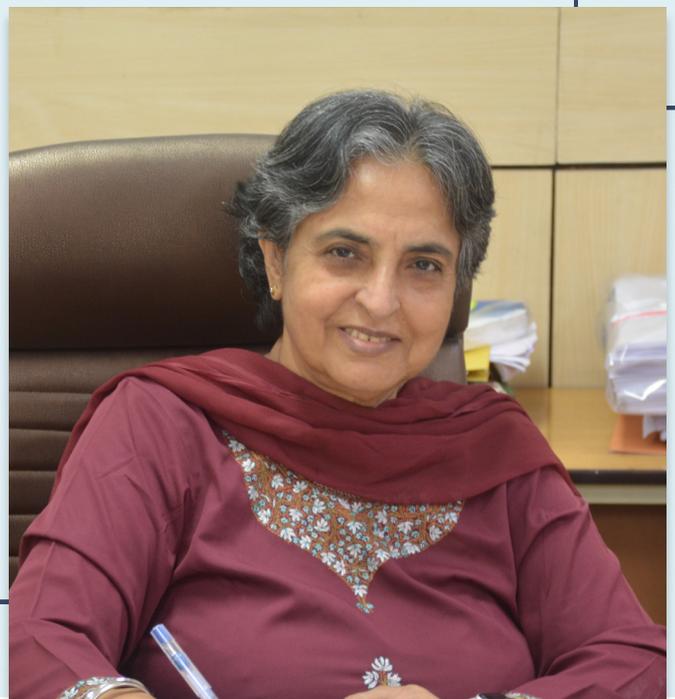
"Information age 2.0 is not mere information but knowledge leading to wisdom."

I am pleased to announce that the Department of Computer Science has launched the 7th edition of its annual magazine, e-Blitzine 2022-23. The dimension of education is changing rapidly with the advancement in technology. The students at Keshav Mahavidyalaya strive to build their minds while keeping up to date with the latest technologies and innovations in Computer Science.

e-Blitzine is a perfect platform for our students to showcase their knowledge and creative abilities. The magazine is a testament to the commitment and dedication of the students, faculty, and staff who worked tirelessly to make this edition a reality. The theme for this year's edition, "Information Age 2.0" is not about having access to information, but about managing an overwhelming abundance of it. With the rapid advancements in technology, it has become imperative to adapt and embrace the new age of information.

I encourage all to take time to read this year's edition of e-Blitzine. I hope that the magazine will inspire and motivate our students to continue pushing boundaries and achieving their dreams.

Prof. Madhu Pruthi
Principal

FROM CONVENOR'S DESK
(e-Blitzine)

Take up one idea. Make that one idea your life – think of it, dream of it, live on that idea. Let the brain, muscles, nerves, every part of your body, be full of that idea, and just leave every other idea alone. This is the way to success." – Swami Vivekananda

Warm greetings from e-Blitzine!

On behalf of the team, e-Blitzine, I feel privileged to present e-Blitzine'23, the 7th issue of the annual e-magazine of the Department of Computer Science, Keshav Mahavidyalaya. Besides covering all departmental events that happens throughout the year, the magazine also publishes articles authored by our students. The magazine not only showcases the achievements of our students in academia and beyond but also provides a platform for exhibiting their talent.

I congratulate team members of the e-Blitzine'23 for successfully compiling this edition of the magazine. The college was reopened in physical mode after two years of virtual mode. Despite having a little prior experience, the team worked with new thoughts and lots of enthusiasm. It helped them achieve their goal within the given resources and time frame. The team not only published the magazine on time, but also initiated a new activity (to be disclosed later!). My best wishes to all the members to keep their progressive zeal up.

I hope the readers find this magazine informative and helpful. I request all the readers to give their feedback to improve the upcoming magazines.

Dr. Anjali Thukral
Convenor, e-Blitzine
Department of Computer Science

FROM CONVENOR'S DESK (BLITZ)

"A baby learns to crawl, walk and then run. We are in the crawling stage when it comes to applying machine learning." – Dave Waters

Department of Computer Science brings forth yet another edition of its annual magazine, the e-Blitzine. The society serves as a platform for bringing together academia and industry to provide students with the latest technological advancements in computer science. Since its establishment in 1996, BLITZ has been striving to prepare students for the new technological world.

The society has been successful in its mission this year too, thanks to the highly motivated team of teachers and students who have worked continuously towards a common goal. BLITZ has organized various activities of students' interest, such as seminars, coding competitions, and career talks, to help students gain expertise in their chosen fields. Renowned industry professionals shared their experiences with students on topics like Secure Coding Practices, First Step Towards Open Source with Git/GitHub, Resume Building, Career Opportunities, Competitive Coding etc. The society is set to stage with utmost enthusiasm, its annual BLITZ festival 'BLITZKRIEG 23'.

I am extremely grateful to our Principal, Prof. Madhu Pruthi, for her unwavering encouragement and support in this endeavour. I am also thankful to all teaching and non-teaching members of the department for all the support that they have extended. However, the most pivotal role in nurturing the growth and prosperity of this society is played by the students of today and tomorrow. Without their active involvement, the society cannot exist.

Dr. Roli Bansal
Convenor, BLITZ
Department of Computer Science

FROM TEACHER IN-CHARGE

"Artificial intelligence is growing up fast, as are robots whose facial expressions can elicit empathy and make your mirror neurons quiver." – Diane Ackerman

I feel extremely happy to speak to the readers through the 7th edition of e-Blitzine, the Computer Science Department magazine. Over the years the e-magazine has provided an opportunity for students to portray their topics of interest and share their ideas. It ignites the young minds to generate inputs to bring all round growth and development. I take this opportunity to congratulate the entire team on their endeavor to bring out the next issue of the magazine. My best wishes to all the readers for scaling bigger success and achieving newer heights in the times to come. Always remember, an analytical mind with a passion for learning leads an individual to achieve success and glory in life.

Happy Learning and Happy Reading..!

Ms. Maulein Pathak
Teacher In-Charge
Department of Computer Science

ABOUT BLITZ

Brilliant Information Technology Zealots, a society formed by the first batch of B.Sc (Hons.) Computer Science, with a feeling to promote innovative thinking and professional growth, has turned out to be a "power-house" for the whole college. It has largely contributed in making Keshav Mahavidyalaya to be "the happening place in the DU fraternity". The vision conceived by the founders of the society was to enable higher academic standards and enhance the quality of extracurricular activities in the college. Under the guidance of our Principal, faculty members, and fellow mates we have turned **BLITZ**, from just being another society in the college to making it a thinking, acting and an ever changing entity. We at BLITZ believe and live by the motto 'SILICON MINDS, CIRCUITED HEARTS' and in the endeavor, organize events such as seminars, debates and technical festivals to keep the students abreast of new advances in the fast changing world of information technology.

ABOUT e-BLITZINE

The Department of Computer Science at Keshav Mahavidyalaya has consistently kept up with technological advancements and has been a reliable source of information for the dynamic subjects in computer science. From 2017, the department has taken the laudable step of launching the annual magazine 'e-Blitzine' with the very goal in mind. The year 2023 marks the first year of the magazine's social media presence as well as the year of inauguration of its monthly forum. It has various engaging and interactive articles about the most recent technological advancements which are educational and informative.

The magazine's goal is to enlighten readers about how technology is developing so that they can keep up with developments as they happen. The magazine strives to transform the young readers' ideas so they can adopt the new practices and build a new, better, and informed tomorrow.

IN THIS EDITION

Information Age 1.0 was the modernization of information systems providing easy access of information to everyone through personal computers and the internet. During this period, businesses and institutions began to rely heavily on computer technology to store data, and communicate with people. Over time, with increasing capabilities of computers, businesses started accumulating this data to later leverage it by analyzing trends and gaining a better understanding of the market. New fields of study like Big Data Analytics, Machine Learning and Artificial Intelligence emerged in the first Era of Information.

Recent development in fields of Artificial Intelligence, Internet of Things (IoT), and 5G networks and emergence of decentralized technologies such as Blockchain is reshaping our world as we see it. These technologies are creating new opportunities for data collection, analysis, and sharing, which are expected to have profound implications on businesses and institutions. Information Age 2.0 will be an era of intelligent, interconnected, and decentralized ecosystems that will transform the way we work, communicate, and interact with each other.

In this edition we have tried to provide an introduction and then dive deeper into the topic Information 2.0, making it is easier and interesting at teh same time. Hope you have a good time reading.

Regards,
Team e-Blitzine

©doodles by
chetan

contents

For the readers

- This edition of the magazine is full of treats for the reader.
- We have included articles from the Data domain and how it is being used in today's world.
- We went into depth and found many exciting advancements in technologies used worldwide.
- Artworks that will leave you mesmerised.

Hope you enjoy reading!!

01

BLITZ Events

02

Articles

03

Recommendations

04

Achievements

05

Tech Updates

06

Photographs

BLITZ
EVENTS

BLITZ, The Computer Science Society of Keshav Mahavidyalaya and e-Blitzine, the annual magazine of the Computer Science Department, bring to you the annual report of events held by BLITZ in the year 2022-23.

Throughout the year, BLITZ organised interesting seminars, competitions, and helpful candid talks for the students of the Computer Science department. To help the students gain practical knowledge from experienced speakers and showcase their abilities, BLITZ encouraged active participation. This year students also took an initiative and had career-related discussions called "CareerTalks@BLITZ" about how to proceed with their interests in the domains of Computer Science and lead them to a better future.

BLITZKREIG'23 awaits to bring with itself an array of electrifying events and activities for the students to participate in and enjoy!

Seminars on "Safe Coding Practices", "Introduction to Git/ GitHub" were organized along with a coding competition on HackerRank and a series of career-related discussions "CareerTalks@BLITZ"

SECURE CODING PRACTICES

Date: September 7, 2022
Time: 2:00 – 3.30 PM

The speaker of the session was Mr Saket Taneja. He is currently a Senior Security Engineer at Paytm. He is among the top 100 awardees of the CEH (Certificate Ethical Hacker) Hall of Fame 2021. He is an experienced Cyber Security Analyst, skilled in PHP, corporate communication, ethical hacking, business relationship management, and information security.

He did a post-graduate diploma in cyber security and law focused on cyber security. The speaker covered topics like Confidentiality, Integrity, and Availability (together, famously known by the acronym CIA). He thoroughly discussed 'Secure Coding Controls' viz. Input Validation and its implementations, Sanitization, Access Control, Authentication and Authorization, and Encoding. Furthermore, he described the four sanitization mechanisms - Trimming, Replacing, Escaping, and Disallowing. Insecure usage of dangerous functions was also covered, along with some prevention measures. The speaker engaged the audience with mind-boggling questions following every concept.

Poster of Secure Coding Practices'22

Former-Vice Principal ma'am gifting sapling to the speaker

Dr. Roli Bansal, Mr. Saket Taneja, Prof. Vinita Jindal during the seminar

Students and faculty grasping the concepts explained by Mr. Saket

Mr Saket Taneja during his interaction with the audience
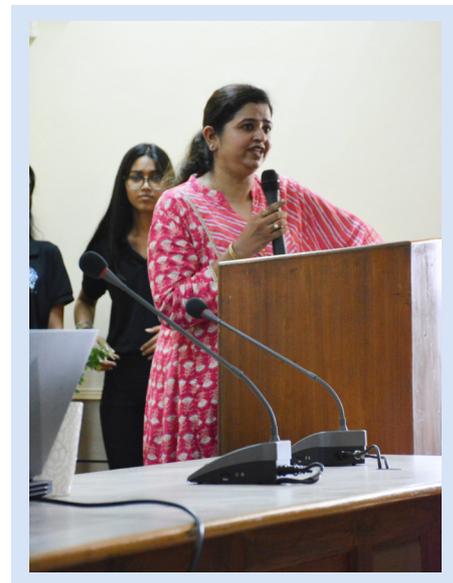
Blitz Convenor addressing the audience

Faculty and the students thoroughly understanding the procedure

FIRST STEP TOWARDS
OPEN SOURCE WITH GIT/GITHUB

Date: November 14, 2022
Time: 11:00 AM – 1:00 PM

The speaker, Mr. Mohit Uniyal is co-founder of Coding Minutes and currently a lead Data Scientist and Instructor at Scaler. He is an alumnus of Keshav Mahavidyalaya. Initially, Mr. Uniyal defined open-source software and elaborated on its value, and applications. Later he explained what is Git and why it is needed. A demonstration of how to git can be configured on oes's machine was conducted by him. Furthermore, he discussed what is GitHub and how to use the basic commands for building various computer science projects. He thoroughly cleared all the related concepts by providing examples on how to efficiently and effectively use Git commands and commit changes on GitHub. In the end, Mr Uniyal engaged the audience in a fun-filled quiz hosted on Kahoot Platform. Prizes were distributed to the top 5 performers.

Poster of Open First Step towards Open Source'22

Poster of Open First Step towards Open Source'22

Team BLITZ with speaker Mr. Mohit Uniyal

BLITZ convenor gifting sapling to the speaker Mr. Mohit Uniyal

Mr. Mohit Uniyal addressing the student of Computer Science department

Mr. Uniyal demonstrating Git commands

Felicitation of the prize winner.

Team BLITZ with the speaker.

13

CODING COMPETITION

Date: October 12, 2022
Time: 1:30 – 3:00 PM

BLITZ, the Computer Science Society of Keshav Mahavidyalaya organised a coding competition for students of all the courses of Keshav Mahavidyalaya on 12/10/22. The competition was conducted in Computer Labs of Dept of Computer Science. The competition was hosted on HackerRank platform and consisted of 220 points. The topics covered in the competition included backtracking , arrays , greedy algorithm, divide and conquer strategies, etc. The participants were given a total of 90 minutes for the competition.A large number of participants participated enthusiastically in the competition. The first position was bagged by Aniket Bhardwaj from 3rd Year, BSc (Prog.) Physical Science with a point score of 160 and the second position was secured by Abhinav Anand from 3rd Year, BSc (H) Physics with a point score of 130.

Poster of Coding Competition'22

Poster of Coding Competition'22

Students all set to win the competition

Team BLITZ with the convenor.

Event coordinator supervising the competitors

Students solving complex problems.

Students using their critical thinking skills to find solutions

Event coordinators ensuring adherence to rules and regulations.

STUDENTS'
ACTIVITIES

CAREER TALKS PART 1

Emerging Options In CS

CAREER TALKS PART 2

Effective CS CV Building

CAREER TALKS PART 3

*How To Land First Internship*

Vision

CAREER TALKS PART 1

EMERGING OPTIONS IN CS

Date: January 25, 2023
Time : 12:30 PM

As part of a three-part series called CareerTalks@BLITZ, The Computer Science Society of Keshav Mahavidyalaya, BLITZ, organised an in-house session for all college students who were interested in a career in computer science. Simrat Deol, the President of BLITZ, and Shruti Sharma, Senior Executive BLITZ, were the speakers for the event. Simrat Deol started by briefly defining and summarizing the highest paying jobs in the fields of computer science, including those in data, software, ethical hacking, and cyber security. It was made clear that traditional coding careers may not always be favorable considering how swiftly artificial intelligence has taken over the world and how the IT business is developing. The domination of the artificial intelligence (AI) sector over a variety of industries, such as e-commerce, lifestyle navigation, human resources, healthcare, agriculture, gaming, and finance, was brought up. It was emphasized during the discussion that as the computer world advances, concerns about the security of data have also grown, and that this will necessitate more employment opportunities for cyber security experts. Then Shruti Sharma described how different industries are working together with Computer Science to perform more effectively. The recent boom in employment opportunities in computer science and related fields was also discussed. Following that, the distinction between the MSc and MCA degrees offered by various Universities was discussed, along with what could be beneficial for the students. The possibilities for advanced study abroad were also discussed, and questions from the students about the session were then addressed.

Poster of Emerging Career Options in CS'22

Simrat and Shruti addressing the event

CAREER TALKS PART 2

EFFECTIVE CS CV BUILDING

Date: January 30, 2023
Time: 1:00 PM

The second in-house event of the three-part series called CareerTalks@BLITZ, organised by the Computer Science Society of Keshav Mahavidyalaya, BLITZ, was on the topic "Guide to build an effective CS CV/ Resume". Udit Kaushish, the Treasurer of BLITZ, and Rahul Arora, Executive BLITZ, were the speakers for the event. The presenters began by describing the differences between a CV and a resume, emphasising the differences between the two in terms of content, length, and audience. The speakers then concentrated on the essentials of a CV or resume, followed by do's and don'ts for drafting a resume. They next discussed frequent errors applicants make, while creating any resume or CV. They also mentioned a number of websites, like ApnaResume.com, Canva.com, and Novelesume.com, which make it simple to create resumes and CVs. A few other aspects, including adopting a clean, modern design and including keywords with specific examples in your CV, were also emphasised. Following the students' doubts and inquiries, the session was concluded with a token of appreciation.
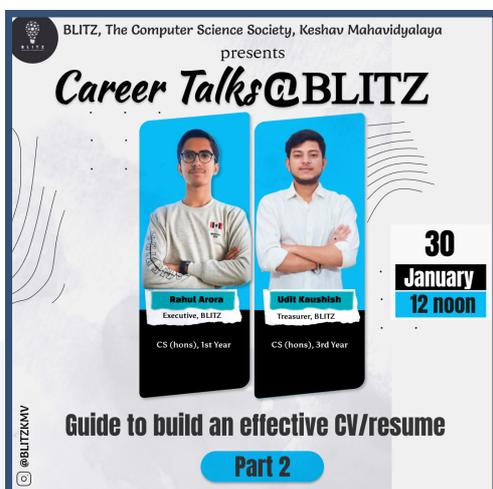
Poster of Guide to Build an Effective Resume'22

Udit and Rahul addressing the event

CAREER TALKS PART 3

HOW TO LAND FIRST INTERNSHIP

Date: February 8, 2023
Time: 1:00 PM

The third in-house event of the three-part series called CareerTalks@BLITZ, organised by the Computer Science Society of Keshav Mahavidyalaya, BLITZ, was on the topic "How to land your first Internship". Diksha Singh, the Secretary of BLITZ, and Harshita Mahajan, Senior Executive BLITZ, were the speakers for the event. The Speakers began by outlining the importance of internships i.e., the exposure, teamwork, and networking opportunities that they provide. The difference between paid and unpaid internships, part-time and full-time internships, and remote and in-office internships was then discussed. The speakers continued to underline the importance of unpaid internships because they offer a person a variety of chances. The skills required to obtain an internship were then discussed. Before brushing up on the skills needed, the speakers advised the students to identify the field they want to work in. The most crucial topic of discussion—how to find internships—was then addressed by the speakers. They first encouraged everyone to sign up for a LinkedIn account and make connections, emphasising the value of having one. As a result, students were informed about additional internship-finding websites like Internshala, Glassdoor, Naukri, and Monster. Finally, Simrat Deol, President of BLITZ, gave a brief explanation of her experience as an intern, emphasising the importance of developing relevant skills and applying for jobs. She recommended students to join Telegram groups so they could learn about the most recent internships and fellowships available locally and globally. After resolving the students' questions and acquiring their feedback, the session concluded with a token of appreciation.

Poster How to Land Your First Internship'22

19 *Diksha, Simrat and Harshita addressing the event*

ARTICLES

MACHINE LEARNING

A Survey of AutoML Algorithms

Generative AI & Synthetic Data

INTERNET OF THINGS

Edge Analytics

The Convergence

DECENTRALIZATION

*Big Data & Blockchain*

Decentralization

A Survey of AutoML
ALGORITHMS

Automated Machine Learning (AutoML) is a new technology that speeds up machine learning iterations and allows less experienced users to leverage existing tools. With multiple frameworks each having different capabilities, finding the best option to solve a classification problem becomes difficult. When choosing an algorithm, aspects such as performance metrics and time should be considered to reduce the need for high subject matter expertise. There are several comparisons of AutoML

7 Steps of Machine Learning

1 Gathering Data
2 Preparing the data
3 Choosing a model
4 Training
5 Evaluation
6 Hyperparameter Tuning
7 Prediction
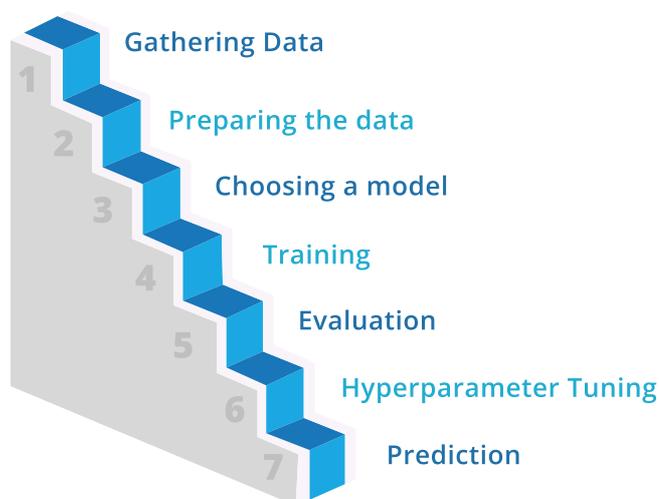
Designed by: Smrati Sharma

tools and approaches that perform tests in the areas of Data Preprocessing, Model Selection, and Hyperparameter Optimization.

AutoML, as the name suggests, automates the machine learning (ML) process, reducing the need for manual work and deep knowledge in the field. There are several AutoML tools to choose from, but choosing one isn't easy. Each has its characteristics and is designed to solve a variety of binary, multiclass, and multilabel classification problems. One of the goals of machine learning is to predict values or categories of new data as accurately as possible. Therefore, choosing the right AutoML tool is essential, especially when defining algorithm performance. One example is the combination of execution speed and metrics (accuracy, error rate, etc.). We compare AutoML approaches and tools, adopt standard pipelines and full datasets, use them in various AutoML frameworks, and test in the area of data preprocessing, model selection, and hyperparameter optimization. Comparing optimization speed, accuracy, and overall performance. However, most existing tests run against binary and multiclass classification. Machine learning solutions require

Source: Pixaby

significant technical knowledge from experts that is often not readily available. Furthermore, no particular algorithm works well for all possible problems. All efforts from these requirements have motivated the development of tools that automate various components of ML to simplify and democratize access to these technologies.

Machine learning (ML) is a field of assertive artificial intelligence (AI) that can solve many problems by recognizing patterns and making predictions based on data. However, it requires human intervention and the efforts of data scientists. Automated machine learning is designed to mitigate these and other inconveniences. According to researchers, ML eliminates many

manual tasks and allows domain experts to create and operate ML pipelines without advanced ML or statistical knowledge. Researchers see AutoML as a combination of automation and ML. AutoML says it emphasizes the ability to configure and control its ML learning tools, making them adaptable to problems.

In this article, we describe several automatic machine learning tools, their available features, architectures, capabilities, and the results they obtained for binary, multi-class, and multi-label classification problems by experimenting with specific datasets. Tools discussed in this article are 4intelligence, AutoKeras, AutoSklearn, FLAML, H2O, and TPOT.

4intelligence: A cloud-based framework developed by the startup of the same name and used by the AutoML platform to solve classification problems with minimal user input. It aims to streamline several steps in the modeling process, from data cleaning strategies to preprocessing and classifier selection.

Source: Pixaby

AutoKeras: An open-source system with a simple interface that runs in parallel on CPUs and GPUs, so it can be used by non-data science experts. Based on the Keras API, it uses Bayesian optimization to perform efficient Neural Architecture Search (NAS).

AutoSklearn: Born to promise superior performance and increased efficiency for AutoML systems using the Scikit-learn library. It consists of various pretreatment methods to handle missing values and normalize the data. As a difference, we add a meta-teach step to speed up the Bayesian optimization process.

FLAML: A Fast and Lightweight AutoML library aimed at finding accurate machine learning models automatically and efficiently. Unlike other existing AutoML tools it takes advantage of the structure of the search space to select searches that are more optimized in terms of cost and error. However, the goal is to create a system with little computational overhead beyond the cost of testing each configuration.

H2O: Efficient training of H2O machine learning algorithms to build more models in less time. Designed to scale to large datasets. It seeks to achieve results competitive with, and sometimes better than other AutoML frameworks that rely on more complex techniques.

TPOT: A tree-based pipeline optimization tool that uses genetic programming. It's suitable for analyzing large datasets that do not require input or detailed knowledge from the user. In other cases, you can design entire pipelines that are easier to read and edit.

Numerous Automated Machine Learning frameworks and libraries have different approaches to solving Machine Learning (ML) problems, making it challenging to decide which is better for each case. It is known that AutoML

allows people without advanced expertise in ML or statistics to work well with ML pipelines, which means that a comparison between the performance of some frameworks and other metrics will help in choosing the best library for each problem. Other comparisons of AutoML tools can be found; however, the most usual tests are made only for binary and multiclass classification, not working upon the multilabel classification, which makes room for different outcomes.

Also, after analysis, researchers have concluded that there is no best tool for all scenarios; each framework has a different approach for each data set, which sometimes results in some being superior to others. However, in binary and multi-class trials, AutoKeras and Auto-Gluon had the best combination of higher scores and lower training time in most tests, which means that, in our test conditions, they are ahead of other frameworks. On the other hand, only AutoKeras and AutoSklearn could score for multi-label datasets.

AutoSklearn performed slightly better and AutoKeras training time was significantly faster on all datasets. This shows that no AutoML framework outperforms all other AutoML frameworks on

Designed by: Smrati Sharma
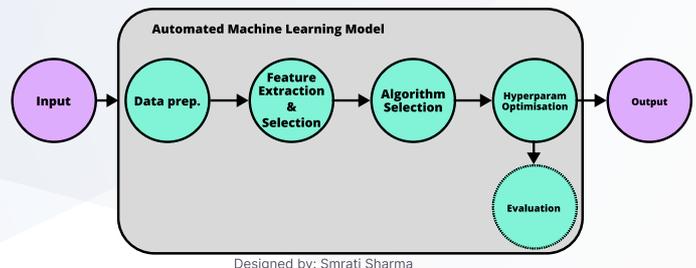
all tasks. Additionally, in some results, we observed that some tools were not respecting the configured 10-minute timeout. Other frameworks, on the other hand, are not always used and may impact performance. However, no clear reason has been found that could explain this behavior.

References:

- *H. Xin, Z. Kaiyong, C. Xiaowen, "AutoML: A survey of the state-of-the-art", Knowledge Based Systems, Vol. 212, 2021 [https://www.sciencedirect.com/science/article/abs/pii/S0950705120307516]*
- *S. Saurav "What is AutoML and Why is it important?", Blog, 2020, [https://towardsdatascience.com/what-is-automl-6ddf27040f27]*
- *V.C.A. Marcelo, G.A. Augusto, C.F. Rafaela, G. F. Rairon, G. L. Sávio, "A practical evaluation of AutoML tools for binary, multiclass, and multilabel classification", TechRxiv, 2023, [https://doi.org/10.36227/techrxiv.21792959.v3]*

Udit Kaushish
**B.Sc. (H) Computer Science**
3rd Year

Generative AI & Synthetic Data

Researchers at University of Jyväskylä, Finland, developed an artificial neural method that creates synthetic knee X-ray images. The researchers used a data set of real X-ray images from a knee osteoarthritis study to generate the synthetic knee X-rays. "By mixing real and synthetic x-ray images, we improved AI-based osteoarthritis classification systems", said Fabi Prezja, the Doctoral Researcher of the project.

Specialists from the central Finland healthcare district assessed the images. The medical experts, unaware of the presence of synthetic images among real ones, were first asked to rate the severity of osteoarthritis. Later, they were asked to determine which images are authentic.

It was observed that, on average, the synthetic images had managed to deceive even the experts. To develop AI in the medical field, it is incredibly necessary to have medical data but sharing of medical data often requires authorization due to strict regulations.

Synthetic data, therefore, can prove to be extremely valuable in
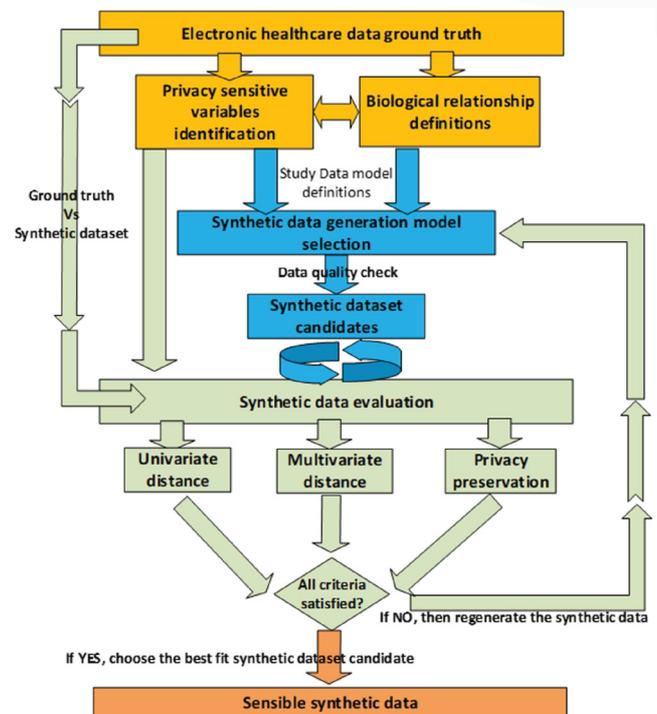
Source: Freepik

technological development of medicine. Sami Äyrämö, Head of Digital Health Intelligence Laboratory at the University of Jyväskylä, said, "The use of synthetic data is not subject to the same data protection regulations as real data. Using synthetic data can facilitate collaboration between, for example, research groups, companies and educational institutions".

Now, it is important that we understand what synthetic data is and how it is generated. The deep generative algorithms use samples of data based on real

entities as training data. They learn the connections, statistical aspects and data structures. This helps them to generate data that is statistically and structurally identical to the original, real data, except all of the data points are synthetic.

Synthetic data, however, is not a new concept but it has been used to develop several technologies in the past few years as Artificial Intelligence has become a prominent requirement for businesses to excel. Data is the engine that fuels the domain of Artificial Intelligence but collecting real data is costly, time-consuming, error-prone, and tedious. Synthetic data solves the problem of unavailability of large amounts of real data as well as the legal regulations that forbid accessing data that might be sensitive.

Synthetic data had begun to become relevant in the mid-2010s when the autonomous vehicles industry had invested heavily in developing stimulating engines that generated synthetic data in volumes requested. Waymo, a leading autonomous vehicle company, has generated 10 billion miles of stimulated driving data to feed into their self-driving vehicle models.

Why was the autonomous vehicle industry impetus for generative

Generate market data for price prediction models

Generation of synthetic images for training prediction models in medical domain

Generation of data for Autonomous Vehicle Training

Designed by: Eshaan R. James
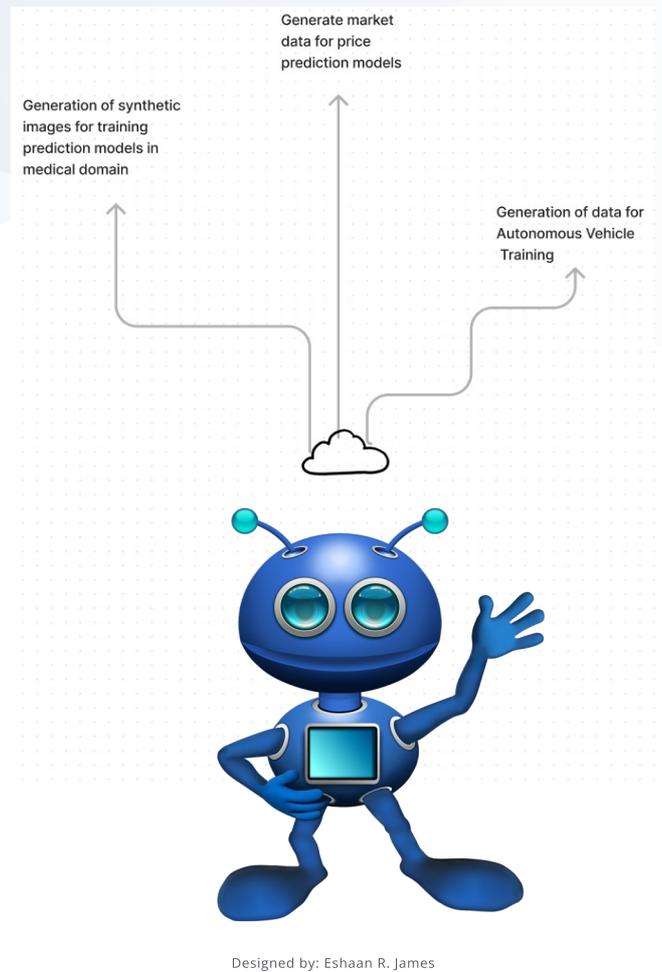
AI? It is quite simple. To develop an autonomous vehicle it is necessary to consider all the plausible scenarios for driving. It is nearly impossible to record and collect real-world data for several scenarios such as presence of pedestrians, weather, speed, traffic and other probable conditions. Thus, it required generative AI for synthetic data.

Gradually, business entrepreneurs caught on about generative AIs and it has flourished ever since in the last decade.

Financial services, manufacturing, healthcare, automotive and robotics, security and social media sectors are just a few

factors that make efficient use of synthetic data and the well-known Gartner study estimates that 60% of the data used in AI would be synthetic by 2024. But what makes it possible for generative AI to stimulate images so realistic that they deceive even experts?

The key to the generative AI technology are Generative Adversarial Networks (GANs). A GAN is a deep learning technique in which two neural networks work against each other in a zero-sum game architecture. One of the networks is a generator network that synthesises data and the other network is a discriminator network which tries to identify if the data is authentic or not. Both the networks are trained to their specific tasks and it continues until the synthetic data is indistinguishable from the real data. GANs are used for image synthesis, text-to-image synthesis, image-to-image translation, anomaly detection and data augmentation.

Another development in the synthetic data field has been diffusion models which are supposedly better than GANs when it comes to high-fidelity of the synthesised data. They also have better quality of images and training stability in comparison to GANs. The diffusion models, proposed in 2015, are based on this thermodynamics concept of

entropy or heat death. In the model, noise is sequentially added to an image and then the image should be reverted back to its original state.

The trained diffusion models can denoise the data from the noise in a hierarchical approach. DALL-E 2, an AI that generates images from text provided, is one of the advances of the diffusion model.

Neural Radiance Fields (NeRF) is an emerging, diverse and high-fidelity method that converts two-dimensional figures to elaborate novel views of three-dimensional figures. It takes input images and interpolates them to render a scene. A NeRF network is trained to map direction and spatial location, opacity and colour, using volume rendering to render new views. A complex scene can take hours or days to render but it is because the algorithm is complex and intensive and is a highly effective way to generate images for synthetic data.

ChatGPT, which gained an enormous 1 million users in just 5 days, is one of the biggest examples of generative AI's ability to create data in creative fields. The domain of generative AIs is only expected to expand in sectors like drug design, material science, chip design and broadly most of the industries. Gartner predicts that the marketing
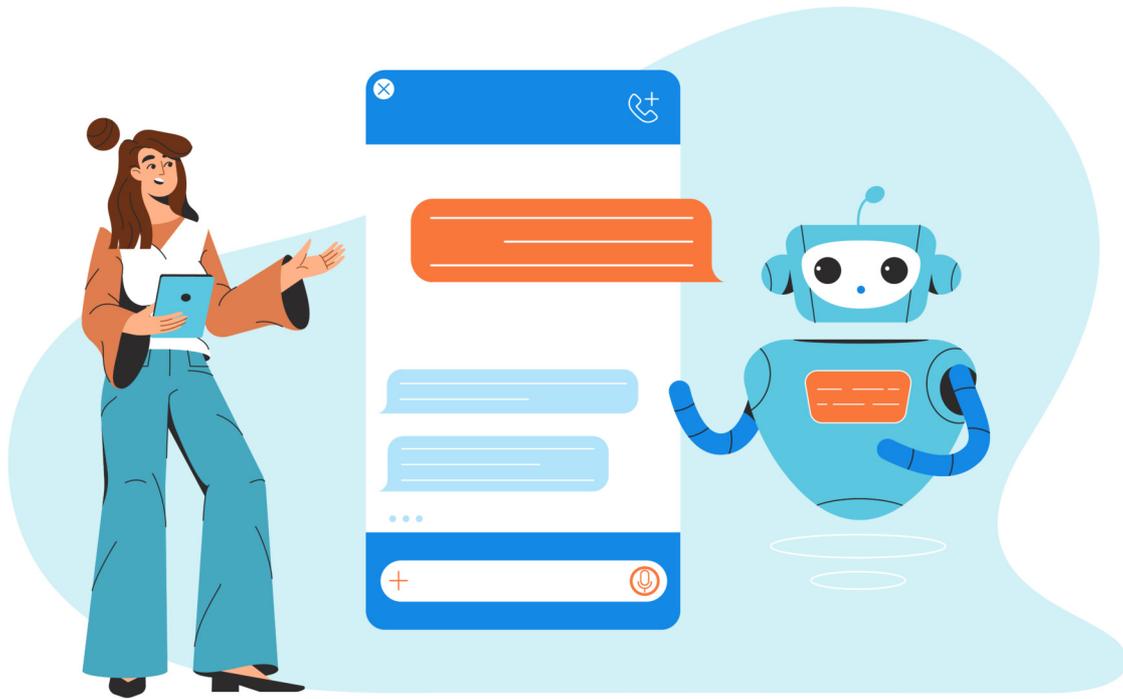
Source: Freepik

messages from large organisations go from 2% synthetically generated in 2022 to 30% in 2025. And, by 2025, we would have a film which would be 90% generated by AI.

Generative AIs and the synthetic data generated by them hold several immense promises and possibilities of improvement in future as new models keep emerging, and new sectors and businesses are starting to encapsulate wonders of AI for development.

References:

- *"AI-generated X-ray images fooled medical experts and improved osteoarthritis classification" Science Daily, 2022, [https://www.sciencedaily.com/ releases/2022/11/221117102821.htm]*
- *T. Rob, "Synthetic Data is about to Transform Artificial Intelligence", Forbes, 2022 [https://www.forbes.com/sites/ robtoews/2022/06/12/synthetic-data-is-about-to-transform-artificial-intelligence/?sh=1a86846f7523]*

Dhavni
B.Sc. (H) Computer Science
2nd Year

Edge Analytics: A new way of settling in the **fast-forwarding world**

Edge analytics is the process of collecting, processing, and analyzing data at the edge of a network rather than sending it back to a centralized network. It is best for systems that require rapid data turnover.

Let's understand this better with the help of military drones. They can easily enter the enemy's territory, take photos, and send them back to the centralized servers of the intelligence agency to analyze, but the data transfer speed is very slow. Now, edge analytics can help in this case by collecting the required data and carrying out analysis at the edge like detecting the enemy's arsenal, mess, strength, etc.(all of this will be done by drone only instead of sending pictures or other data back to the centralized server) and then based on the analysis result, further actions can be taken by the agency. Without edge analytics, the data would first be sent back to the centralized server, where the analysis would be done, and on that basis, devices will be instructed whether to take action or not.

Now you have an idea of what

Source: Unsplash

edge analytics is which brings us to the next question, what makes edge analytics better than cloud analytics? Edge analytics is faster, requires less bandwidth, and delivers no dormancy. It is fruitful for applications where real-time data analysis and response are required for executing operations accurately and cautiously dealing with hastiness and adequacy well.

Taking into account that security has always been an issue with cloud-based data where subsequent progress has been seen but edge analytics almost dodge this issue as edge systems are deployed near data sources, data doesn't have to be transferred repeatedly and even travelling fewer distance repercussions in less chance of getting breached and theft.

Edge analytics is said to be highly scalable as edge networks can easily manage multiple edge computers across a network, spreading the load across multiple devices and reducing the strain on a single device. Another aspect of the same is the ever-growing number of network devices will strain the central data analysis resource but edge analytics can offload some of the processing demands to the cloud, where more powerful infrastructure can be put which ensures that the system will remain scalable even if faced with increasing data volumes and processing demands. Edge devices, then later on, can even be upgraded to handle increased processing demands either by adding memory, storage, or processing power.

To have a system that can handle increasing data volumes and processing demands without impacting performance, edge analytics is the way to go for it.

While edge analytics has so much to offer to society we need to keep in mind that it is still a work-in-progress technology and has certain limitations. As we know edge analytics process and analyze a subset of data and only results are transmitted over the network which means some of the raw data is effectively discarded.

Source: Unsplash

For eg., in an airplane system, all of the raw data needs to be transferred for analysis to avoid the possibility of a pattern going undetected that could lead to any sort of mishap. The point here is if the loss of data is bearable or not. There is no generalized solution to a case like this.

Now, after knowing all this about edge analysis, the question occupying everyone's mind would be how can present-day businesses reap financial rewards from this. After all, every new technology can only exist in the market if it gives abundance to humankind.

Though the fundamentals of edge analytics remain the same its use varies according to the different demands in the market. First, we will see how it analyzes retail customer behavior and helps in bringing in more sales.

In a case like this retailers can have data from a variety of sensors like in-store cameras, and shopping cart tags. The retailer can provide a customized solution to every individual by using behavioral targeting by running analyses on the collected data.

Another case is smart surveillance where an organization can benefit from real-time intrusion detection edge services where edge analytics can detect suspicious activities from raw images acquired using surveillance cameras.
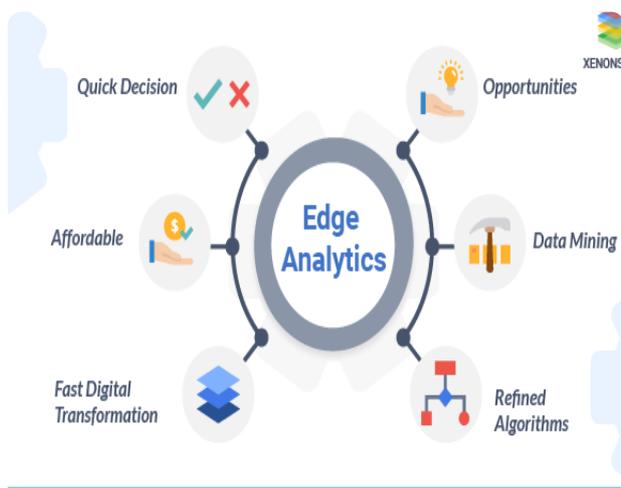
Source: Unsplash

Another case is Remote monitoring and maintenance in a variety of industries. In industries such as energy and manufacturing, one needs to take immediate action if machine malfunctions. Edge analytics without involving centralized authorities can immediately identify failures and take necessary action before it affects everything.

I will sum everything up with a recent potential use case of edge analytics. During COVID-19, cameras could have been deployed at airports, and with the edge analytics, authorities could have detected a person's temperature, or whether they are wearing a mask and based on a quick analysis, rapid actions of quarantining affected passengers or not letting them pass through could have helped in reducing the spread of COVID-19 and from being labeled as a pandemic. Henceforth, saving millions of lives.

References:

- A. Nitin, "All About Edge Analytics", STL, Blog, 2022, [https://www.stl.tech/blog/all-about-edge-analytics/]
- I. Ashok, P. Ivan, "Analytics at the Edge" IBM Blog, 2020 [https://www.ibm.com/cloud/blog/analytics-at-the-edge]
- W. Dave "Edge Analytics and the IoT Edge Architecture", MachineMetrics, Blog, 2020, [https://www.machinemetrics.com/blog/edge-analytics]

Sunidhi
B.Sc. (H) Computer Science
**3rd Year**

The Convergence:
where ML, 5G & IoT meet

Revolution is a change in the way the world works. It is also a continuous motion of a celestial body around its orbit, but revolution; is a change in how people go about their lives. The world has gone under its fair amount of revolutions, 2023 since the birth of Christ! And an equally astonishing number of innovations that made human society as we are today. Technology has played a great part in taking us where we are, from the first apes who learnt to use stones to smash heads to today's average developer smashing their heads on the keyboards.
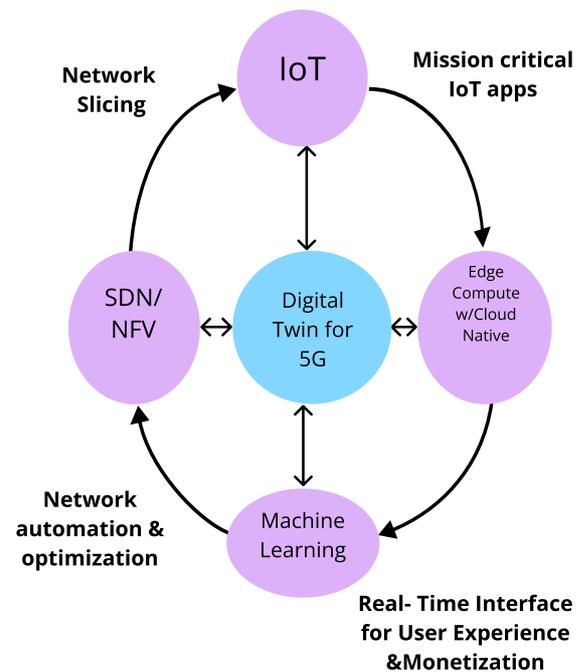
Designed By: Smrati Sharma

But revolution has hardly ever occurred due to one major change or factor, it is the cumulation of thousands of things coming together to form something new and different. Millenia ago somebody carved out a circular shape, saw it rolls and called it a wheel, centuries after someone made a seat and decades after somebody decided to put the seat on the wheel, we got a cart; and transport never was the same. But it did not stop there, in the industrial revolution, somebody strapped an engine onto the cart and Ka-chow! cars.

Today we discuss one such revolution taking place, the convergence of technologies that are going to revolutionize the way we live. Imagine a world where there are no car accidents because every vehicle is aware of each other's presence in real time and has an autonomy to decide its movement based on this information. Or a house that's aware of its energy consumption and is capable of optimizing it to minimize its carbon footprint, a city full of such houses and a country full of such cities. Imagine the impact that it would have on saving the planet from climate change. These technologies have the potential to solve major issues of world and maybe even the ones that we haven't even anticipated. So, let us see what they are and combine how they do miracles.

Designed By: Smrati Sharma
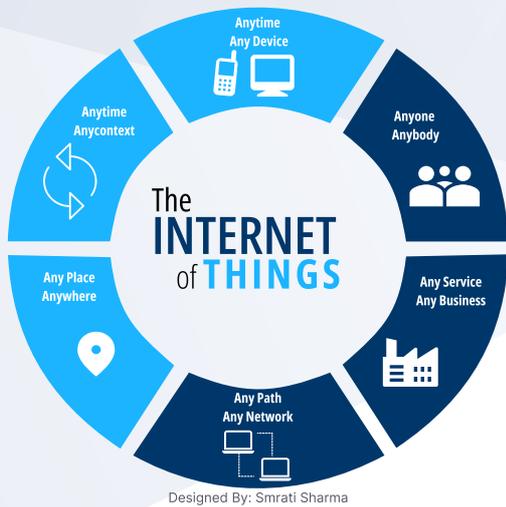
THE BACKBONE: INTERNET OF THINGS

We all are aware about the impact that the internet had and continues to have on the world. The Internet took one of the fundamental traits that makes us humans superior and amplified it beyond exponential terms; communication. It made transmission of information almost effortless and instantaneous for the users, but at its core the internet is an extensive network of networks transferring data among each other.

IoT further adds the idea of inclusion of 'things' to this big mesh of networks. A thing capable of generating data by itself. In the traditional internet, queries are made by a person to retrieve data, from some location over the world, which is stored by some other person. But IoT relies on the data produced by machines in their environment. It is a system that is generating data

by itself with minimal human assistance; to understand this let's take a deeper dive into how IoT works.

The most basic unit of the IoT is a "thing", a thing is a smart device made up of embedded systems consisting processors, sensors and communication hardware. This ecosystem made up of things is capable of collecting, sending and acting upon the data it acquires from an environment. Data acquired by a sensor from the environment is shared by connecting to an IoT gateway or some other edge device it is either analyzed in the cloud or locally. These devices can also communicate with other related devices and act on the information they get from them.

These devices work without any human intervention, but people can interact with them if needed. For eg. say a fitness band or heart implant. All the work of monitoring the information, converting it to useful data and transferring it to be further processed is all handled by the device itself without the user having to do much more than wearing it and adding it to the network. IoT is built around this lack of human interaction and automation of data generation or information retrieval transmission, and processing.
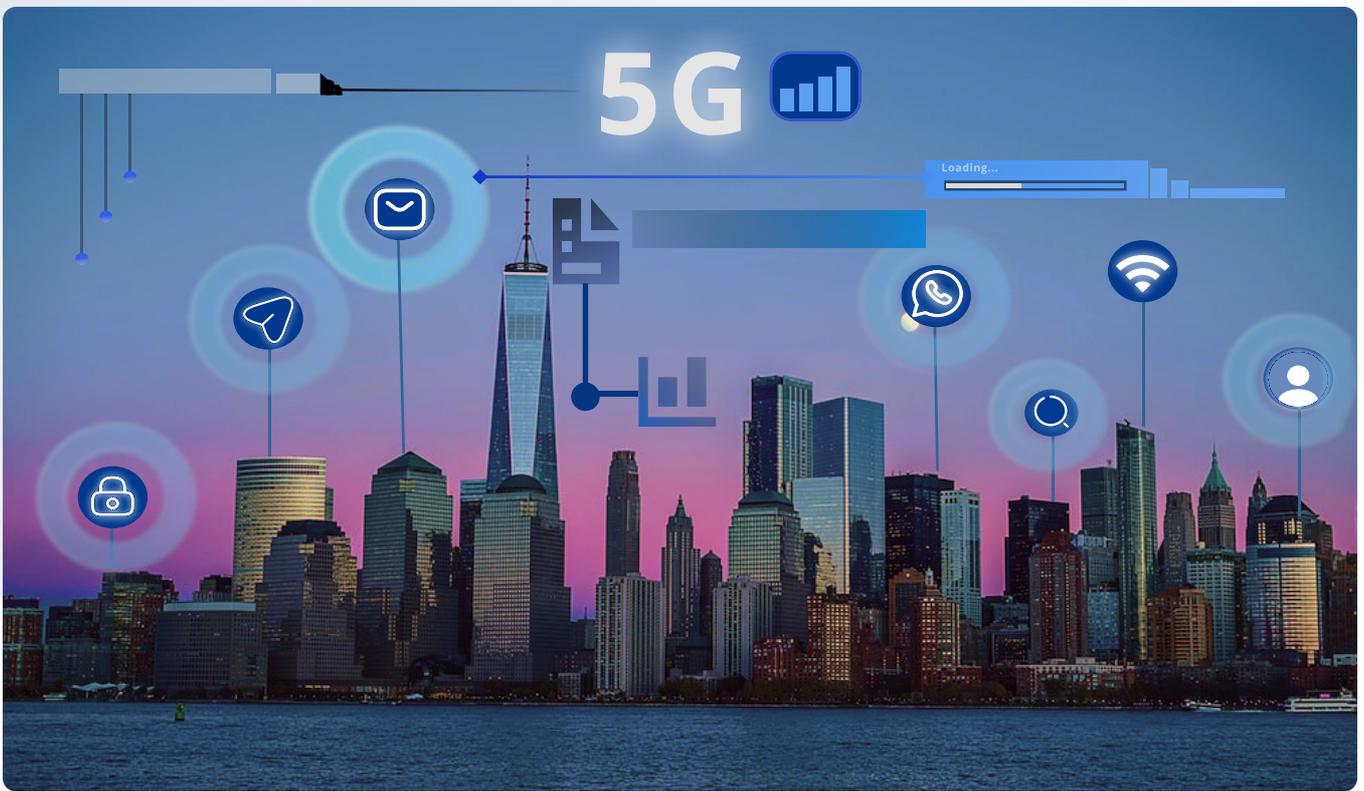
Designed By: Eshaan R. James

THE ENABLER: 5G

Now that we have this big network of things, we need a medium that makes it viable to connect this massive amount of things and be able to transfer data quickly and efficiently without a loss and be secure at the same time. I pay emphasis on the volume because the number actually Is huge, it was close to 10 billion in 2020 and is only estimated to quadruple in the coming decade.

Fortunately, we have 5G.

5G is the 5th generation of global wireless standards. A guideline on which all the mobile or cellular networks work. It uses radio waves to transfer data, radio waves are divided in different bands of frequencies. They can only carry a limited amount of information due to physical limits of the respective frequency bands. If reached, this limit produces a bottleneck where for someone to get good speed someone else's speed would need to be cut down. Since 5G uses the unused band of frequency it adds more space and hence more devices can be accounted for, providing room for them to enjoy higher speeds.

Along with handling more devices, 5G can also handle higher densities of devices. Previous generations struggled with a large number of devices in a single place, say a stadium or a concert which would be a problem for a world choke full of internet devices, 5G is more precise and less noisy making it capable of streaming data accurately in a dense area. Which is necessary

for IoT devices and systems to work optimally.

THE ENHANCER: ML

Now we have billions of things connected with each other with very low latency producing massive amounts of data. The next big question is how do we make sensible, effective, and efficient use of all this information at our disposal. That is where ML comes into play.

Machine learning is the field of study that lets computers learn without being explicitly programmed. These algorithms use statistical methods to learn directly from data without relying on a human to program a predetermined equation as a model. The algorithms adaptively improve their performance as the number of samples available for learning increases.

In general, it gives computers the ability to tackle problems it has not seen before using its past experiences. These past experiences come from its training when the model is provided with existing data.

The number of samples increases exponentially with the amount of data we will be generating resulting in better ML models. These ML models combined with IoT will help us automate many aspects of livelihood, bringing down capital and energy cost. We can even use Automated Machine learning to remove the need of ML experts for various kinds of tasks and create a self-sustained system that does not require much outside intervention.

CONCLUSION

Technological improvements have propelled human society for millennia and it will keep doing so until the end of time, but it's always been the harmony between various choruses that create the sweetest of melodies.

So is true in the word technology, some innovations improve others and some are outright essential for others to be feasible. The three technologies we discussed are prime examples of it.

References:

- *B. Matt, "What is the Internet of Things?", WIRED, 2018 [https://www.wired.co.uk/article/internet-of-things-what-is-explained-iot]*
- *"5G vs 4G", Ericsson, [https://www.ericsson.com/en/5g/5g-vs-4g]*
- *Stanford CS229: Machine Learning Course by Andrew Ng (Autumn 2018), Youtube, [https://www.youtube.com/playlist?list=PLoROMvodv4rMiGQp3WXShtMGgzqpfVfbU]*

Harsh Yadav
B.Sc. (H) Computer Science
3rd Year

"There are about 3 million industrial robots in use across the globe. Roughly 400,000 new robots enter the market every year. The global market value of the industrial robotics industry is $43.8 billion, by revenue."

- Zippia.com
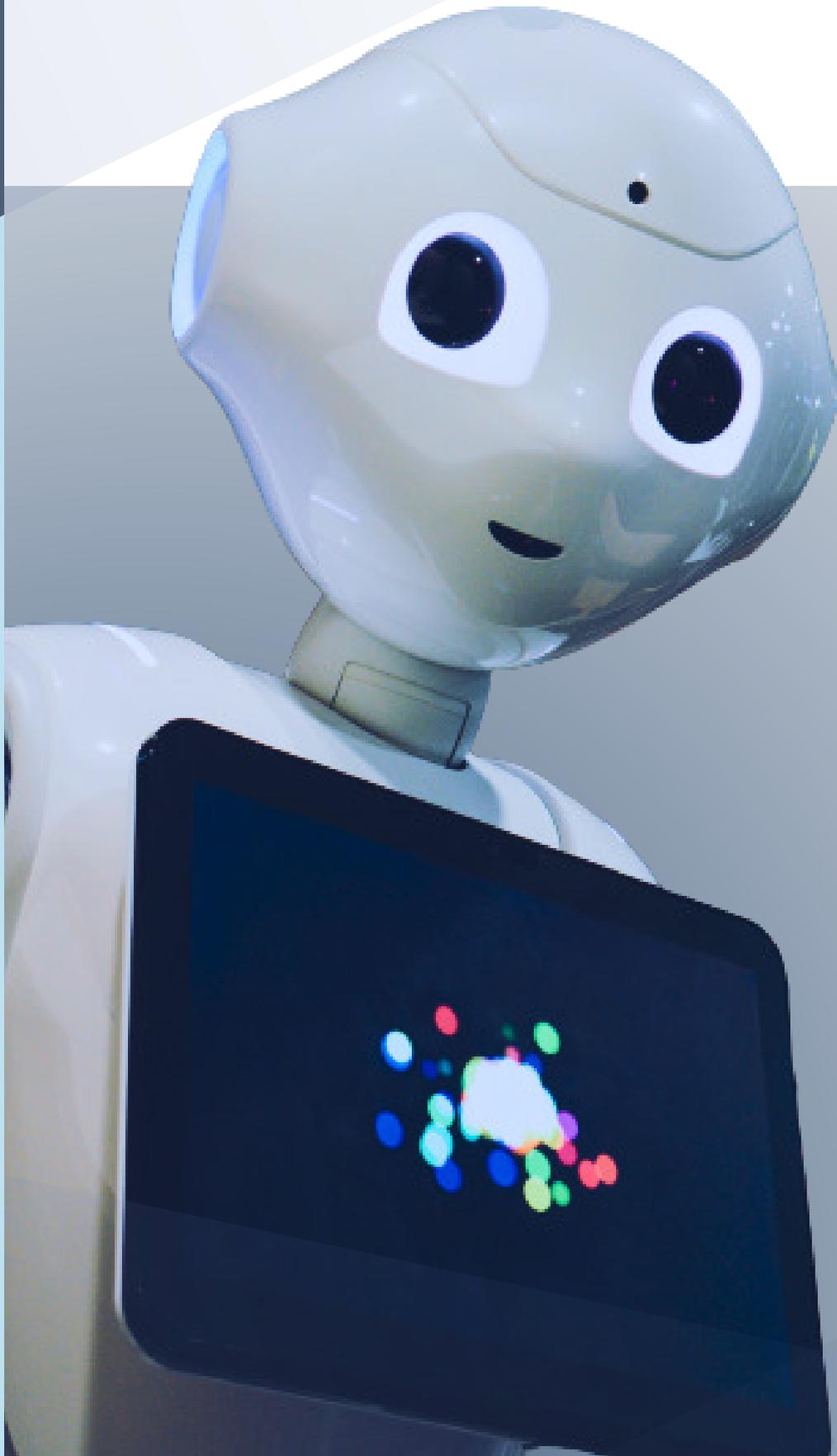
Is Big Data and Blockchain
A MATCH MADE IN HEAVEN ?

Source- Pixabay

In the developing world with growing technology and amazing innovations coming in front of us every day, two of the most talked about topics in the tech world are Blockchain and Big Data. These two are distinct but complementary technologies that have the potential to revolutionize various industries. This article is to understand how these two technologies complement each other to the degree where some claim their combination to be a match made in heaven.

What is Blockchain Technology?

Blockchain technology is an advanced, decentralized and distributed database mechanism. As the name suggests it stores data in blocks that are linked together in a chain. Each block in the blockchain stores information including data, transaction timestamp and a link to the preceding block. Blockchains are immutable hence one cannot delete or modify the chain. In Blockchains, transactions are stored and managed as "open ledgers". It prevents unauthorized transaction entries hence reducing risks and providing a secure framework.

Benefits of Block chain Technology:

This bad boy has ample of benefits and here are few of them**:**

1. Distributed Database

In blockchain the database is shared and synchronized across a network of nodes, each maintaining a copy of it. This makes it difficult for any single node or entity to manipulate the data, as any changes to the ledger must be validated and agreed upon by majority of the nodes in the network.

Source- Pixabay

2. Audit trail

An audit trail in blockchain can be defined a chronological record of all the transactions that have occurred within a particular blockchain network. It provides a transparent and tamper-evident history of all the changes made to the blockchain, which can be used to track the movement of assets and ensure their authenticity.

3. Immutability

In block chain each block holds the hash value of its previous block which creates an unbreakable chain of blocks. Which is why once a transaction is added to the blockchain, it cannot be altered or deleted. To change a block's contents, one would require changing the hash of that block, which would break the chain and invalidate all subsequent blocks.

4. Decentralization

In a blockchain network, there is no central authority that controls the database. Instead, all the nodes in the network have ability to add new transactions to the database. The transactions are validated by through a consensus system and any attempt to introduce fraudulent transaction will be rejected by the network.

Source- Pixabay

What is Big Data?

To understand the concept of big data one should know about the teeny tiny concept of data. Data can be defined as unstructured information formatted in a structured manner. It can be numbers, alphabets, or special characters on which operations can be performed by a computer.

Big data is nothing but data that is huge in volume and so large and complex that none of traditional data management tools can store it or process it efficiently. For example, Facebook, a well-known social media giant collects data in huge volumes in the form of comments, likes, user details etc. which is around in the range of petabytes (1 pb = 1000 tb). This vast collection of data is nothing but big data.

Challenges related to big data:

1. Data authenticity
Large volumes of big data make it difficult to ensure the authenticity of data, particularly if the data is spread across multiple systems and databases. Big data can be manipulated, making it difficult to establish the authenticity and trustworthiness of the data**.**

2. Security
Big data often contains sensitive information, such as medical records, financial data etc. Cyber-criminals can exploit vulnerabilities in big data systems and manipulate the data. Preventing such unauthorized access and changes is a big concern of any organization.

3. Traceability
Big data typically involves large volumes of data from diverse sources and can be complex, involving multiple layers and components, making it difficult to track data across its entire lifecycle.

4. Data Sharing
Big data is crucial for artificial intelligence to work effectively. By having access to more data to train upon, AI models become more precise and accurate over time. But in the world of centralized databases, big tech companies have access to most data on the internet, which is locked down in their private servers.
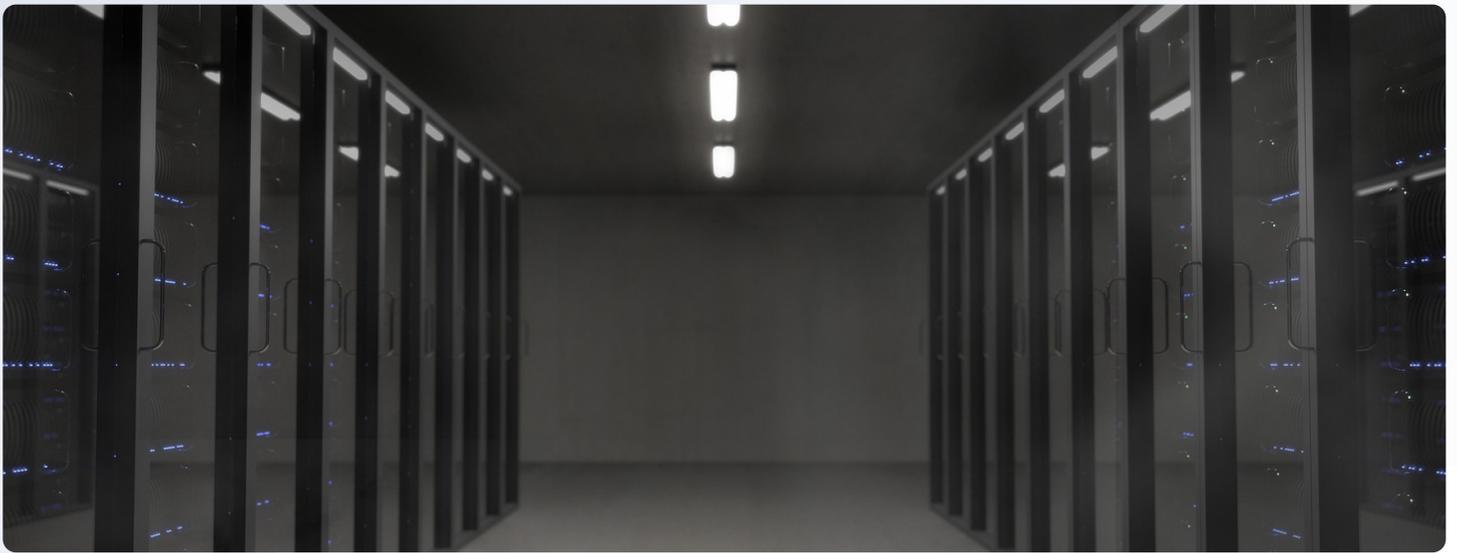
Now that you know what is Blockchain and Big Data is, you might have noticed that the benefits of Blockchain and the challenges faced by Big Data are quite similar which makes them made for each other types, like a match made in heaven.

Why Big Data and Blockchain are a match made in heaven:

1. Data Authenticity

In blockchain data is immutable due to hashing which ensures that, once written, data cannot be altered. It helps many industries such as healthcare, finance etc to build trustworthy databases shielded from any kind of fraudulent records.

2. Security

Manipulation in any kind of data whether it is financial data, medical records, academic record or and other important data is harmful and a threat to security. Even in closed source systems forging data is possible. They can be hacked, and data can be altered whereas in Blockchain it's going to be hell. As discussed earlier in Blockchain data is stored in the form of distributed ledgers, which makes it almost impossible to manipulate.

3. Data Sharing

Since databases are now decentralized and instead of one organization monopolizing on data, multiple organizations have access to the database. Now having data is not the edge but being fast at generating insights gives an edge.

4. Traceability

Blockchain provides a transparent and traceable record of all transactions and data changes with the help of cryptography and audit-trial. Cryptography ensures that transactions are secure and tamper-proof while audit-trail provides a secure and transparent method for tracking the movement of assets and verifying the integrity of transactions on the network, making it easier to track and audit data.

Conclusion:

In conclusion, there seems no doubt that big data and blockchain technology can complement each other to create secure and efficient solutions in various industries. Whether it is the security concerns or the sharing issues, blockchain seems like a reliable solution. The integration of these two technologies can provide organizations with valuable insights while maintaining the security and authenticity of the data.

References:

- *E. Jeremy, "When Blockchain meets Big Data, the payoff will be huge", Venture Beat, Blog, 2017 [https://venturebeat.com/business/when-blockchain-meets-big-data-the-payoff-will-be-huge/]*
- *M. Trent, "Blockchains for Artificial Intelligence", Medium, Blog, 2017 [https://blog.oceanprotocol.com/blockchains-for-artificial-intelligence-ec63b0284984]*
- *J. Tanuja, "Features of Blockchain", GeeksforGeeks, Blog, 2023 [https://www.geeksforgeeks.org/features-of-blockchain/]*

Vinay Dagar
B.Sc. (H) Computer Science
3rd Year

Decentralization:
Ulterior of the Internet

Our personal and professional lives have benefited greatly from the Internet since its birth. It developed from a slow, coarse mechanism mainly secondhand by the military to a large netting joining a lot of designs. At the moment, it is dominated by five firms that have accumulated enormous power, riches, and control: Facebook, Netflix, Apple, Amazon, and Google. The privacy and safety of users have been compromised as a result of its centralized control, which has still assisted in taking the Internet to

Source- Pixabay

new heights. Blockchain technology, however, has the potential to solve these issues and, through decentralization, completely transform the Internet. It may greatly increase online security and give users back control over their material.
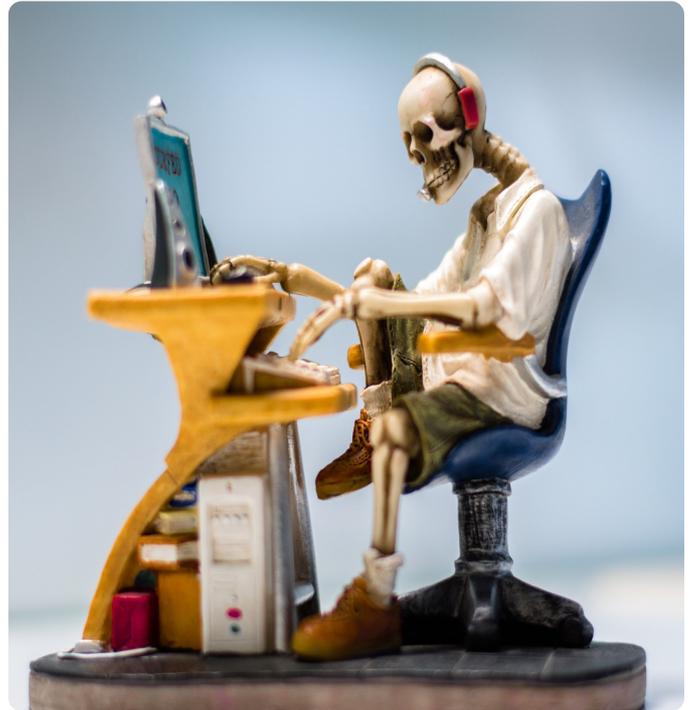
It is far more secure than the current centralised Internet because of its distributed public ledger and decentralised architecture. A block chain is basically a joint table that stores dossiers in holes called blocks. Each block is before being connected to an allure person utilizing signaling code, so reducing the data in individual connected blocks would demand the consent of the whole network. Blocks enhance constant, immutable parts of the chain as they are additional, so skilled is little fear of hateful alterations in the dossier or rule that create a block chain, leading to delivered public ledgers that are nearly absurd to taxicab

Although the highly centralised Internet has given consumers access to more technology and services, it has also been harmful in two ways that are particularly important. First off, due to its increased concentration,

the Web is now far more vulnerable to security breaches. For instance, on June 8, 2021, a significant outage at Fastly, a content delivery network provider whose servers manage around 10% of the Internet, caused a significant number of important websites, such as Reddit, Spotify, and the White House, to go down. Ironically, an unidentified configuration problem was the root cause of the entire outage, demonstrating the vulnerability of centralised systems to single points of failure.The majority of the Internet's resources are concentrated around a few number of businesses and servers, creating an unreliable and fundamentally flawed architecture.

When it comes to security and online freedom, the multiple uses of block chain technology may ultimately result in a more democratic, decentralised Internet. Blockchain is substantially more secure than the present centralised Internet architecture because of distributed public ledgers and the dispersion of storage and processing needs among all participating devices. In addition, NFTs and DAOs enable sharing while preserving ownership of one's own media, which is a distinctive feature that Kahuna uses to compete with conventional social media platforms. On both a professional and personal level, a future in which these cutting-edge innovations are incorporated into our online experience appears promising.

Source- Pixabay

This loss of freedom is best illustrated by the contentious change to Instagram's Terms of Service in late 2012, which at the time included a sentence allowing outside businesses the right to "...pay [Instagram] to display your username, likeness, photos (along with any associated metadata), and/or actions you take..." In essence, Instagram would hand over your images and private data to outside advertising in exchange for cash. Despite the fact that this particular section was removed in response to criticism, the rules still contain a provision that bars readers from suing Instagram in a class-action lawsuit unless they opt out within 30 days. These terms of service are required for the current social media platforms, but they also clearly compromise people's privacy and freedom of speech. It's understandable why the modern phrase "consider before you post" is well known to everyone.

A leading example of a blockchain-based decentralised social media platform is Kahuna. Kahuna does not have the right to share anything shared; rather, all content placed there remains the unique intellectual property of the user. Additionally, Kahuna employs a brand-new "Celebrity Coin" system that enables creators to profit from NFTs, collectibles, tickets, and special events. In essence, artists can increase their income by eliminating the middlemen, or the organisations that typically support platforms, and by utilising the additional functionalities provided by block chain technology. A more advantageous alternative to Facebook, Twitter, and Instagram is produced by these benefits in privacy and individual liberties.

Since there is no built-in insurance, their security and dependability have been questioned due to the absence of government involvement. As an illustration, one user in 2016 stole $60,000,000 worth of cryptocurrencies by exploiting a DAO built on the Ethereum network. The only option was to recreate the entire block chain, which was a very time-consuming procedure. However, there are too many possible uses for block chain technology to dismiss. This emerging field, which provides beneficial solutions to our

Internet problems, must be further alienated. Instead, we must approach it cautiously to avoid the traps that led to our suspicion of it and optimistically to widen our eyes to the world of opportunities it opens.

References:

- *W. M. Thomas, "Making the decision to Decentralize", Harvard Business School Press, 2004, [https://hbswk.hbs.edu/archive/making-the-decision-to-decentralize]*
- *R. Nicholas "Decentralization of the Internet: The Frontier of the Internet", Hackernoon, Blog, 2021, [https://hackernoon.com/decentralization-of-the-internet-the-future-frontier-of-the-internet-q2j35aj]*
- *R. Adam, "Everything you need to know about the Decentralized Internet", Tech.co, Blog, 2018, [https://tech.co/news/decentralized-internet-guide-2018-02]*

Ayush Kumar Jha
B.Sc. (H) Computer Science
2nd Year
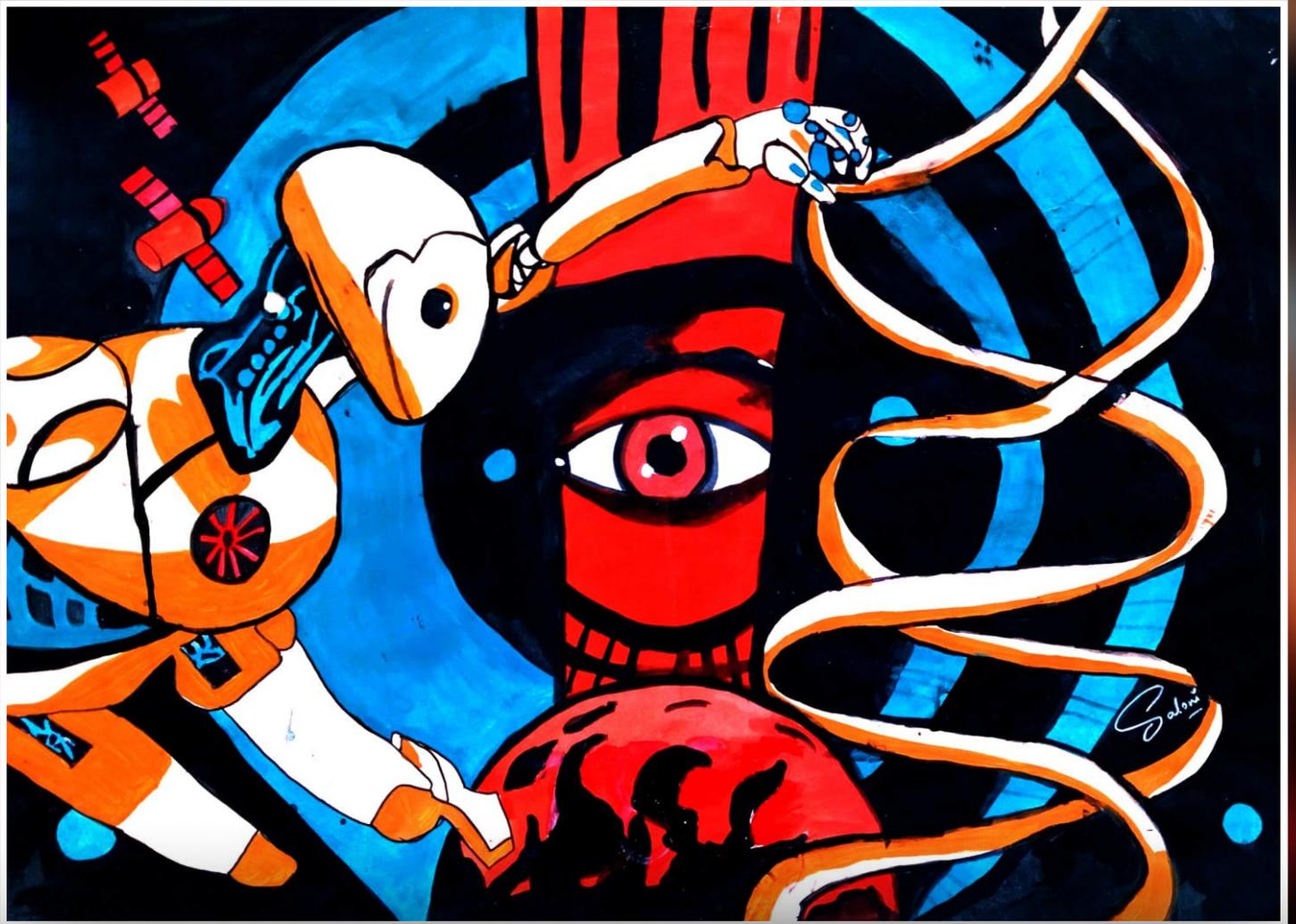
Nothing Goes Unnoticed On The Internet. Your Social Media Posts, Search History And Uploaded Documents All Are Acessible To Those On The Other Side. Articial Intelligence Has A Huge Influence On Your Decision Making And Is Expected To Impact More In The Coming Years. So, Upload Images Or Personal Content Wisely. Be Safe And Secure.
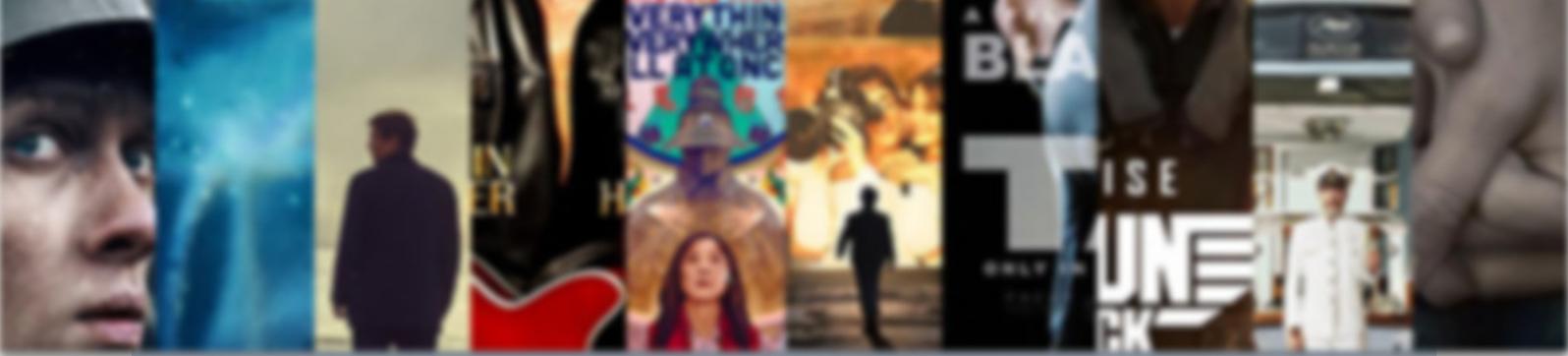
# MOVIES THAT LEFT US WANTING MORE
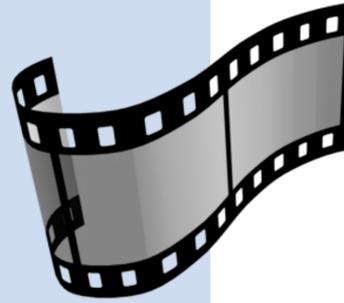
The Social Dilemma (2020)

Directed by Jeff Orlowski

Genre: Documentary/Drama
Rating: PG-13

The Social Dilemma is thought-provoking, chilling, and honest. It raises a sense of alarm and insecurity and makes you question your own consumption of the Internet. The dramatisation of the Internet worries your conscience and makes you reconsider your time and actions.

Several experts, designers, and developers from the large tech based companies in Silicon Valley are brought together to discuss the impacts of their own creations. The docu-drama discusses majorly two influences of social media that have led to major harm.

One, the way our data is centralised in the hands of big tech companies who have algorithms to keep you engrossed in order to maximise their monetization. But this is not all, the data is used to manipulate, predict your actions and even induce thoughts that might not have come to you if it weren't for a post you liked. Two, the widely-spread social media platforms are used to spread of disinformation and the inability of the tech companies to moderate it has led to political polarization and in extreme cases horrors like genocide of Rohingya Muslims in Myanmar. The Internet is capable of wonders but at the cost of your privacy and integrity of thoughts and action. And, there is exactly where the dilemma lies.

The Imitation Game (2014)
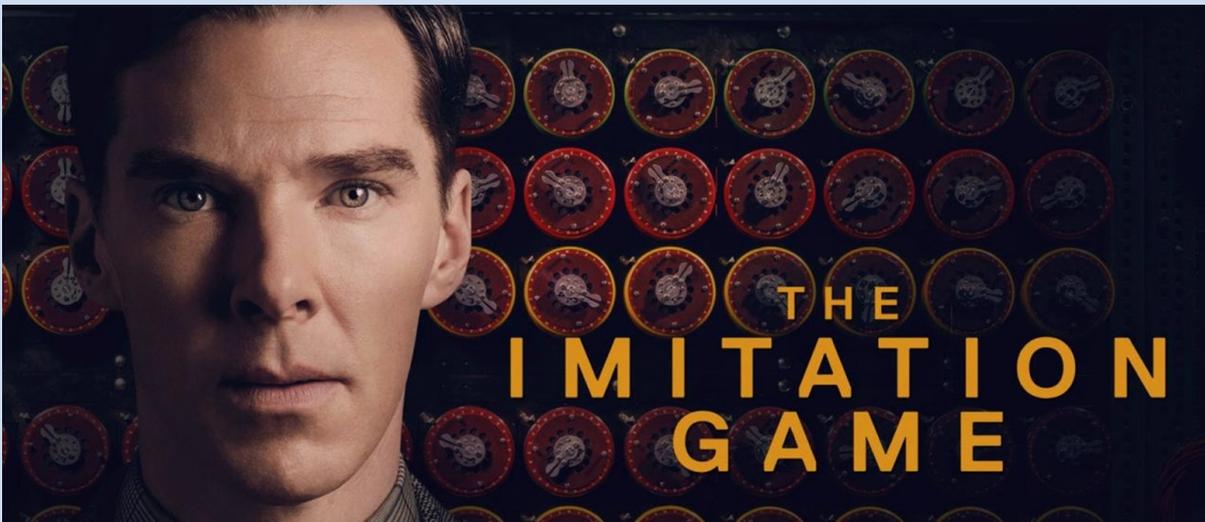
Directed by Morten Tyldum

Genre: War/Drama
Rating: PG-13

The Imitation Game is based on the life of Alan Turing, an English mathematician, computer scientist and cryptographer. His work was influential in the development of theoretical computer science, the concepts of his algorithm for Turing Machine had laid foundations for it. The film focuses on his work during World War II He worked for the Government Code and Cypher School at Bletchley Park, Britain's codebreaking centre. Turing played a huge role in cracking the Nazi Enigma that allowed the Allies to defeat Axis powers. The film is slow-paced, oversimplified and sentimental at parts but it manages to capture the tension in atmosphere, and captivate by its quirky humour.

It brings out Turing's eccentric character but most importantly tells you the story of a hero who was never celebrated and whose sexuality had condemned him to death.

49

Her (2013)
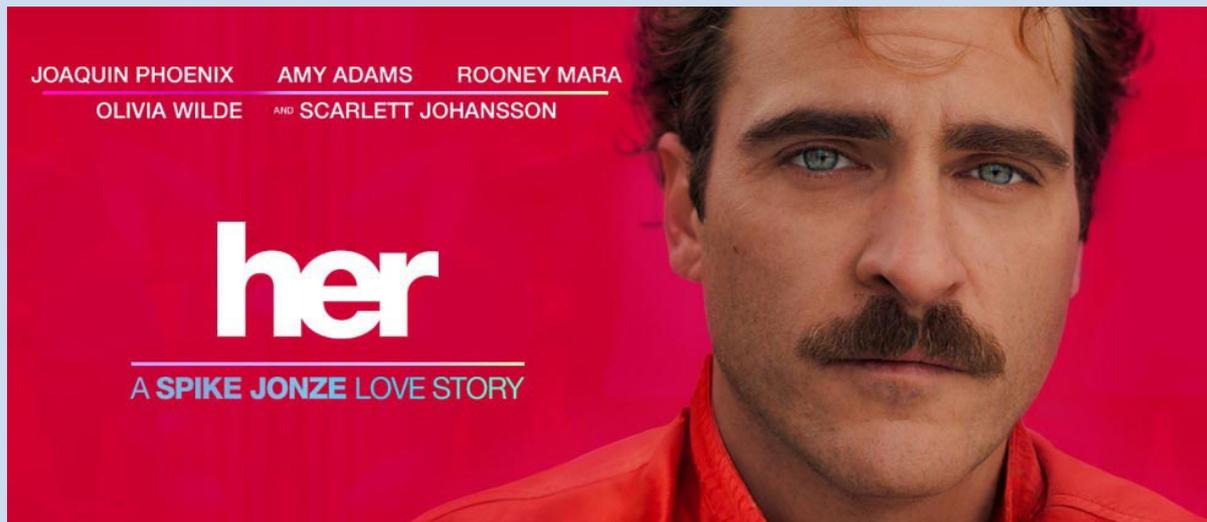
Directed by Spike Jonze

Genre: Romance/Sci-fi
Rating: R

Her is an unconventional mixture of Romance and Sci-fi. The film follows the life of a sensitive writer, Theodore Twombly, who is going through a divorce. He buys an Operating System to help himself with writing only to discover that the AI is capable of learning, adapting and growing.

The program calls itself "Samantha". He grows to like her more on discovering that she doesn't merely do whatever he asks her to do like a programmed bot but rather talks and emotes almost like a human would. The animated conversations they have steadily makes him feel closer to her and he falls in love with her. They share intimate moments as the AI yearns to have a body of her own and Theodore battles his loneliness. The film tells a tale of a man and an AI that feels outlandish and odd and yet it makes you feel the affection, the heartbreak and the realness of something that only existed in a virtual space. It questions not just limits of AI but also love and human emotions.

Ghost In The Shell (1995)

Directed by Mamoru Oshii

Genre: Sci-fi/Action/Animation
Rating: R

Ghost in the Shell is a classic Japanese anime that is eerily visionary of today's times. It tells an inventive, complex and intricate fantasy of a world dominated by cyberspace where cyborgs and humans co-exist.

A team of high-level government officials try to capture a computer hacker known as "Puppet Master" who is notorious for his crime in cyberspace and has developed an interest in the team's cyborg leader. The film is violent, hard to follow but the surreal imagery and animation makes it stylish and memorable. It is very interesting how the film manages to, in a few ways, prophet some elements of the future despite it being portrayed in a convoluted and large scale. A few action sequences of the film leaves you awed at the details and fluidity while the others terrify you with their brutal approach. This film along with Japanese sci-fi classics like "Akira" and "Paprika" remain to be among films who established the concept of "cyberpunk" in the 80s and 90s.

Blade Runner (1982)

Directed by Ridley Scott

Genre: Sci-fi/Action
Rating: R

Blade Runner is violent, obscure, and still humane at its core. It was one of the films that is encapsulated in the sci-fi subgenre that is now known as, "cyberpunk". The film visually pleases you with its gorgeous backgrounds, tall skyscrapers, neon lights, and futuristic devices but not without making you feel the dooming sense of alienation.

Rick Deckard is an ex-'blade runner' who is once again assigned a job to kill 'replicants'. Replicants are manufactured artificial humans and are used as slaves for labours in outer colonies of the Earth. A handful of them has developed conscience, have started to question their existence and have managed to make their way to Earth. In the thrilling and petrifying pursuit of this mission Rick finds himself filled with a strange empathy and doubt. It leaves him with a moral dissonance and a guilt and something else to find about his own self.

TOP 5 GEEKY PODCAST TO TUNE IN

In Machines We Trust

The thoughtful investigation of the far-reaching effects of artificial intelligence on our daily lives may be found in the award-winning podcast In Machines We Trust. The series, which is hosted by Jennifer Strong, examines the rise of AI through the perspectives of those who are coming to terms with the technology's power and by bringing listeners close to the creators and founders whose aspirations are fostering the development of new forms of AI, with far-reaching implications we are only now beginning to comprehend.

Tech Stuff

TechStuff is a podcast that discusses the latest gadgets, software, and consumer electronics. The host Jonathan Strickland looks at the latest innovations and considers the ways in which they have impacted our culture and society.

Daily Tech News Show

Daily Tech News Show is a podcast that brings you the biggest tech stories of the day and offers a bite-size look at the tech news you need to know.

This Week In Google

This Week In Google is a podcast that looks at the latest developments within the search engine giant. From new products and services to interesting stories behind the scenes, the hosts aim to keep their audience updated with the most relevant information, including the latest from the world of tech.

This Is Only A Test.

This Is Only A Test is a podcast that talks about the latest news in the world of technology, and aims to be accessible and understandable to listeners.

Hosts Will Smith, Norman Chan, and Gary Whitta offer a clear, simple explanation of the must-know tech in an easy-to-follow format.

"Achievements & Placements"

Keshav Mahavidyalaya is an institution that encourages students to learn by doing. It aims to provide the students with the best facilities to inculcate unorthodox ideas and productive habits. It is considered to be one of the finest colleges for Computer Science in University of Delhi.

The dedicated faculty is well-equipped to impart knowledge and encourage overall development of a student. It is always the goal of the department and faculty to be up to date with the latest technologies and emerging trends and tools. Making learning easier and innovative through creative classroom sessions and practicals in a. Commitment and hard work has always bore fruit. The alumni of the 2019-2022 batch have shown remarkable progress in their careers.

- **Akshita Gupta** was previously placed at FULD Analytics and Consulting as a Research Associate. She secured AIR-8 in DUET MSc Entrance and is pursuing M.Sc. in Computer Science at DUCS.

- **Ashish Sharma** got placed at D. E. Shaw group, a global investment and technology development firm.

- **Akansha Goel**, **Gagan Kumar Soni**, **Sakshi** and **Deepti Meena** got a merit-based admission in DUCS and are pursuing M.Sc. Computer Science.

- **Anubhav Singh** secured AIR-391 in NIMCET'22.

- **Shristi Gupta** got placed at Value Research as a Mobile App Developer.

- **Vanshika Singhal** secured admission at FORE School Of Management and is pursuing Post Graduate Diploma of Management.

- **Garima Pandey** secured admission at Motilal Nehru National Institute of Technology and is pursuing MCA.

- **Shreya Jain**, **Kanchan Bora**, **Nikita Shammi** and **Khiuphuiliu** secured admission at Indira Gandhi Delhi Technical University for Women and are pursuing MCA.

- **Aakansha Tandon** and **Ashishit Tiru** secured admission at National Forensic Sciences University and is pursuing M.Sc. Digital Forensic and Information Security.

- **Anubhav Singh** secured admission at National Institute of Technology, Jamshedpur and is pursuing MCA.

- **Manasvi Ladia** secured admission at IIM Ranchi and is pursuing MBA.

- **Parul Negi** secured admission at Saarland University and is pursuing M.Sc. in Data Science and AI.

- **Satyandra Pal** and **Saurabh Kumar** secured admission at DUCS and are pursuing MCA.

- **P Sril Harivas Charan** secured admission at JNTU, Kukatpally and is pursuing MCA.

- **Garima Bothra** secured admission at MNNIT Allahabad and is pursuing MCA.

- **Sezal Saundarya** secured admission at Vellore institute of technology, Vellore and is pursuing MCA.

- **Megha Rawat** secured admission at JSS Academy of Technical Education and is pursuing MCA.

It is an honor for the institution to be a pillar for the future of the youth. The faculty of Computer Science hopes to keep seeing brilliant achievements from graduates of Keshav Mahavidyalaya.

e-Blitzine

Accomplishments

This session marks one of the most significant sessions for e-Blitzine. In line with our ambition to expand e-Blitzine and initiate its reinforcement, we made progress and started new projects. We came up with the idea to expand beyond our annual digital magazine, and we have begun providing content on Instagram and LinkedIn on weekly and monthly basis, respectively. We hoped to provide tech-related news and information all year round and make use of the abilities and resources that our team possesses.

We have gone above and beyond and developed an online forum or website for regular and monthly posts with numerous activities surrounding tech and coding. Our digital platforms listed here cater to distinct content and schedules as per the requirement of the platform, but all of them aim to provide a creative and proficient way to support and embellish e-Blitzine's presence.

-Team e-Blitzine

Please! Click the link or scan the QR code to visit our platforms and take a peek at our projects by scrolling down.

Instagram	**LinkedIn**	**Blog**

TECHNOLOGICAL UPDATES
OF THIS YEAR

AI BEING CREATIVE

-Shivanshi Gupta

SPACE TOURISM

-Dhavni

AUGMENTED REALITY AND METAVERSE

-Dhavni

CRYPTO : A TOOL TO MONEY LAUNDERING

-Ayush Kumar Jha

AI BEING CREATIVE

AI being Creative like Humans
In this story We have included a few interesting wonders AI did that caught our attention.

Books Authored by AI
Among the other books, we liked this one the most.
The Aum Golly Series: Artificial Intelligence Poetry on Humans (2021, 2023)
The Aum Golly series is a good choice if you're seeking something that is enjoyable both as literature and as a technological product. Midjourney created full-page graphics for the newly released illustrated sequel Aum Golly 2.
This poetry series currently consists of two parts:
Aum, Golly: (written in 24 hours by Jukka Aalho and GPT-3 in 2021)
Aum Golly 2: (written and illustrated in 12 hours by Jukka Aalho, ChatGPT and Midjourney in 2023)

Aesthetic and Magical Paintings By AI
Hotpot.ai is one tool that left us shocked every time we used it to generate paintings. It is very easy to use and requires just three steps to generate paintings that look magical. Just enter the key elements of your painting in the input box and smash the create button.
AI will generate an awesome painting for you. Take a look at some paintings generated by hotpot AI:

References: List of Books Written by AI [https://allgoodgreat.com/list-of-books-written-by-artificial-intelligence/]

Source:Generated By AI
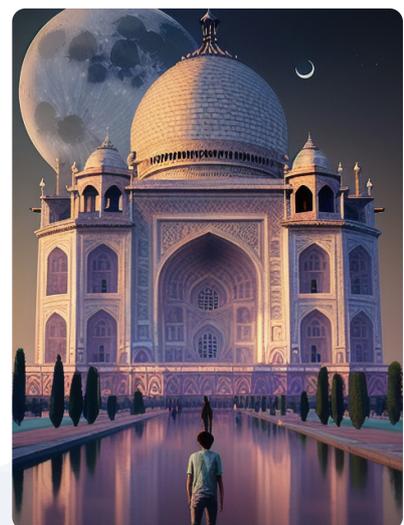
Source:Generated By AI

SPACE TOURISM

Jeff Bezos's Blue Origin has been sending people to enjoy joyrides in space for a hefty amount of money. Space tourism has had several breakthroughs in recent years and the market has experienced exponential growth. According to Future Market Insights (FMI), the global space tourism market is set to reach 678.3 million US dollars in 2023. There is an estimated 38.6% CAGR increase in sales in space tourism between 2023 and 2033.

Source: Unsplash

One of the significant milestones in "space tourism" was Axiom Mission One. The first privately funded crewed mission to International Space Station (ISS) was launched on 8 April 2022, from Kennedy Space Center, Florida. It lasted 17 days, 1 hour and 48 minutes. This is considered a significant step in establishing privately funded and operated space stations which are likely to be expanded by commercial businesses and could further help with research.

SpaceX, the corporation that launched Axiom-1, uses AI-driven algorithms that use data from the satellites' sensors to navigate satellites through space such that any collisions can be predicted and avoided. SpaceX also uses AI to analyze data from the sensors of the rockets and telemetry system that allows the to have better control of trajectory and velocity. Machine learning algorithms have helped identify data patterns and predict potential risks. Intelligent assistants like "Daphne" is being used for a while now for satellite designing, they help the designers by providing useful information on command.

AUGMENTED REALITY AND
METAVERSE

Augmented reality and Metaverse have been tech trends for a while now. Businessmen are investing in tech-related startups and researchers are trying to develop ways to inculcate the concept in even more innovative ways.

Source: Freepik

At the Mobile World Congress (MWC) 2023, several startups had ideas relating to similar AI. A mixed reality startup Urban XR, based in the UK, showed its cutting-edge Visual Positioning Technology that provides the augmented reality experience. Another startup in Spain, La Frontera used metaverse to create tailor-made environments for realistic avatar-based virtual meetings. It focuses on the development of immersive AR environments.

Published in the February 2023 issue of Advanced Science, a research team introduced technology for smart contact lenses that implement Augmented Reality-based navigation using 3D Printing. The research is jointly led by Professor Im Doo Jung in the Department of Mechanical Engineering at UNIST and Dr Seung Kwon Seol from the Smart 3D Printing Research Team at Korea Electrotechnology Research Institute (KERI). The researchers experimented and successfully developed PB-based EC displays in a smart contact lens with a navigation function. "Although thin glass ITO was used for the EC display in this study, it can be further developed as a method of patterning transparent electrodes, such as graphene on flexible materials and printing EC materials," noted the research team. "We believe that our novel strategy will serve as an attractive method for realizing PB-based EC displays as well as diverse functional devices with micro PB patterns."

Reference: Harshini, "10 European Startups that wowed Mobile World Congress 2023" Analytics Insight, Blog, 2023, [https://www.analyticsinsight.net/10-european-startups-that-wowed-mwc-2023-from-ai-to-the-metaverse/]

CRYPTO : A NEW TOOL TO MONEY LAUNDERING

Recently, a written document from the Finance Ministry said that crypto will be governed by anti-money laundering rules in the Indian market. According to these changes all the parties involved with crypto exchanges, digital wallet providers and NFT platforms will be responsible for monitoring any kind of suspicious financial activities.

Source:Freepik

"Exchanges and wallet providers will be required to implement AML/CFT controls, and to be licensed or registered and supervised or monitored by national authorities," the Ministry of Finance.

All these actions are the fact that the Indian government is not in good mood with cryptocurrency and there are the strong reasons behind it and the recent event with the case of money laundering through digital assets like cryptocurrency and NFT.

According to the Finance Ministry, till date a total $115.5 million seized money laundering cases have been found by the ED (Enforcement Directorate).

Some sources say that under India's G20 Presidency, India will push this issue with other members and try to come up with a global regulation for decentralized finance for all forms of crypto assets. Although India has passed some rules last year to control its unrestricted growth and hip, those are not sufficient to control money laundering and it needs a global approach and support to control digital laundering.

Reference: Notification - Ministry of Finance, March, 2023 [https://egazette.nic.in/WriteReadData/2023/244184.pdf]

GEEK TIME
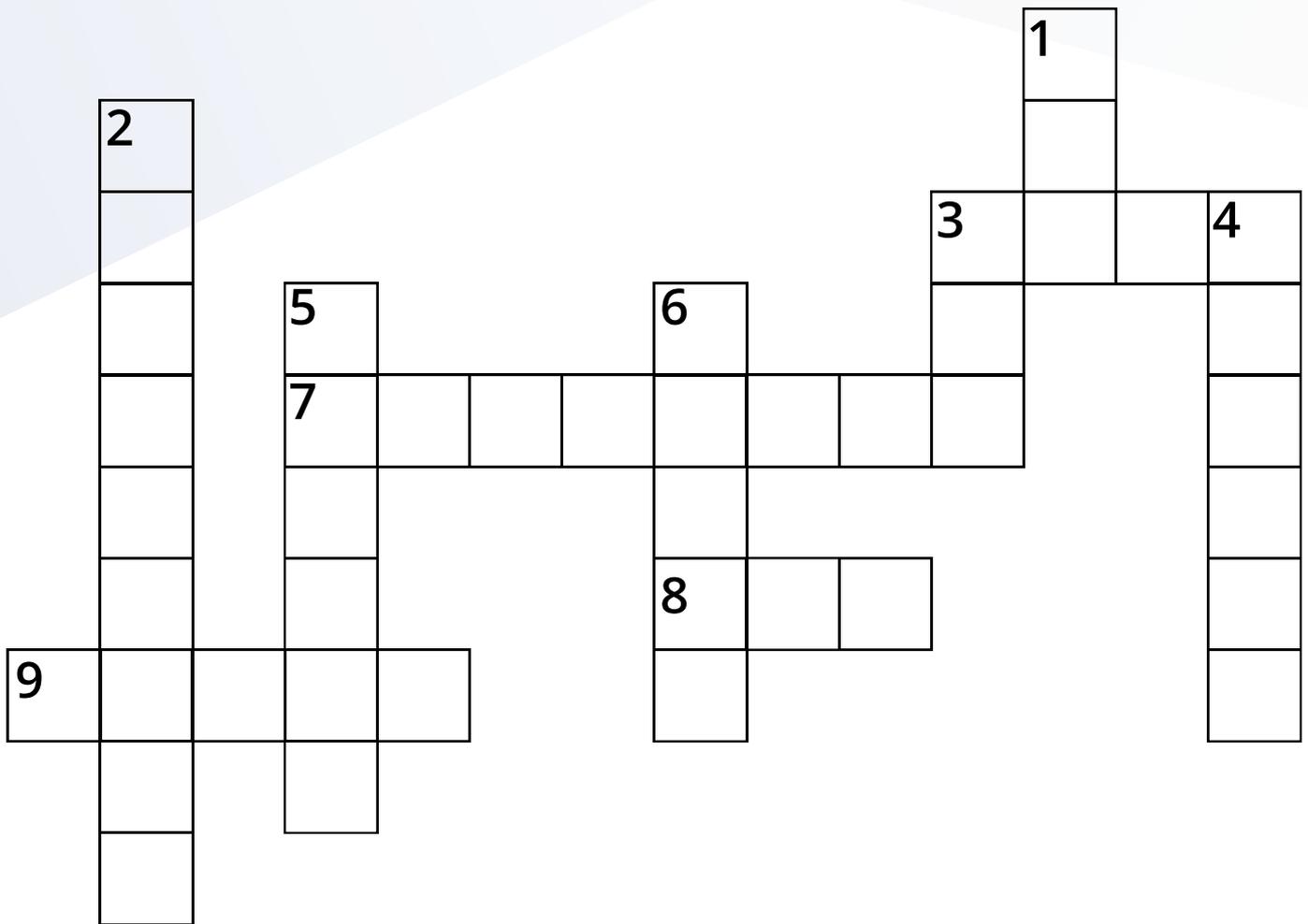
Across

3. Platform that allows a computer to operate software found on a hard disk drive

7. Connects devices and computers to a shared network

8. Allows applications to communicate with one another

9. Combines two words, "picture" and "element.

Down

1. Program that requests information

2. Find and remove bugs

3. Abbreviation of Binary Digit

4. Rules that dictate the structure of a language

5.   Robot created to help elderly people

6.   Data that saves in a sequential form.

ARTIFICIAL INTELLIGENCE
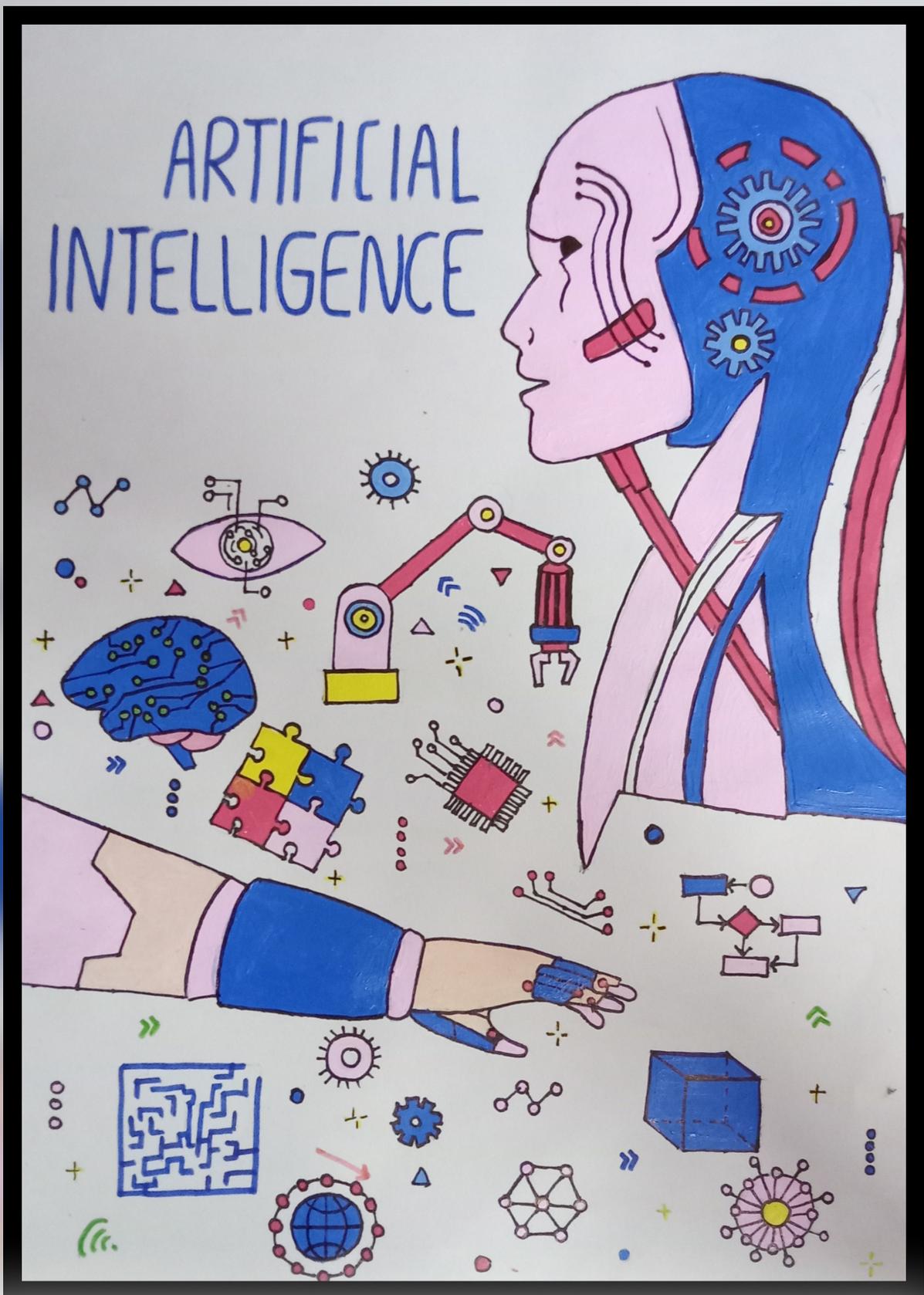
The world of AI is growing tremendously everyday. It facilitates smooth functioning of complex tasks as well as our lives but with it comes along an alienation from the very same things.

Artwork Credits
Simran Dureja
B.Sc.(H) Computer Science
II Year

TEAM BLITZ

First Row (Left-to-Right):

Smrati Sharma (Senior Executive),
Dr. Namita Aggarwal,
Dr. Roli Bansal (Convenor),
Ms. Rashmeet,
Mr. Rakesh Kumar,
Samiksha Singh (Executive)

Second Row (Left-to-Right):

Shashank Deep (Executive),
Nancy Gupta (Executive),
Shruti Sharma (Executive),
Udit Kaushish (Treasurer),
Simrat Deol (President),
Diksha Singh (Secretory),
Harshita Mahajan (Executive),
Priyanshi Jain (Executive),
Rahul Arora (Executive)

TEAM e-Blitzine

First Row (Left-to-Right):

Siddhi (Executive),
Simran (Executive),
Ms. Jyoti Kumari,
Dr. Anjali Thukral (Convenor),
Mr. Ashutosh Singh,
Smrati Sharma (Design Team Lead)
Dhavni (Content Executive)

Second Row (Left-to-Right):

Eshaan R. James (Executive),
Abhishek Kumar (Design Executive),
Shivanshi Gupta (Chief Student Editor),
Chetan Yadav (Design Executive),
Lipika (Executive),
Ayush Kumar Jha (Content Executive),
Keshav Saini (Content Team Lead)

TEACHING STAFF

First Row (Left-to-Right):
Prof. Vinita Jindal, Prof. Preeti Sehgal, Dr. Anjali Thukral, Dr. Roli Bansal, Ms. Maulein Pathak, Dr. Bhavna Gupta

Second Row (Left-to-Right):
Ms. Jyoti Kumari, Ms. Astha Goyal, Ms. Rashmeet, Dr. Namita Aggarwal, Ms. Nidhi Passi, Mr. Anand

Third Row (Left-to-Right):
Mr. Sumit Baberwal, Mr. Ravi Kumar Yadav, Dr. Sumit Aggarwal, Mr. Ashutosh Singh, Dr. Rakesh Kumar, Mr. Pradeep Kumar

©doodles by chetan

NON- TEACHING STAFF

First Row (Left-to-Right):
Ms. Pooja Batra, Mr. Ritesh Gupta,
Ms. Anuradha Chaddha, Mr. Rajesh
Wadhwa, Mr. Akhilesh Kumar,
Mr. Lovkesh Jairath (not in picture).

FIRST YEAR STUDENTS

B.Sc. (H) Computer Science

SECOND YEAR STUDENTS

B.Sc. (H) Computer Science

THIRD YEAR STUDENTS

B.Sc. (H) Computer Science

KESHAV MAHAVIDYALAYA

(University of Delhi)

NAAC Accredited Instituion 'A' Grade Cycle 2

G2

BLITZ
The Computer Science Society

Annual Technical Festival

BLITZKRIEG '23

Friday, 24th March
9:30 AM - 4:30 PM

E- Blitzine
7th edition

Trading Titans

Valorant Showdown

AI Tank

Webopoly Spree

Stream Draw

Code Duel

Creepy Crypt Hunt

Ministry of Magic

Register Here:
https://blitzkriegkmv.tech/
team.blitzkmv@gmail.com
@blitzkmv

Student Co-ordinators
Simrat Deol, President   - 9013027661
Diksha Singh, Secretary   - 8368256787
Udit Kaushish, Treasurer - 8650442828

Ms. Maulein Pathak
(Teacher In-charge)

Dr. Roli Bansal
(Convenor)

Prof. Madhu Pruthi
(Principal)

Media Partners

THE CAMPUS MEDIA

DFU
DU FEST UPDATES

DU ONLINE CAMPUS

EVEPAPER

CHAIGARAM
POCKET · CAFE

Crossword Answers:

Across
3. BIOS
7. Ethernet
8. API
9. Pixel

Down
1. URL
2. Debugging
3. Bit
4. Syntax
5. pepper
6. Array

OUR PREVIOUS ISSUES

KESHAV MAHAVIDYALAYA
NAAC Accredited 'A' Grade
UNIVERSITY OF DELHI

e-BLITZINE 2022

DEPARTMENT OF COMPUTER SCIENCE

ISSUE 6

AI Empowering the Future

ISSUE 5

KESHAV MAHAVIDYALAYA
NAAC ACCREDITED 'A' GRADE
UNIVERSITY OF DELHI

e-Blitzine'21

Department of Computer Science

KESHAV MAHAVIDYALAYA
NAAC ACCREDITED 'A' GRADE
(UNIVERSITY OF DELHI)

e-Blitzine
Issue IV
April 2020
Department of Computer Science

Keshav Mahavidyalaya
NAAC Accredited 'A' Grade
University of Delhi

e-Blitzine'19
Issue-III

Department of Computer Science

Department Of Computer Science

**Keshav Mahavidyalaya
NAAC Accredited 'A' Grade
University Of Delhi**

H-4-5 Zone, Pitampura, Near Sainik Vihar, Delhi-110034
Contact No.- 011-27018805
Website- www.keshav.du.ac.in