



KESHAV MAHAVIDYALAYA



NAAC Accredited 'A' Grade Cycle 2

University of Delhi

METaverse

e-BLITZINE 2025

Department of Computer Science



Issue 9

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FROM THE PRINCIPAL'S DESK



It gives me immense pleasure to share the 9th edition of e-BLITZINE, the annual magazine from the Department of Computer Science at Keshav Mahavidyalaya. The magazine is enriched by the dedication, intellectual curiosity, and enthusiasm of our committed students and faculty members. This year's theme, *Metaverse: The Future of Digital Interaction*, looks at the exciting idea of the metaverse and how it could change our digital experiences for the better.

The metaverse is the future of our digital lives, and it has already started taking shape. As we venture into this exciting new world, we're not just adopting new technology – we're unlocking new possibilities for human connection, creativity, and innovation. I congratulate the entire team of e-BLITZINE for putting together such an amazing collection of informative and inspiring articles about the latest advancements in computer science and technology!

I encourage everyone to dive deep into this edition of e-BLITZINE, focusing on the world of the metaverse. As we strive for excellence in education, I wish this magazine embodies the innovative thinking and problem-solving skills that will define the next generation of leaders.

Wishing all students and faculty members immense success in their academic and professional journeys!

Prof. Madhu Pruthi
Principal
Keshav Mahavidyalaya

FROM CONVENOR (e-BLITZINE) AND TEACHER-IN-CHARGE



“Metaverse isn’t a thing a company builds. It’s the next chapter of the internet overall”

~ Mark Zuckerberg

It gives me immense pleasure to present the ninth edition of e-BLITZINE, centered around the transformative themes of Artificial Intelligence (AI) and the Metaverse. Metaverse is more of a concept that describes the way we communicate, socialize,

do business, shop, and do just about everything else in the future. These revolutionary technologies are not only transforming the future but also reinventing the very essence of our daily lives. They’re reshaping the way we connect, create, and thrive in a hyper-connected digital landscape. The fusion of AI and the Metaverse is reshaping our reality, bringing about unparalleled advancements in industries like healthcare, finance, and education, while unlocking new dimensions of creativity, collaboration, and immersive experience. As computer science enthusiasts, we’re not just witnesses to the revolution - we’re the architects. We have the power to shape the future, to harness the power of technology for good, and to create a world that’s more equitable and amazing for everyone.

I am proud to share this magazine with you. It is a witness to the talent and dedication of our students and faculty. The magazine showcases insightful articles, research, and creative expressions on AI and the Metaverse. The magazine also exhibits the achievements of students and faculty of our prestigious department. I am honoured to share this incredible work with you, which happens only when passion meets expertise. I congratulate the editorial team and contributors for their hard work in bringing this edition to life.

I’d like to extend my heartfelt gratitude to our Principal, Prof. Madhu Pruthi, whose unwavering support and guidance have been instrumental in bringing this issue to life.

Happy Reading!

Prof. Priti Sehgal

(Teacher in Charge, Dept of Computer Sc.& Convenor, e- BLITZINE)

FROM CONVENOR (BLITZ)



*"It is neither the strongest of the species,
nor the most intelligent that survives. It
is the one that is the most adaptable to
change."*

Charles Darwin

On behalf of BLITZ, the Computer Science Society of Keshav Mahavidyalaya, I welcome you to the new edition of e-BLITZINE. I congratulate the team, led by Prof. Priti Sehgal, for their dedicated efforts in creating this insightful publication.

BLITZ has been instrumental in organizing seminars, workshops, coding competitions, research projects, and technical events. We have also invited distinguished alumni to guide students in their academic and professional journeys. Our annual tech festival, BLITZKREIG, continues to be a hub for innovation, offering challenging and engaging events. I extend my gratitude to Ms. Astha Goyal, Ms. Nidhi Passi, and Mr. Pradeep Kumar for mentoring the student and ensuring the success of all initiatives. I endorse and acknowledge our student leadership team, led by Ms. Priyanshi (President), Ms. Kanishka Rai (Secretary), and Ms. Nancy Gupta (Treasurer), along with the dedicated and dynamic members of BLITZ, for their role in conceptualizing novel ideas and bringing them to successful fruition. I express my heartfelt gratitude to our Principal, Prof. Madhu Pruthi, for her constant support in fostering our society. I thank Prof. Priti Sehgal, the Teacher-in-charge, along with all faculty and staff, for their invaluable contributions. I wish all students a successful academic journey and beyond.

As we turn pages of this magazine, we delve into the evolving metaverse not just as participants but as architects of its future.

Best,
Prof. Richa Sharma
Convenor, BLITZ
Department of Computer Science

An illustration of a person wearing VR goggles, with a futuristic digital background featuring glowing blue lines and data patterns. The person is wearing a dark blue shirt and has their hands on the sides of the VR headset.

IN THIS EDITION

Welcome to the 9th edition of e-BLITZINE, where we step into the ever-expanding universe of the Metaverse - an immersive digital realm that is blurring the lines between reality and virtual existence. No longer just a futuristic concept, the Metaverse is evolving into a space where people work, socialize, trade, and even build entire economies.

This issue unravels the fascinating journey of the Metaverse, tracing its evolution from science fiction to a tangible and interactive world. We explore the groundbreaking technologies fueling this transformation, including virtual reality, augmented reality, artificial intelligence, and blockchain. With digital assets like NFTs and cryptocurrencies redefining ownership and commerce, the Metaverse is rapidly becoming an economic powerhouse.

Beyond finance and technology, the Metaverse is also reshaping human interaction. From virtual workplaces to education, socialization, entertainment, and the way we connect is evolving. However, with great innovation comes great responsibility to ensure an ethical and secure space.

The Metaverse is no longer a distant dream — it is here, evolving daily. As we unlock new dimensions of reality, we invite you to explore the endless possibilities of this digital frontier. Welcome to the future!

ABOUT DEPARTMENT

The Computer Science Department of Keshav Mahavidyalaya is recognized as one of the most distinguished departments within the University of Delhi and was established in 1994, fostering a culture of academic excellence, innovation, and research. With a mission to impart high-quality education in the field of Computer Science, the department has consistently evolved to keep pace with technological advancements. Beyond academics, the department nurtures a thriving coding culture, hosting hackathons, workshops, technical fests, and research initiatives. With a commitment to innovation and continuous learning, the Computer Science Department at Keshav Mahavidyalaya empowers students to become future leaders in technology, research, and entrepreneurship.

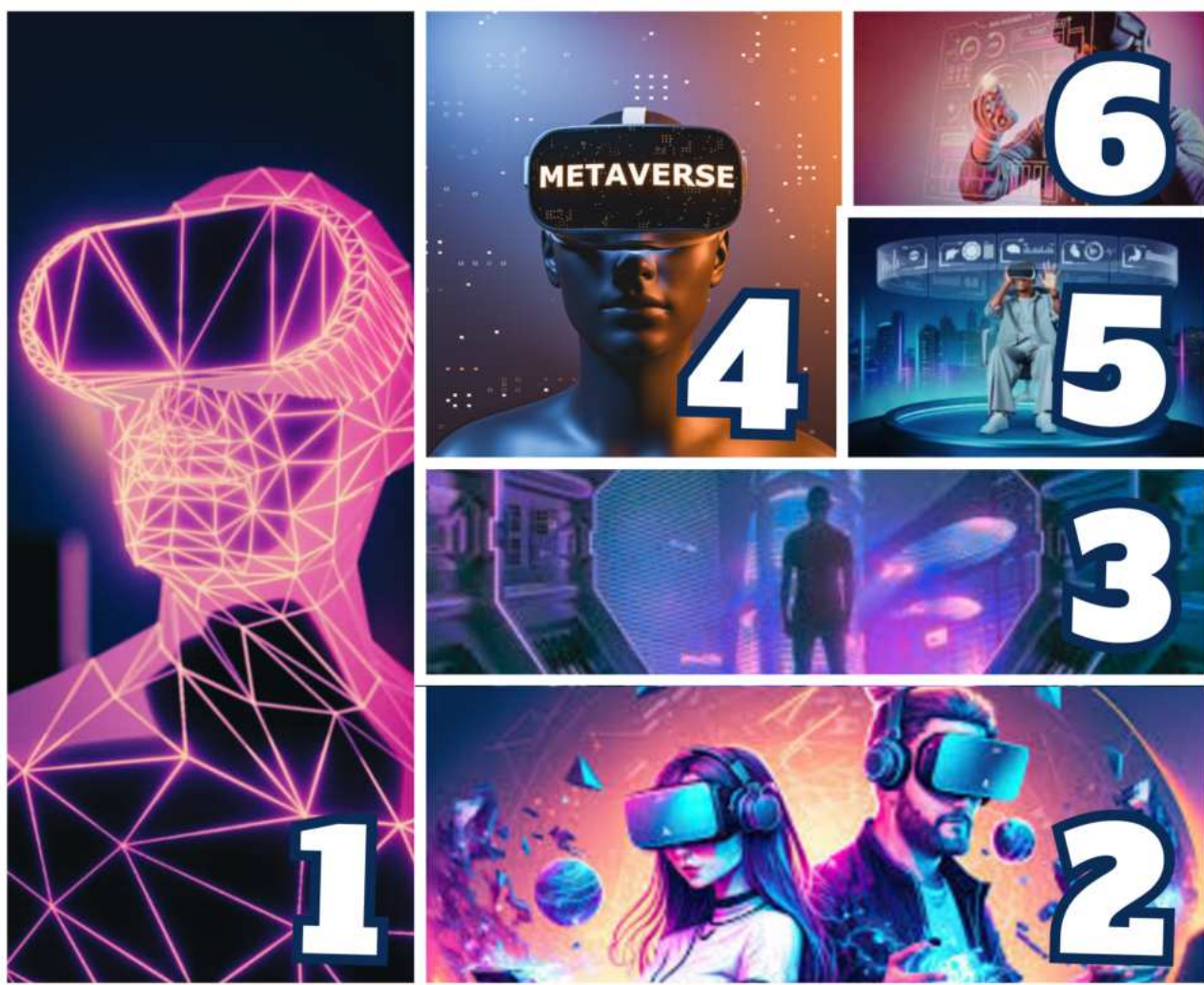
ABOUT e - BLITZINE

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 2022 marks the first year of the magazine's social media presence as well as the year of the 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.

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 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.

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BLITZ AFFAIRS

2024-2025

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BLITZKRIEG'24:

THE ANNUAL TECH FEST

BLITZKRIEG'24: The Annual Festival of the Department of Computer Science at Keshav Mahavidyalaya, University of Delhi, unfolded on March 21st, 2024, from 10:00 A.M. to 6:00 P.M., offering a diverse array of captivating technical and non-technical activities. The fest commenced with a splendid inauguration ceremony in the college's seminar hall, hosted by Shruti Sharma, President of BLITZ, and Rahul Arora, Secretary of BLITZ. Esteemed figures graced the occasion, including the distinguished Chief Guest, Ms Nidhi Aggarwal; Principal, Prof. Madhu Pruthi; Teacher-in-Charge of the CS department, Prof. Priti Sehgal; BLITZ society's convenor, Dr. Roli Bansal, and e-BLITZINE's convenor, Dr. Richa Sharma, alongside esteemed faculty members.

During the inauguration ceremony, the eighth edition of e- BLITZINE, the annual magazine of the Department of Computer Science, was launched, adding another milestone to the fest's commencement. This launch marked a celebration of the department's achievements and contributions to the field of computer science.

Following the inauguration, the chief guest, Ms Nidhi Aggarwal, alumnus of the Computer Science department, currently working at Adobe Systems, delivered her thought-provoking views in the speaker session on the topic "GenAI: Navigating the Impact and Charting a Path Forward." The session provided valuable insights into the intersection of Artificial Intelligence and society, guiding attendees on understanding and navigating the implications of AI in our lives.



Moving forward, the festival's main events took place in a three-tiered format, catering to various interests and skills of the participants.

The initial lineup featured the coding challenge 'Code Duel 2.0', the debate competition 'Job Wars', and the gaming contest 'BGMI Showdown'. 'Code Duel 2.0' provided a dynamic platform for coding enthusiasts to showcase their skills through a series of challenges. 'Job Wars' sparked engaging debates with overwhelming participation, comprising group discussions and conventional arguments. Meanwhile, 'BGMI Showdown' uncovered the latest gaming talents of the participants, focusing on strategy and gaming skills.



In the afternoon session, the spotlight shifted to the web development challenge 'Web Bugs' and the brain-teasing quiz 'Ace the Quiz'. 'Web Bugs' assessed participants' proficiency in web development, allowing them to unleash their creativity in optimizing websites and enhancing user experiences. 'Ace the Quiz' presented an exhilarating competition, challenging participants to think on their feet and showcasing their technical and intellectual prowess.

In addition to the main events, BLITZKRIEG'24 featured a series of entertaining mini-events, adding a touch of fun and excitement to the festival atmosphere, and delighting attendees with memorable experiences throughout the day.



The concluding event, 'Finding Meme-O', a treasure hunt competition, invited participants on an adventurous journey, deciphering clues and solving puzzles to uncover hidden treasures, testing their observational skills and wit.

Wrapping up the day's excitement, the organizing team coordinated the prize distribution ceremony to commend winners across categories with certificates and appealing prizes, expressing gratitude for the smooth execution of BLITZKRIEG'24. Participants from across the University of Delhi and beyond gathered to celebrate technology and innovation, exploring the ever-evolving world of technology in an entertaining and enriching manner.

Shruti Sharma
Former President, BLITZ

Date: 7th October, 2024

Time: 10:30 a.m.

TRANSFORMING TECH LANDSCAPE: INDIAN AND GLOBAL PERSPECTIVE

On October 7, 2024, BLITZ, the Computer Science Society of Keshav Mahavidyalaya, University of Delhi, organized a seminar on the topic "Transforming Tech Landscape: Global and Indian Perspective", featuring Ms. Nidhi Kathuria as the keynote speaker. Ms. Nidhi Kathuria, an alumnus of the batch 2000-2004, is a product and tech executive with twenty years of industry experience scaling products and teams in the fields of fintech, software engineering, and health tech. The aim of the seminar was to familiarize the students with the evolution of technology, covering the global tech landscape and focusing on India.



Commencing at 10:30 AM, the seminar was initiated by Prof. Kanupriya Goswami, Vice Principal, and Prof Priti Sehgal, Teacher-In-Charge, who welcomed the speaker by presenting a sapling as a token of appreciation. Priyanshi Jain, the President of BLITZ along with Kanishka Rai, the Secretary, also extended their greetings and began the



Seminar by introducing the speaker and highlighting her achievements. It was then followed by Isha Sharma and Aleesha Singh, Executives of the society, briefing about the events organized by BLITZ in the previous term. Subsequently, Priyanshi invited the speaker to begin the seminar.

She started off by introducing herself and answering the questions asked in the survey by the students. Then she delved into the topic by describing the tech evolution in the last 20 years with respect to communication, health, storage, climate change, etc. She continued by emphasizing the significance of technological advancements. Indian (Bengaluru, Hyderabad, Pune, etc.) and global (US, China, India, etc.) tech regions were also highlighted. Along with summarizing the major tech companies in India and globally, she also pointed out the major and emerging technologies and their investments and funding.



Honouring Ms. Nidhi Kathuria

She discussed how technology is helping with sustainability and climate change, focusing on green tech. Ms. Nidhi then dived deeper into the concepts of emerging technologies such as blockchain and Web3. She also introduced the crowd to some meditation techniques, making the session more interactive and helping us to be more mindful. Concluding the event, Prof. Richa Sharma, the Convenor of BLITZ, expressed her gratitude through a vote of thanks. The seminar proved to be a resounding success.

Anjali
B.Sc.(Hons.) Computer Science
2nd year

PROMPT PEN: PROMPT POETRY AND STORY CONTEST



Keshav Mahavidyalaya, University of Delhi

BLITZ
The Computer Science Society

Prompt Pen

Prompt poetry and story contest
30 November 2024

Open for all Courses!

Scan To Register

Certificates for Winners

Student co-ordinators:
Priyanshi Jain
96253 17445
Kanishka Rai
7017584908

Techniques Used: Emotion-Based Prompting, What-if technique and Reverse Chronology
Screenshots of Prompts Used:

Hey GPT, Let's frame a poem on the theme: The Silent City. I will give you prompts one by one, build the poem slowly using them.

That sounds like an exciting and creative way to build a poem! Let's start. Share your first prompt whenever you're ready, and we'll weave the verses of The Silent City step by step.

(Emotion Based) Imagine someone walking through a completely silent city, feeling very lonely. Why is the city so quiet, and how does it make them feel?

Beneath a hollow, silver sky,
The city's breath is still, a sigh,
No murmur, no echo, no fleeting sound,
Just lonely footprints on hollow ground.
The windows stare, blind and bare,
Shadows linger, whispers nowhere.
A clock never ticks, time stands still.

Why is the city quiet, so stark?
Perhaps it lost its beating heart.
A place where laughter once took flight,
Now shrouded in an endless night.
The silence swells, it presses tight,
A cloak of loneliness, endless blight.
The walker's soul, a fragile thread,
Wanders the city of the dead.

Change the second last paragraph starting with Why is the city quiet, so stark? to something like What if the empty buildings in the city could whisper secrets.

Prompt Poetry and Story Content

BLITZ, the Computer Science Society of Keshav Mahavidyalaya, successfully hosted an Online Prompt Engineering Challenge on 30th November 2024. This innovative event, centered around literature, aimed to blend creativity with structured prompting techniques. The challenge lasted for 24 hours and required individual participation, with submissions due by the end of the day. Participants were asked to create either a story (500 to 1000 words) or a poem (20 to 40 lines), utilizing at least two prompting techniques from a predefined list.

They were also required to specify the techniques used, the chosen theme, and provide a creative title for their submissions.

Participants employed a variety of prompting techniques, such as character-centric prompting, Setting-First Approach, and Reverse Chronology, to craft unique and innovative narratives. These techniques enable

them to experiment with complex storytelling methods and pair them with engaging themes like "Voices in the Shadows" and "Echoes of Yesterday." The event offered a wide range of creative themes for participants to explore, including "Dreamscapes and Nightmares," "The Secret Garden," and "Whispers in the Wind."

Submissions were evaluated based on four main criteria: the creative use of prompting techniques, adherence to the chosen theme, originality of interpretation, and the overall technical quality of the writing. These elements guided the evaluation process, ensuring that each submission was assessed comprehensively.

The event witnessed enthusiastic participation from students, highlighting the interdisciplinary appeal of prompt engineering.

This involvement fostered a culture of innovation, critical thinking, and creative expression, making the challenge a valuable and enriching experience for all participants. It not only helped students hone their creative writing skills but also encouraged intellectual growth and inclusivity within the college community. The challenge concluded successfully, leaving students inspired and eager for future initiatives, further strengthening BLITZ's reputation as a society that nurtures diverse talents.

Winners of the Challenge:

- *First Place: Saloni Nayyar B.Sc.(H) CS*
- *Second Place: Anusha Garg B.Sc.(H) CS*
- *Third Place: Tanya Khowal B.com. (H)*

Isha Sharma
B.Sc.(Hons.) Computer Science
2nd year

TECHIFY WITH BLITZ

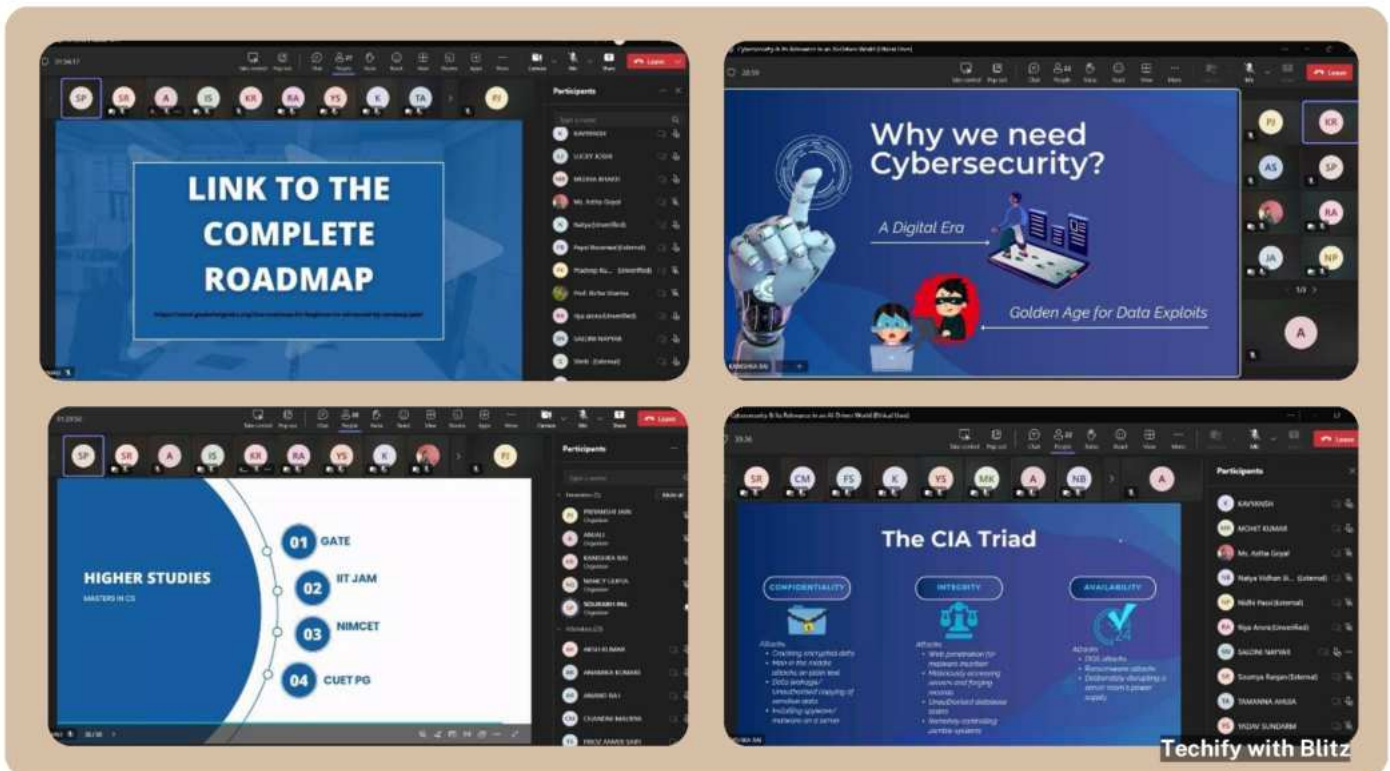


The series **“TECHIFY with BLITZ”** was successfully organized online by the Computer Science Society of the college. This initiative aimed to equip students with knowledge of emerging technologies and career-building strategies in the IT industry.

The first session, held on 7th February 2025, focused on Power BI, a powerful business intelligence tool. The webinar covered the fundamentals of Power BI, including data visualization, dashboard creation, and data analysis techniques. Aleesha, Senior Executive, along with Nancy Gupta, Treasurer, provided hands-on insights into how Power BI can be leveraged for data-driven decision making across various industries. They demonstrated data visualization techniques, explaining how to create and analyze reports using Power BI. Additionally, they highlighted key functionalities such as filters, visualizations, and fields.

The second session, titled **“Generative AI Use Cases”**, was hosted on **8th February 2025** by **Priyanshi Jain, President**, and **Sundaram Yadav, Senior Executive**. The webinar provided an insightful overview of advancements and applications in Generative AI. It covered fundamental topics such as the differences between **Traditional AI and Generative AI**, **Transformers**, and **Large Language Models (LLMs)**. The session also introduced **Pre-trained Models and Fine-tuning**, along with an explanation of GPT, its capabilities, and its impact. A key highlight was the discussion on real-world applications of Generative AI across industries, followed by an exploration of its future prospects. The webinar concluded with a **beginner's roadmap** for starting a journey in Generative AI, offering practical guidance and learning resources. With active participation and engaging discussions, the session proved highly informative for attendees looking to

understand and leverage AI in various domains.



On 13th February 2025, the third webinar, "Steps to Build a Career in IT," was organized and hosted by Sourabh Paul, Senior Executive, along with Anjali, Senior Executive, and Soumya Ranjan, Executive. The session provided a comprehensive roadmap for students aspiring to build a successful career in Information Technology (IT). It explored various IT career paths and opportunities in the industry, emphasizing the importance of Data Structures and Algorithms (DSA) as a fundamental skill for technical roles. The session also discussed the significance of hackathons in enhancing problem-solving abilities and networking with professionals. The speakers covered essential aspects such as securing internships, excelling in technical interviews, and preparing for competitive exams that open doors to prestigious opportunities. Additionally, the webinar highlighted the role of research papers and projects in demonstrating expertise and innovation. To support students in their learning journey, the session concluded with a curated list of resources. The webinar provided valuable guidance, equipping students with the knowledge and strategies needed to excel in the ever-evolving IT industry.

The final webinar, hosted by Kanishka Rai, Secretary, and Aleesha Singh, Senior Executive, took place on 15th February 2025. Titled "Cybersecurity and Its Relevance in an AI-Driven World," it provided a deep dive into the critical role of cybersecurity in today's digital landscape. The session began with an overview of why cybersecurity is essential, emphasizing the growing reliance on digital systems and the increasing risks associated with cyber threats. It explored the history of cyberattacks, showcasing real-world incidents that underscored the need for robust security measures. A key concept discussed was the CIA Triad (Confidentiality, Integrity, and Availability). The speakers elaborated on vulnerabilities and various cybersecurity threats, including malware, phishing, and ransomware, followed by an

Analysis of counterattacks and defense mechanisms to protect against breaches in the CIA Triad. The webinar concluded with a discussion on the relevance of cybersecurity in an AI-driven world, addressing the challenges and solutions in securing AI systems from adversarial attacks and data breaches. The session provided valuable

insights into modern cybersecurity practices, equipping participants with essential knowledge to navigate the evolving cyber landscape.

The “TECHIFY with BLITZ” webinar series was met with great enthusiasm and participation from students and professionals alike. Each session featured insightful discussions, real-world applications, and expert guidance.

The Computer Science Society received positive feedback, and the series successfully enhanced attendees' knowledge and awareness of modern technological advancements.

Isha Sharma
B.Sc.(Hons.) Computer Science
2nd year

CODE SPRINT

Event Overview

BLITZ, the Computer Science Society of Keshav Mahavidyalaya, successfully organized Code Sprint, a competitive coding event, on 24th February 2025 in Lab-2 at 1:30 PM. The competition aimed to challenge and enhance participants' problem-solving skills, fostering innovation and technical excellence. It was open to students from all courses, with participation in teams of two.

Structure and Format

The competition consisted of a 90-minute round where teams solved six algorithmic and logical problems in a programming language of their choice. The event followed strict guidelines, with no partial or negative marking, and mobile phones and internet usage were prohibited to maintain fairness. Plagiarism was strictly monitored. To help participants familiarize themselves with the format, a Practice Round was conducted on HackerRank at 3 PM on 23rd February 2025. This allowed teams to test their skills and adapt to the platform before the main event.

Execution and Participation

The competition witnessed enthusiastic participation as teams tackled complex coding problems, testing their logical thinking and efficiency in writing optimized code under time constraints. Registrations and IDs were verified before the event, ensuring smooth execution and strict adherence to rules.



Conclusion

Following the intense competition, the top-performing teams were recognized for their outstanding problem-solving abilities. A congratulatory message was shared to appreciate their enthusiasm and efforts. The competition saw a total of 20 participants. The first place was secured by Vishal and Vishal, both from III Year B.Sc (Hons) Computer Science. The second place was won by Daksh Sahni and Samriddhi, both from III Year B.Sc (Hons) Computer Science, while Deependra Kumar Singh and Nitish Thakur, also from III Year B.Sc (Hons) Computer Science, secured third place.

Isha Sharma
B.Sc.(Hons.) Computer Science
2nd year

HACKATHON

2024-2025



INTERNAL HACKATHON

(SMART INDIA HACKATHON 2024 PRELIMS)

Overview

The Internal Hackathon was conducted by Keshav Mahavidyalaya on September 4, 2024, as a pre-qualifier for the Smart India Hackathon (SIH) 2024. The event offered students the opportunity to showcase novel solutions for everyday problems, enhancing their problem-solving and technical skills while fostering teamwork and creativity.

Event Highlights:

The event featured teams of students from various departments collaborating to solve diverse problem statements across various domains, including Heritage & Culture, Agriculture, Food Tech & Rural Development, Smart Automation, Travel & Tourism, Space Technology, Smart Vehicles, and Miscellaneous. Participants developed innovative solutions guided by industry mentors or faculty advisors and presented their prototypes to a panel of judges. The evaluation criteria focused on innovation, feasibility, research depth, scalability, and social impact, ensuring a comprehensive assessment of each team's work.

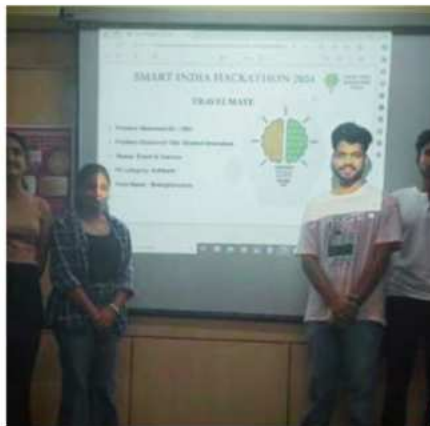
After intense competition and thorough evaluation by the judging panel, the team धरोहरDevs, led by Tushar, secured the first position for their outstanding innovation in Student Innovation based on Heritage and Culture. Team Solve-Ease, led by Adarsh Maurya, and Team DigiScholar, led by Ansh Juneja, claimed the second and third



positions, respectively, showcasing remarkable creativity and problem-solving skills.

All the selected teams were chosen to represent the college at the national event of SIH 2024, with special honours for ideas that showed a practical, scalable impact. The event encouraged creativity, collaboration, and technical excellence at the college.

Team Photos



Jury Details & Judges Information



Prof. Vinita Jindal
Professor
(Department of
Computer Science)



Dr. Sumit Aggarwal
Assistant Professor
(Department of
Computer Science)



Dr. Anjali Thukral
Associate Professor
(Department of
Computer Science)



Dr. Ashutosh Singh
Assistant Professor
(Department of
Computer Science)



Dr. Bhavna Gupta
Associate Professor
(Department of
Computer Science)



Dr. Panjabi Singh
Associate Professor
(Department of
Mathematics)



Prof. Neha Sharma
Professor
(Department of
Electronics)

WRITEUPS

***DISCOVER HOW THE METAVERSE
IS CHANGING OUR WORLD***



INTRODUCTION TO METAVERSE

The Metaverse is a digital realm in which virtual reality brings people together to work, socialize, and play through the use of digital avatars. It is a mix of video games, social media, and the Internet. However, it is a lot more realistic than these. Though the idea has been there for a century, its concepts have undergone a huge change nowadays with the continual improvement of technology and the change in the way things are done today. Virtual worlds like Second Life started to be produced in the 2000s and let users create avatars and interact with each other within a 3D world, which was still far from immersive. This was one of the initial forays into the metaverse, albeit only in the form of a credible setup. The metaverse became a reality with the rising development of high-speed internet, more powerful computers, and better VR technology. The metaverse started to become a reality with the entrance of large tech companies like Facebook, presently Meta, and Microsoft into the VR headset and digital space sector. Games like Minecraft and Roblox also played a key role in the development of the metaverse, where people could create and individuals could reach virtual realities. VR and AR have significantly improved the metaverse, changing it from something obscure to a subject of great interest. Wearing a VR headset and thus joining a virtual location, a user can even interact with others in real-time, exactly capturing the real-world interaction experience.



The metaverse is no finished product yet, but its future brings a welcome innovation. In the years to come, many will believe that the metaverse has been dominated by the work, education, and entertainment industries. Schools might arrange their Virtual Reality classes with or without a campus, businesses might convene their meetings through the metaverse, and friends will have a unique digital coffee date. Moreover, other limitations and considerations such as privacy issues, safety risks, and the technology requirements for the metaverse also exist, but with the development, the metaverse has gone from science fiction to reality.

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Divyansh
B.Sc.(Hons.) Computer Science
1st Year

मेटावर्स का विकास



परिचय :-

आज के आधुनिक युग में जहां संसार में मानव जाति प्रत्येक क्षेत्र में विकास की राह पर अग्रसर है, उन्हीं क्षेत्रों में से एक क्षेत्र है मेटावर्स जो पिछले कुछ समय में बहुत तेजी से विकसित हुआ है, और जिसके कारण मानव आधुनिकता के चरम पर पहुंचने वाला है।

आज हम इसी विषय को लेकर इसके विकास पर चर्चा करेंगे जिसमें इसका इतिहास इसमें हुए सुधार आने वाले समय में इसका भविष्य आदि हमारी चर्चा का विषय रहेंगे।

मेटावर्स का अर्थ :-

एक ऐसी दुनिया जहां आप भौतिक रूप से ना होकर भी वो सभी कार्य कर सके जो आप भौतिक रूप से करते हैं जैसे कि – खेलना, खरीदारी करना, आपस में बातें करना, खुद को एक वर्चुअल रूप में देखना आदि। मेटावर्स “मेटावर्स” दो शब्दों से मिलकर बना है Meta और Verse जिसमें Meta एक ग्रीक शब्द है जिसका मतलब ‘Beyond’ यानी ‘परे’ होता है जबकि Verse शब्द का अर्थ ब्रह्माण्ड (Universe) है।

यानी “ब्रह्मांड से परे” एक तरह से कहा जाए तो यह एक आभासी दुनिया है जो बिल्कुल असली दुनिया की तरह ही है पर इसमें हम शारीरिक रूप से तो अपनी चारदीवारी में रहेंगे लेकिन मानसिक रूप से एक Avatar (करैक्टर) की सहायता से उस वर्चुअल दुनिया में प्रवेश करेंगे।

मेटावर्स का पहला विचार

ऐसा तो नहीं है की ये सब अचानक से हो गया हो या मेटावर्स अचानक आ गया हो, इसके पीछे दशकों का समय लगा है।

“मेटावर्स” शब्द का जिक्र पहली बार 1992 में नील स्टीफेंस ने अपनी एक किताब में किया था और उन्होंने उसमें एक ऐसी काल्पनिक दुनिया की ही बात करी थी जिसमें सारी बाहर की दुनिया खत्म हो जाती है और लोग चारदीवारी में रहकर इस वर्चुअल रियलिटी में अपना जीवन व्यतीत करते हैं।

1995: “Active Worlds” नाम का पहला वर्चुअल प्लेटफॉर्म आया, जहां लोग 3D वर्ल्ड में घूम सकते थे।

1998: Google की शुरुआत हुई, जिससे इंटरनेट और डिजिटल दुनिया को तेजी मिली।

1999: “The Matrix” फिल्म आई, जिससे लोगों को वर्चुअल दुनिया और असली दुनिया के कनेक्शन पर सोचने पर मजबूर कर दिया।

मेटावर्स का अग्रिम विकास :

• गेमिंग और मेटावर्स की शुरुआत :-

21 वीं शताब्दी आते आते लोगो ने वर्चुअल दुनिया की कल्पना शुरू कर दिया था और इस क्षेत्र में अनेकों आविष्कार हो चुके थे।

वर्ष 2003 में “Second Life” नाम का गेम आया जिसमें लोग अपने डिजिटल अवतार बना सकते थे और घर खरीद सकते थे, बिजनेस कर सकते थे | इसको पहला प्रयोगिक(Practical) मेटावर्स कहा जा सकता है |

मेटावर्स और वर्चुअल दुनिया को लोगों के बीच लाने में सबसे सफल “Minecraft (2009)” और “GTA (1997)” का रहा जोकि आम लोगों के बीच बहुत लोकप्रिय थे |

• AR और VR टेक्नोलॉजी का विकास :-

2012 में “Oculus Rift” (VR हेडसेट) आये | जिसने वर्चुअल रियलिटी को लोकप्रिय बनाया | इसमें लोग अपने मनपसंद खेल और सिनेमा को इस तरह देख सकते थे जैसे वे खुद वहां उपस्थित हों।

2016 में “Pokemon Go” नाम का गेम आया जिसने AR(ऑगमेंटेड रियलिटी) को लोगों के बीच मशहूर कर दिया |

मेटावर्स का आधुनिक दौर :-

वर्तमान समय में मेटावर्स और अधिक मजबूत हो चुका है, जिसमें Facebook, WhatsApp, Instagram, Snapchat जैसे सोशल मीडिया प्लेटफॉर्म सबसे अधिक योगदान हैं |

NFTs (Non-Fungible Tokens) ने मेटावर्स में डिजिटल संपत्ति (जैसे वर्चुअल जमीन, कपड़े, आर्ट) खरीदने और बेचने का रास्ता भी खुलवा दिया है | अभी के समय में मेटावर्स को सबसे अधिक सहयोग AI से प्राप्त हो रहा है जिसमें चैट बोट्स जैसे-“Chat GPT, Deepseek, Meta AI” जैसे AI शामिल हैं | इन्हीं के कारण आज के समय में मेटावर्स हर क्षेत्र में आ चुका है चाहे वो शैक्षणिक, सैन्य, व्यापारिक, मनोरंजन या अन्य कोई भी क्षेत्र हो, इन सभी जगह मेटावर्स अपने पैर पसार रहा है |

भविष्य का मेटावर्स :-

वर्तमान परिस्थितियों के अनुसार आने वाले समय में मेटावर्स में बिल्कुल असली जैसा अनुभव होगा | जिसमें “Hologram, Full Body VR Suit, और Hyper Realistic Graphics” इसको और वास्तविक बना देंगे।

कार्यक्षेत्र में लोग मेटावर्स में वर्क फ्रॉम होम कर सकेंगे और अधिकांश उद्योगपति वर्चुअल स्टोर्स और बिजनेस बनाएंगे। आने वाले समय में क्रिप्टोग्राफी NFTs लोगों के लिए आय का प्रमुख साधन बन सकता है | जिसमें लोगों के लिए खरीदारी करना समान बेचना आम बात होगी |



Source: Google

निष्कर्ष:-

मेटावर्स का विकास एक वैज्ञानिक कल्पना से शुरू हुआ और अब वास्तविक बनता जा रहा है | यह अभी अपने शुरुआती दौर में है लेकिन आने वाले कुछ दशकों में ये हमारे जीवन का एक एहम हिस्सा बन सकती हैं | इसी कारण बड़े उद्योगपति भी इसकी ओर को अपना समय और धन लगा रहे हैं जैसे की “Mark Zuckerberg”, “Elon Musk”, “Jeff Bezos” आदि | क्या आप मेटावर्स में अपनी खुद की डिजिटल दुनिया बनाने के लिए तैयार हैं?

|| मेटावर्स का सफर जारी है ||

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संगणक विज्ञान के साथ
प्रथम वर्ष

ARTIFICIAL INTELLIGENCE IN METAVERSE-CREATING AN INTELLIGENT VIRTUAL ENVIRONMENT

Introduction

If there is any successor to the Internet, then it is the metaverse. It is a technology that provides us with a collective and persistent virtual space to interact, learn, and play. It has revolutionized the concept of visual technology in our day-to-day lives. The metaverse has the potential to grow businesses, industries, and human experiences.

It is strengthened by various evolving technologies like

- Artificial Intelligence (AI)
- Virtual Reality (VR)
- Augmented Reality (AR)
- Blockchain Technology
- Internet of Things (IoT)

In this article, let's have some interesting discussion on the use of artificial intelligence to strengthen the metaverse.



Source: Google

Relationship between AI and Metaverse

AI uses the technologies that are core desires of the Metaverse and are very useful in strengthening the features of the Metaverse. Both are modern and exponential technologies. Here are some aspects of their relationship:-

1. AI as a Foundation of Metaverse:

Metaverse is about creating a virtual environment, which requires interactions, creations, and dynamic characters, which are all driven by artificial intelligence. We can say that AI is the backbone of the Metaverse.

2. Personalization by AI:

We require high-quality visuals with a high variety of options for the personalisation of the metaverse. AI is evolving exponentially in this field and can give high-power visual strength to the metaverse.

3. Natural Interaction: Metaverse environments require highly precise gesture recognition and touch recognition for the user's experience. This requirement can be fulfilled by AI-driven algorithms.

4. Role in Security: As technology is evolving at a fast pace, in parallel, security and privacy threats are also emerging. To protect the virtual environment and confidential details, the metaverse needs a robust security system, which is possible through AI-driven algorithms.

Use cases of AI in Metaverse

AI and the Metaverse are both modern and useful technologies, having complex algorithms and a variety of functionalities. Their combined strength can be very useful for users. Let's see some aspects of their combined strength.

1. 24/7 support: Nowadays, we are seeing the use of AI chatbots, which are very helpful for users to get a prompt response to their queries. We can also embed this technology in the metaverse to provide 24/7 support to users.

2. Inclusivity: Metaverse can be more inclusive through AI-powered translations and speech recognition. Users from different regions of the world may need to interact with the metaverse. So with AI, the metaverse can be more inclusive.

3. Gaming: Gaming is very popular these days, which requires high-quality visuals, features, and recognition, which AI has been working on, so it can further strengthen the gaming platforms.

4. Spam Detection: Metaverse is a very complex environment, which is accessed by multi-users, so there are potential chances of spam in it. So, to resolve this problem, we can use AI-powered spam filters to get rid of spam.



Source: Pixabay

Risk and Challenges of AI in Metaverse

The integration of AI with the metaverse is very useful in providing the next level of user experiences, along with so many AI-powered features. But still, there are some risks and challenges to consider in this direction. Let's see some of them.

1. Data Privacy and Security: Integration of AI in the metaverse requires the sharing of personal information, behavioral patterns, and biometric recognition, which can be used for malpractices and can harm us.

2. Ethical Concern: Metaverse respects diversity without any behavioral biases in the virtual environment, but AI is a trained model, which can be biased by its training model. Also, AI-driven avatars and media can blur the line between virtuality and reality, which can potentially mislead the users.

3. Scalability: AI is a very vast and complex technology, so it is a very difficult and challenging task to ensure its accurate implementation. The main demand for scalability is a good network infrastructure, which can be highly expensive. Also, the vast virtual environment embedded with AI requires more robust governance and control.

Future of AI and Metaverse

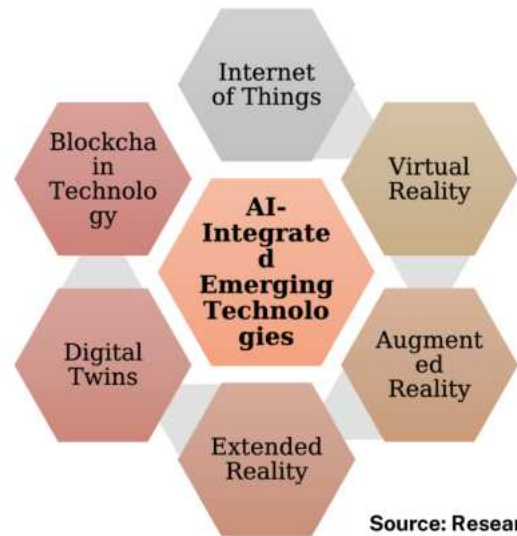
Till now, we have seen a lot of implementations of AI in the field of metaverse, and many of them were just dreams, but our experts were successful in achieving them. Many researches are going on in this direction, like:

- 1. 3D Object Rendering:** In which images are generated by 3D models using explicit designing features.
- 2. AIGC (Artificial Intelligence Generated:** Content generated by AI instead of humans
- 3. Blockchain and AI implementation:** Embedding blockchain with AI gets better security and compatibility features.
- 4. Intelligent NPCs:** AI characters in the virtual world, the same as humans in the physical world.

Developers of Metaverse are using AI engines like Llama 2, Runway, Claude 2, Midjourney, and Stable Diffusion.

It will be a great revolution because many tech giants like Facebook and Microsoft are investing heavily in this direction. According to the reports:

- Facebook has committed an investment of \$10 billion.
- Microsoft is planning for a record-breaking \$69 billion



Conclusion

With all the ongoing research and investment in this field, we can see the blurred image of a futuristic world which will be fully equipped with technologies of the metaverse and artificial intelligence. But we must also consider both the pros and cons of these technologies from every dimension and address them wisely for the betterment of society.

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NATURAL LANGUAGE PROCESSING (NLP) IN THE METAVERSE - ENABLING CONVERSATIONAL INTERFACES



Source: Gemini

The term metaverse refers to a loose collection of virtual worlds, normally in 3D form and generally centered around avatars with whom users identify and through which users interact in ways that can include economic and social interaction. One futuristic vision looks to an online universe in which individuals socialise, work, and play with or within immersive digital environments. It is here in this ever-increasingly digital world that there is great scope for new technologies to be utilized in narrowing the divide between man and machine. Of all these, Natural Language Processing(NLP) forms the core of the metaverse in making good communication possible.

The research field of NLP integrates computational linguistics with machine learning and deep learning models for language processing. It enables the machine to comprehend, interpret, and respond to human language for proper interaction

between the user and technology. This area is changing how users interact in virtual environments and improving the overall experience within the metaverse. The article examines the importance of natural language processing in metaverse recognition, particularly emphasizing chatbots, conversational interfaces, and virtual assistants.

Conversation Interfaces within Metaverse

The chat-oriented interface enables users to communicate with different digital interactions using natural language. In the metaverse, conversational interfaces are considered critical for devising experiences that are at once intuitive and immersive. They remove complicated commands and an interface that users do not recognize to allow users to engage with a virtual environment as they would with another person.

A chat interface can be an essential resource for users seeking to find products, resolve questions, or obtain personalized product suggestions within a virtual marketplace enriched by the metaverse. These interfaces promote greater engagement in the metaverse, making it accessible to individuals with varying levels of technical expertise. Fueled by natural language processing, conversational interfaces can accommodate various languages and dialects, promoting collaboration and overcoming obstacles in a range of fields.

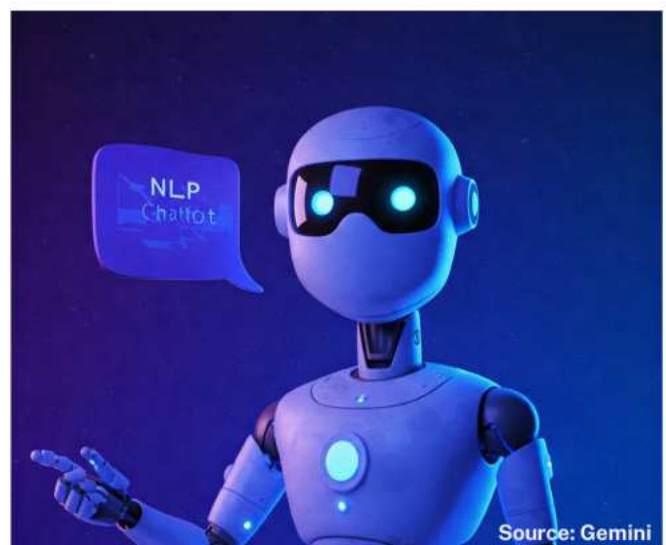
Chatbots in the Metaverse

Fueled by NLP technology, chatbots represent one of the latest innovations that have transformed user interactions in the metaverse. These AI-driven chat entities can involve users in conversations that mimic human interaction with almost instantaneous responses. Chatbots in a metaverse could be used for the following purposes -

- **Customer Support** - Numerous virtual storefronts on the metaverse use chatbots for customer inquiries and troubleshooting. Many of the chats are straightforward. For example, by considering measurements and the type of clothing preferred, a clothing store would recommend those that suit best.
- **Education and Training** - In virtual education environments, chatbots function as tutors by responding to inquiries, clarifying concepts, and assisting learners with interactive lessons. They enhance the learning experience by making it more personalized and engaging.

- **Entertainment** - The same chatbot can function as a companion or mentor in gaming and social applications, enhancing the feeling of immersion. For instance, it could tell a story, direct players through a virtual environment, and more.

NLP enables chatbots in the metaverse to comprehend context, identify emotions, and interact in a way that is natural and similar to human communication. This builds trust and enhances user satisfaction.



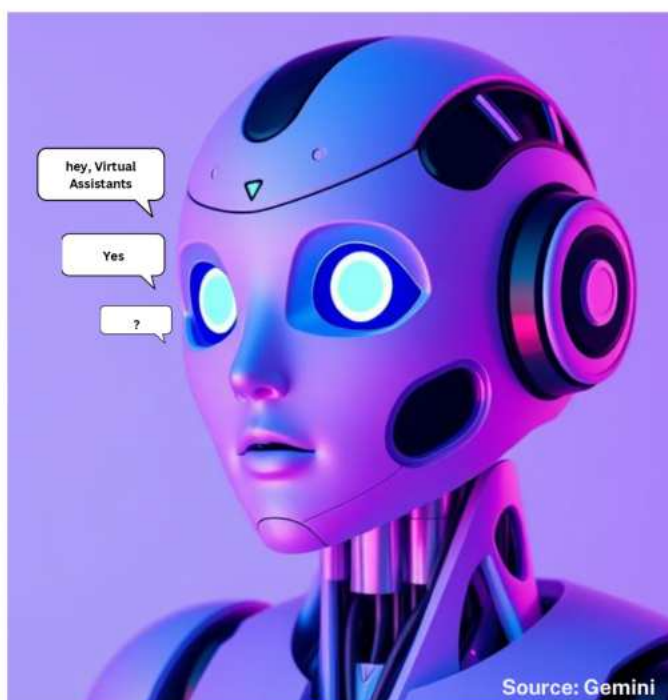
Virtual Assistants in Metaverse

Virtual assistants are AI-powered entities that carry out tasks or services for users. In the metaverse, virtual assistants will play the role of a personal guide-smoothing the interactions of the user and therefore making them more productive. The following are some key roles they will play -

- **Personalized experience** - Each user's interaction with Metaverse may be tailored differently by virtual assistants. This, in particular, can include aggregating events, communities, or activities most relevant to a user's best interest.

- **Automate** - From scheduling meetings to managing various other digital possessions of one's choice, virtual assistants automate tasks right through, for more meaningful application by users.
- **Health and Well-being** - In virtual wellness spaces, the Virtual Assistants can monitor the mental and physical health status of the users, or they can guide the user in some mindfulness exercises, which can include an exercise routine.
- **Collaboration and Workspaces** - In professional environments, virtual assistants enhance team cooperation by overseeing workflows, documenting notes during online meetings, and arranging files.

With Natural Language Processing (NLP), virtual assistants will be able to understand user commands and anticipate further needs to provide proactive assistance. They will help ensure that the metaverse is seamless, effective, and enjoyable.



Challenges and Future Directions



Even with progress made, there are still multiple obstacles to realizing seamless NLP.

- **Context Understanding** - To function effectively, any NLP system needs to correctly grasp context in the ever-evolving virtual environments. A misinterpretation of what the user intends might result in greater annoyance.
- **Security and Privacy** - The handling of sensitive user data in metaverses raises privacy concerns and questions about the protection of user information, highlighting the need for NLP systems to adopt sufficient security measures.
- **Resource Intensity** - A lot of NLP models are demanding regarding computing resources, which makes it difficult to apply them in real-time in the metaverse.
- **Bias and Fairness** - These NLP models

can adopt biases present in their training data, which may result in responses that are biased or unsuitable. This underscores the necessity of creating models that are more inclusive by removing any existing biases.

Going forward, overcoming challenges in the field of NLP includes transformer models such as GPT and BERT. The ability of such models to understand the context, emotion, and nuance of language will continue to open more and more sophisticated applications in the metaverse. The combination of Natural Language Processing (NLP) with technologies like Augmented Reality (AR), Virtual Reality (VR), and blockchain is expected to create several new aspects that will improve the metaverse experience.

Conclusion

The processing of natural language (NLP) plays an important role in the metaverse, such as conversational interfaces, chatbots, and virtual assistants. These technologies significantly improve user interactions in the virtual environment, fostering a more intuitive and immersive experience. Such connections, which integrate human language with machine comprehension, improve accessibility, promote user engagement, and create tailored experience

for individuals within the metaverse. Nonetheless, the advancement of NLP will continue within the metaverse, likely altering how we collaborate and share information within these virtual environments, and influencing the future of online spaces through continual evolution and progress. Technology paves the path in this remarkable journey into the metaverse.

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Source: DeepAI
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5G AND EDGE COMPUTING IN THE METAVERSE: ENABLING REAL-TIME INTERACTIONS

The innovation of metaverses combines real and virtual elements to transform human relationships between professionals and social groups while enhancing entertainment interactions. Real-time, fully immersive encounters in digital platforms require high-rate data delivery and low response delay. The future of digital interactions takes shape through a combination of 5G technology and edge computing as the foundation for realizing this vision.

Understanding 5G and Edge Computing

5G (Fifth-Generation Wireless Technology): Fast and highly efficient mobile network evolution known as 5G enables lightning-speed data exchanges between multiple connected devices while also reducing communication response time. This solution was built specifically to handle the heavy data usage needed for VR.



Virtual reality and Augmented reality devices, together with Internet of Things (IoT) applications, create a combination of high bandwidth capacity and low latency features from 5G networks, enabling immediate user interaction functions in virtual space.

Edge Computing: Local servers, along with devices, serve as processing facilities for edge computing because they host data local to their sources instead of depending on distant cloud networks. The distribution of computing tasks to local servers produces faster responses while protecting data better and shortening communication delays. The metaverse demands edge computing to deliver operational processing and ultrafast communication that enables seamless real-time user interactions for highly realistic metaverse experiences.

Applications in the Metaverse

1. Real-Time Communication: Users simultaneously participate in collective virtual spaces while using avatars to represent themselves in the metaverse. The ability to depict authentic interactions depends on network speeds that deliver low latency, together with high-speed connectivity. 5G and edge computing work together to provide instant data transmission, which supports authentic voice and video interaction.

2. Gaming: The requirements of metaverse multiplayer gaming necessitate synchronized environments that permit players to experience instant interactions in real time. 5G's high bandwidth together with edge computing's local data processing capabilities provide a smooth gameplay without interruptions in complex simulations.

3. Simulating and Training: The Metaverse is used more in various simulation training, including health and military health care. For example, a surgeon who practices in a virtual operating room or pilots who use VR aviation simulation rely on real-time response, where high accuracy can be achieved by integrating Edge processing.

The benefits of 5G and Edge Computing in Metaverse

- **Low Hidden Time:** Smooth and instant interactions .



- **High Bandwidth:** Supports applications that require a lot of information, such as 4K/8K VR streaming.
- **Improvement of User Experience:** Providing a realistic and immersive environment.
- **Adjustable Ability:** Support millions of users at the same time.
- **Updated Security:** Detailed data processing inside the device reduces the risk of data violations.

Disadvantages

- 1. Infrastructure Costs:** Using 5G networks and Edge processing infrastructure requires a lot of investment.
- 2. Energy Usage:** Both technologies require high energy use, which raises sustainable concerns.



3. Information Privacy: Although Edge Computing will increase security by processing data within the machine but the management and protection of an enormous amount of data in the Metaverse is still a challenge.

4. Digital Separation: Limited 5G and Edge Computing in rural areas or underdeveloped areas can expand digital divisions. The future of 5G and Edge Computing in Metaverse. As the 5G network expands and Edge processing becomes more advanced metaverse will access and indulge innovations such as holographic meetings. The realistic virtual environment is too realistic, and the avatar is driven by AI, depending on this technology. In addition, various industries such as health care and entertainment are ready to take advantage of the metaverse for interactive experiences and changes.

Gathering

5G and Edge processing are the main axis of the metaverse, allowing real-time response and a smooth experience, which determines this digital boundary. Although the challenges still exist, the potential for the revolution of game communication and simulation cannot be denied. As these technologies developed, they not only improve the Metaverse, but also adjust our lifestyle and connection in the digital age as well.

The combination of technology and imagination is just the beginning. Welcome to the future where the line between reality and virtual elements is still blurred.

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METaverse & CYBERSECURITY

PROTECTING VIRTUAL WORLD FROM CYBER THREATS



Imagine a big universe where you can let your imagination come true in real life! You could be a superhero who becomes invisible to monsters in a futuristic city, a famous actor showcasing your talent in a 3D movie theatre, or anything you want to happen in real life.

That's the kind of power Metaverse is storing.

It's a place where you can make new friends, play online fun games with them, experience a world of your kind, and even buy virtual land and build your amazing creations. It sounds interesting, but it's all like the internet with some modifications and your thoughts together, gaining a platform to become an amazing creation you can experience on your own. Isn't that exciting? But with these super exciting and amazing features, the metaverse also holds a world of cybercrimes and cyber threats.

The Threat Full Scenario

In the metaverse, extensive possible cyber

attacks are functioning on the principles of immersion and connection. Some of them include :-

- **Malware Attacks:** The metaverse, as well as its hardware, applications, and software tools, can be exposed to malicious codes in the form of viruses, worms, and Trojans. This can halt service delivery, steal information, and damage users' experiences.
- **Ransomware Attacks:** Cybercrooks can use ransomware to lock or hold virtual assets hostage and ask for ransom for their release, affecting individuals and business organisations operating within the metaverse.
- **Network Congestion:** The attack floods the network infrastructure, causing slowdown and latency in the user experience, which results in a delay or breakdown of the performance of the metaverse.



- **Phishing and Scams:** Hackers make use of social engineering. This includes phishing emails and advertisements, which trick users into revealing sensitive data or downloading malicious software.
- **Unregulated Use of Virtual Assets:** Replication and distribution of digital artwork, clothing, and experiences can lead to financial loss for the creatives and the developers.
- **Copyright Infringement:** Both the user and the operator are liable in court for using unlicensed and unreferenced copyrighted material.

Fortification of Digital Frontier: Solutions of Cybersecurity

Addressing such a highly complex cybersecurity challenge for the metaverse will require technological, organisational, and human facets.

1. Cybersecurity Awareness Training: Conducting awareness training for users in comprehensive cybersecurity will educate them about common threats and overall online safety best practices, and enable them to recognise and respond to suspicious activity.

2. Online Behaviour: Responsible behaviour online is encouraged through such practices as avoiding revelations of personal details, use of complex passwords, and avoiding opening of unknown messages in inboxes to reduce cyber attacks against users.

3. AI-based Security Systems: Artificial Intelligence and ML algorithms would back up this kind of system by making an improved mechanism that detects a greater threat by scrutinizing more bits of information and could further identify an anomaly or predict exactly where the attack may be taking place.

4. Culture of Cybersecurity: This builds collaboration among metaverse community users, developers, and security experts through the information shared concerning enhancing cyber safety and protection.

Framework for a secure metaverse

When creating a metaverse, there's always a need for high security. With this, we should also have a framework for effective and smooth sharing of information.



“Teamwork is the Key” so we need everybody, from those who research to the developer, security, and lawmakers, working together to figure out the metaverse's security problems and solve them. Information sharing is super crucial.

- **Common Rules:** Imagine if all sites had a login system. A mess, right? There is a need for common rules or standards to ensure how things go in the metaverse, especially regarding security. So, various parts of the metaverse could communicate with ease.
- **Think Ethics:** We should build the metaverse with ethics in mind right from the start, like adding user privacy, data protection, and doing good for the world. This fosters a trusted place in the metaverse.
- **Continuous monitoring and adaptation:** The threat landscape should be continuously monitored, and security measures should be followed robustly. So, new technologies and best practices will be applied, which will ensure that the metaverse is secure and resilient.



Conclusion

This is the transformative potential of the metaverse, in which great cybersecurity challenges are presented. Moreover, to successfully navigate this digital frontier with confidence and security, we need to implement robust security measures, foster collaboration, and promote user education. Further research, innovation, and adaptation will be important for the nascent technology in the developing future as threats continue to emerge and require the safeguarding of integrity.

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BUILDING A CAREER IN THE METAVERSE : OPPORTUNITIES & CHALLENGES

The metaverse is a collaborative, shared virtual world that is transforming how people connect, work, and gain a new way of life. It has offered immersive blockchain, augmented reality, virtual reality, and AI experiences in one frame. Perhaps, beyond the majestic prospects of employment, this digital shift will pose potential conundrums to be conquered by any sector participant.

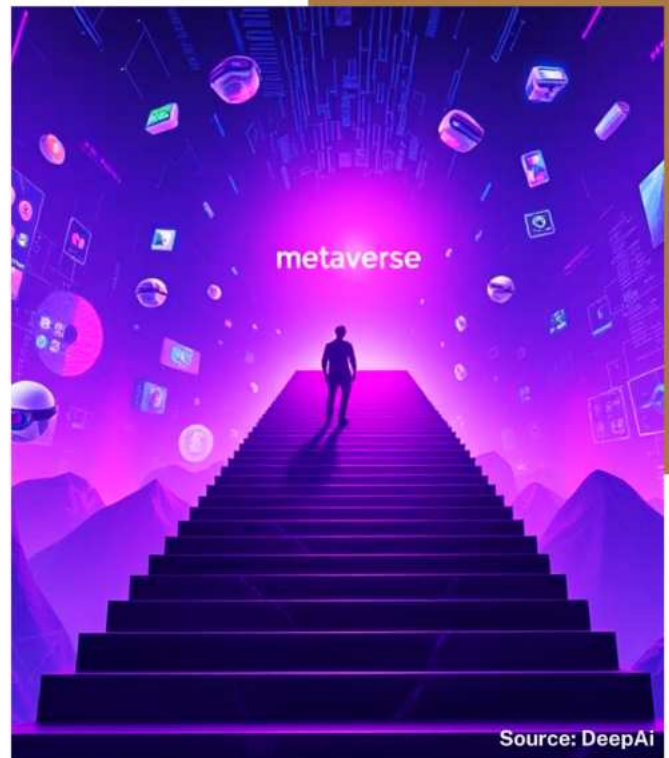
The Metaverse: Opportunities

The metaverse ecosystem will bring opportunities in genetics, real estate, healthcare, video gaming, and entertainment. The following are some of the most attractive career development options.

1. Virtual Environment Creation

Top-notch developers will be employed to design and build metaverse environments and including:

- **3D modelling and design:** The skill to create immersive environments with Unreal Engine, Blender, and Unity.
- **VR/AR Development:** Create an experience involving a VR headset and augmented reality applications to experience greater interactivity.



- **Blockchain Integration:** Building decentralized platforms with blockchain technology, which includes NFT assets and virtual economies.

2. Marketing and Content Creation

As mainstream brands are beginning to manifest themselves in the metaverse, there is indeed a steadier demand for digital storytellers and marketers:

- **Virtual Influencers:** These are avatars that will now pitch products and services in virtual spaces.
- **Hosting Events:** Organising and overseeing virtual events, concerts, and exhibitions.
- **Advertising in the Metaverse:** This type of advertising may be targeted towards the virtual environment.

3. Entertainment and Gaming

The gaming industry, still at the forefront of the metaverse, includes the following career opportunities:

- Game development: The construction of multiplayer metaverse-integrated games and e-sports trains people to lead or participate.
- Music and art: The organisation of virtual concerts and interactive art galleries is just a few examples.

4. Instruction and Practicing

New learning and training opportunities in the metaverse allow learners the following:

- e-learning Platforms: Actively engaging resources for teaching.
- Corporate Training: Learning from virtual scenarios depicting real-world situations.
- Virtual Tutoring: Skills development, such as language, arts, and computers, in particular, interactive environments.

5. Medical Care

Far-reaching transformation is occurring in the realm of health within the metaverse.

- Telemedicine: VR-based consultation can occur within a real-world setting.
- Therapeutic VR: dispensing virtual reality to treat emotional and physical health problems.
- Medical education: surgical practice via VR training simulation.

6. Virtual Economies and Finance

The virtual world has indeed thrived on sound economies like the management of cryptocurrency and NFT trading (an economic exchange that is more of digital commodities, eg, collectables and artworks). Virtual real estate deals in trading and selling off real estate once it is built on and bought.

Challenges in Developing a Career in the Metaverse



However, despite the major benefits that the metaverse brings along in terms of opportunities for careers, the following hurdles are also possible along the way:

1. Skill Development

Multidisciplinary knowledge jobs in the Metaverse frequently require a combination of blockchain, 3D design, and programming. The steep learning curve having extensive technologies in the metaverse will require a steep learning curve for mastering tools such as C-Bitcoin wallets, augmented reality tools, and head-mounted displays.

2. Sources and Availability

Technological barriers and a lack of choice of modern technology make the availability of expensive quality VR/AR devices and swift internet connections harder and cause the social divide.

3. Investment and Speculation

The constant changes in cryptocurrencies

raise their worth in virtual economies under NFTs and ads call for such positions in this metaverse, from freelancing-based to project-based, that may become a series of unpredictable incomes.

4. Ethics and Legalities

The absence of formal legal frameworks might seem a disadvantage, but it offers the perfect opportunities for civil claims. However, the platforms created should consider aspects of abuse and harassment in real life associated with a virtual identity.

5. Social Acceptance

It is more of a cynical approach where this initiative is backed basically by those who feel that the metaverse is a speculative ocean; therefore, risking a job is not a good decision to make in changing careers.

How to Get a Flying Start in Your Career in the Metaverse

It appears that successful professionals in the metaverse who can step out of their comfort zones can adapt more easily compared to the vast majority; most importantly, they are knowledgeable about the emerging market's strengths and weaknesses. Here is the very first tactic you can learn to achieve this.

1. Building Skill Sets

- Learn programming languages C#, Python, and Solidity.
- Familiarize yourself with software like Unity, Unreal Engine, and Adobe Creative Suite.
- Learn cryptocurrency, smart contracts, and decentralized systems to gain knowledge in blockchain.

2. Staying Updated

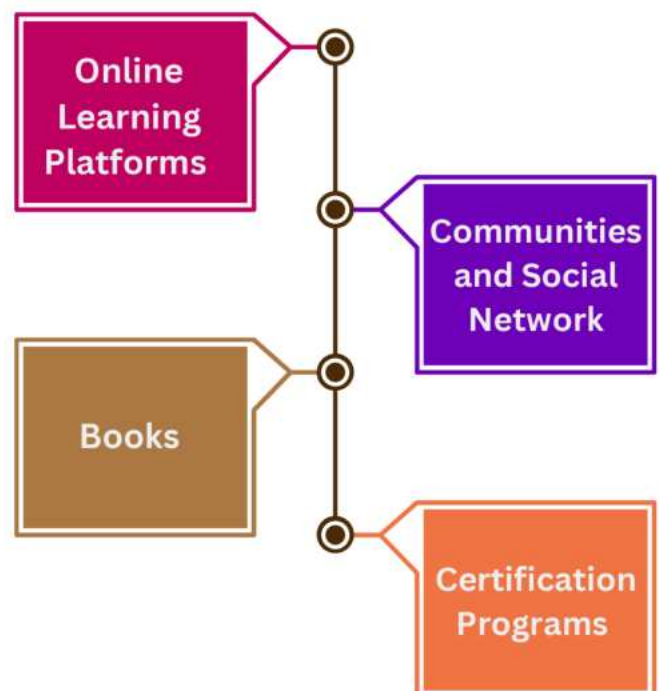
- Attend industry magazines, webinars, and blogs to stay abreast of developments in the metaverse.
- Join Reddit, Discord, and LinkedIn communities.

3. Experience

- Take part in online competitions and hackathons to get some hands-on practical experience.
- Contribute to open-source projects or freelance in fields applicable to the metaverse.
- Work as an intern in companies dealing with VR/AR or blockchain.

Learning & Self-Development Resources

With this little list, you will be able to start or grow into your metaverse career:



Credit: Lipika

1. Online Learning Platforms

- Coursera offers courses on game development, blockchain, and AR/VR.

- You will find inexpensive courses on Udemy about how to utilize Unity and Unreal Engine for creating NFTs.
- edX offers online courses about VR and artificial intelligence from some of the world's leading universities.

2. Communities and Social Network

- Join LinkedIn groups for professionals involved in the development of VR and the metaverse.
- . Join a Discord server or community, such as the 'VR/AR Developers' group
- Join Metaverse, VR, and gaming subreddits.

3. Books

- The book "The Infinite Retina" by Robert Scoble and Irena Cronin looks at how the metaverse is changing a variety of sectors.
- Another early work that was instrumental in the evolution of the concept of the metaverse is Neal Stephenson's "Snow Crash".
- Matthew Ball's "Metaverse: And How It Will Revolutionise Everything" offers an in-depth explanation of the topic relating to the metaverse.

4. Certification Programs

- Professional Metaverse Specialist: Certified according to blockchain and metaverse principles.
- Meta's Certification in AR and VR: Learn how to create VR and AR content using Meta's tools and platforms.

In conclusion, the metaverse offers a diverse and big platform to learn, explore, and innovate something extraordinary in technology. It invites professionals from various backgrounds to work together in a

real collaborative learning environment to create, design, develop, and transform reality. However, with the opportunities, there are respective risks due to the uncertainty, which might step back some people from fully investing in this transformation. But for those who want to learn and build skills irrespective of the hardship, this platform serves all an alternative.

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GAMING IN THE METAVERSE: WHAT'S NEXT FOR THE INDUSTRY



We are the generation that has seen the drastic evolution in the gaming industry from snake games on Nokia to games like GTA. Nowadays, the games are highly animated and multi-functional, which can be felt just as real. But what if I say it is not the end of evolution but a starting? Yes, it seems possible soon with the help of the metaverse. Metaverse can open new doors for gamers in which they can play the game not only from the outside but also from inside the game. In this article, we will discuss some critical developments of the metaverse in the gaming industry.

The Metaverse: A New Frontier

Metaverse can be described as the overall virtual space that combines the physical and digital worlds, like some huge universe where gamers can interact with each other through creating or even exploring within their world. Metaverse gaming is supposed to come together with an immersive game experience throughout

2025. For instance, you have just joined another game using your identity and have your assets attached to your identity. Thus, this connected world will result in richer experiences when switching between different genres and environments.

Key Features of Metaverse Gaming

- **Immersive Experiences:** The experiences that the metaverse provides are quite similar to reality, VR, and AR will advance to a level where games take on increasingly lifelike quality. Players can enter and walk through almost hyper-realistic worlds that respond to their actions in real-time.
- **Social Interaction:** The metaverse will redefine how we socialize in games, as socializing is one of the important aspects for gamers. It will provide a space for gamers to live, interact, and play with real-time communication with other players.



- **User-Generated Content:** One of the exciting features of a metaverse in gaming is that it empowers gamers to reshape their environment according to them. Players can use various tools for designing their avatars and creating different worlds. They can also organize meetups in their world and participate in the events organized by other users.

Economic Opportunities

The metaverse's growth impacts new economic models. It allows the users to buy, sell, and trade the actual ownership of digital assets using non-fungible tokens (NFTs) and blockchain technology.

Blockchain-based games are increasingly adopting the play-to-earn approach for more engagement. Players who finish tasks or produce content can win cryptocurrency rewards or other prizes. In addition to encouraging participation, this approach enables gamers to monetize their pastime.

Technological Advancements

Developments in technology have redesigned the existing gaming experiences for a more engaging and efficient platform for users. Let's see the impacts of some of them:

1. Cloud Gaming: Cloud gaming allows players to access games on any device without necessarily having the most modern hardware. For instance, Xbox Cloud gaming helps gamers enjoy AAA titles on all devices, from smartphones to tablets. As a result, people can join the gaming community without much investment. This not only reduces the costs of heavy hardware but all provides instant access to the players to continue their gaming experience.

2. Integration of AI: AI plays a big role in transforming how games are developed and played. Features like Intelligent NPCs(Non-Player Characters) make each game more dynamic and fresh for players. It will respond to each player's strategies and also personalize experiences for each player to make every game unique.

3. 5-G Connections: High-speed connections with ultra-low latency allow players a seamless experience of gameplay on mobile devices. It provides constant support to the system for an immersive and engaging experience in the game.

The Rise of eSports

eSports is expanding at an exponential rate in the gaming industry due to the rapid advancements in technologies and the widespread reach of the internet.

According to a report, competitive gaming will likely be more popular than ever by



2025. Games like League of Legends, Fortnite, and Valorant have helped to generate a massive audience base and thus the emerging popularity. It is drawing millions of spectators from all around the world. Beyond entertainment, esports is also influencing education and social interactions. Universities now offer scholarships for gamers or communities to promote professional gaming.

Community Engagement

Community involvement will become increasingly important as eSports gain popularity. During tournaments, fans can anticipate more engaging experiences, such as virtual player meet-and-greets and behind-the-scenes material that puts them in closer proximity to their preferred teams.

Challenges Ahead

Although metaverse gaming appears to have a bright future. There are some obstacles to take into account:

- **Security and Privacy:** Strong security measures must be given top priority by developers to shield users from fraud and hackers to save the time and money of both the users and the company.
- **Digital Divide:** Not all people have equal access to high-speed internet and cutting-edge technology, which will be required for Metaverse-based video games. So, it becomes important for the company to bring a platform that will be accessible to a larger user base.
- **Control:** It is really important for developers and the company to carefully manage digital currencies and asset ownership to maintain compliance and promote creativity.



Conclusion

Metaverse surely brings a whole new world for gamers that is filled with creativity, excitement, and fun. As the technology continues to advance, it will be able to transform the complete experience of a gamer from an online platform to a real-world gaming platform. However, it needs to overcome security, ethical, and other technology-related issues to bring this gaming zone to a wider user audience. So, for this new gaming era to embrace change and innovation will be important for both the developers and players as they step into new unknown territories in the metaverse.

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METaverse AND EDUCATION

Metaverse is expanding to almost every sector and is undergoing a transformational transition in its implementation. A combination of AR (Augmented Reality), VR (Virtual Reality), AI (Artificial Intelligence), and many other technologies has opened a new door for the education industry. After the global coronavirus pandemic in 2020, educators and students were forced to distance education, which sparked the opportunities for the metaverse in education. Metaverse provides a new interactive, fun, and engaging learning environment for students to understand and learn at their own pace.

Unlike traditional ways of learning and education through books, the metaverse has a completely different landscape for students. Let's see how Metaverse provides remote learning experiences:-

- Students can enter a metaverse-created educational environment using wearable devices that are accessible at any time and place, despite geographical distance, through their customized digital identities called Avatars.
- Metaverse offers teachers/ educators and peers in two types-
 - Avatar of teachers and peers, which mimics the real ones and increases emotional engagement, collaboration, and presence of others as if they were in the same physical room.



- Intelligent Non-Player Character (NPC) Teachers and Peers, who are AI-powered identities and behave like humans to serve as supplementary teachers or peers in a virtual classroom. These provide personalized assistance to students and offer them feedback to address any issues. Thus, they act as 24/7 support to students, unlike traditional educational methods.

In this way, the metaverse will provide a customized learning environment to each student according to their requirements. Some also include games, like achievements and rewards, to motivate the students to learn more and develop their skills.

- The main key feature of metaverse education is visualization. Students can learn the concepts in a simulated but real-like 3-D, VR, and AR-designed environment, giving them an interactive experience and foundational knowledge.

According to a study by Meta at Morehouse College in Atlanta, students who learned in an AR-designed virtual lab of chemistry scored higher than those who had studied in person or online because the metaverse gives students an immersive experience to explore on their own and understand the abstract idea of the concept. Unlike the traditional way of learning, the environment created by the metaverse focuses on developing higher-order skills like creation and evaluation in students rather than just remembering and understanding the concept. This develops the creativity, critical thinking, and problem-solving ability of students for their whole lives.

- Metaverse focuses on analyzing the students' activities, participation, and overall progress to measure their growth rather than just focusing on the scores or results. It encourages students to learn according to their capabilities and provides a personalized path for their overall development.

This interactive and engaging space for education boosts the active participation of students and builds a deeper understanding of knowledge for further development.

Applications of Metaverse in Education

- **Virtual Field Trips:** Students can explore any geographical place in a virtual environment with realistic simulations and 3-D views. For example, Students can walk on the moon's surface by staying in their classroom only. Google has also released a VR(Virtual Reality) platform called Google Art and Culture Expeditions, which gives virtual trips to more than 100 places for teaching students.

This allows students to understand easily by putting themselves in a real scenario using VR headsets and reducing physical field expenses.

- **Collaborative Learning Environment:** It provides a space where students can interact with their teachers and other students in a discussion or work together on projects in a team. Microsoft Mesh for Teams and Virbela give a platform for remote group participation and events using avatars and other virtual tools.
- **Language Learning:** It includes a language practice environment where learners can interact with NPCs, which helps them to practice a language naturally. They provide interactive conversations during learning and promote speaking like native speakers. Platforms like Mondly and Immerse



Source: ChatGPT

provide these Metaverse-based immersive, engaging, and fun spaces to master a language in the easiest way possible.

- **Gamified Learning:** It integrates education and games into a fun and engaging learning environment by incorporating gamified elements like quizzes, assessments, virtual leaderboards, badges, and achievements/ progress levels to provide an effective education platform. These virtual wins motivate the students to grow and excel.
- **Skills Training Simulations:** These simulations consist of a professional training environment where students can learn in real scenarios, like medical students performing a surgical procedure without risking anyone's life, or engineering students can design or test prototypes before physical machinery implementation. These simulations also provide real-time feedback according to the performance to understand where they are lacking and improve their skill.

PrecisionOS and Osso VR provide surgical training to medical trainees to help them assess themselves and excel in their field.

- **Inclusive Education:** This provides an opportunity to access, participate, and learn like everyone, all in a classroom, regardless of their disabilities and differences. It encourages students with disabilities to learn in a personalized environment designed according to their requirements. Some VR tools have sensory experiences for visually or hearing-impaired students.

Challenges to Incorporate Metaverse in Education

- **High Cost:** Metaverse technologies require high investment for VR headsets, high-quality displays, content licenses, and designing avatars with a continuous high-speed internet connection. So, for now, it becomes difficult for each institution to put in such large amounts.
- **Privacy and Security:** Metaverse consumes huge amounts of user data, including their biometric information and emotional thoughts. So, it becomes a challenging task to ensure the privacy of users and protect them from any attack while maintaining the utility of the platform.
- **Inadequate Access and Digital Literacy:** Due to the different economic backgrounds of students and teachers, many are not able to access this technology, and they should be trained effectively about the use of metaverse tools.



Conclusion

Metaverse in Education has undoubtedly immense potential, and it could bring a new revolution for students to learn, experience, and explore more effectively. However, overcoming challenges and preserving security and ethical issues is an essential part of the process of bringing this development to all educational institutions. It demands a collaborative step of tech experts, the government, and private institute owners to work together and bring a more accessible, affordable, and engaging platform to learn for a brighter future for all.

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THE FUTURE OF SHOPPING: HOW THE METAVERSE IS REVOLUTIONIZING RETAIL AND E-COMMERCE



Source: Imagine Art

The shopping experience has evolved significantly over the decades, from physical stores to online stores. Due to the ongoing advancements in technology, a new domain in retail and e-commerce is coming up, the metaverse. In this digital world, where users engage in a virtual environment in the form of avatars, it assures us of changing our shopping experiences, unlike what we have seen.

What is the Metaverse?

The metaverse is a shared virtual realm that combines virtual reality, augmented reality, and the Internet. It supports real-time interaction via avatars, allowing for immersive experiences such as gaming, shopping, socializing, and working. By combining the digital and physical worlds, it provides interconnected ecosystems rich with virtual commodities, hybrid realities, and limitless chances for exploration and

connection.

Evolving Retail & Online Shopping

Metaverse has sparked a revolution in the retail and e-commerce industries. Here's how:

1. Provide an appealing retail experience

Strolling through online stores where you may browse things, try them on virtually, and even receive recommendations. In the metaverse, the experience of shopping remains what it is like in the physical world. Virtual storefronts and fitting spaces improved by AR and VR allow clients to see and experience products as if they were genuine. This increases the reliability, particularly for clothing and products. For example, Nike has established a virtual domain within Roblox as Nikeland, which allows the users to try on Nike gear and



Source: iStock

footwear on their avatars. This altogether helps customers to engage with articles in a gamified setting.

2. Extreme Personalization

With AI's help and data analytics integration, the metaverse can give us personalised services that can be altered by the consumer's past purchases and ongoing preferences, giving a particularly exclusive requirement to the consumer. The Avatars or the human beings of the metaverse replicate a similar physical appearance of the user, giving better and a real world real-world-like recommendations that can be altered by the consumer's past purchases and the ongoing preferences, giving a particularly exclusive requirement to the consumer. The Avatars or the human beings of the metaverse replicate a similar physical appearance of the user, giving a better and a real-world-like experience to the user on how the accessories will look and fit them. One of its examples is Sephora's AR Mirror, which is an AR tool that enables customers to try beauty products such as foundation, lipstick, and many more in real time. It is available on the Sephora app, website, and in-store smart mirrors.

3. Improved Social Shopping

Shopping has always been a communal activity, and the metaverse improves it. Friends can connect to shop online, share ideas, and participate in special events. The seller can develop the launch of the products, fashion shows, and publicity, all virtually, to develop an exclusive community for their brand. For example, Snapchat created AR shopping lenses, in which friends can wear and try on multiple things, such as apparel, makeup, and much more in the virtual realm, and share them among their friends or stories.

4. The Digital Collectibles

NFT collectibles have changed the digital possession, and the metaverse has accelerated this transformation by the addition of virtual items. Usually, brands now create their limited-edition collectibles offering much of real-world services, virtual experiences, and exclusive access. This drives up a new age for interactive shopping with the fusion of both digital and physical commerce that elevates the



Source: Imagine Art



customer shopping engagement, giving them the opportunity to demonstrate and also wear the NFT-based stuff in the metaverse. Athleisure giant Nike purchased a digital and sneaker brand, RTFKT, to create their own sneakers and apparel as NFTs virtually. These digital things can be worn by avatars in the metaverse and also be released as physical product launches in the real world, giving much of a real-world experience.

Difficulties & Factors to consider

Although the metaverse presents significant opportunities, it also comes with obstacles.

1. Restrictions due to Technology

To be widely adopted, the metaverse requires progress in technology, including VR headsets and AR glasses, and of course, a stable internet connection. Initially, costly expenses and limited access may impede its progress.

2. Digital Inequality

Everyone does not have the required number of resources of technology to use the metaverse. Bringing down this inequality will be beneficial for ensuring the platform has an even userbase.

3. Security and Confidentiality

Whenever collecting the data for customized experiences, the major concern is of user's privacy and the user's data protection. The retailers must take necessary measures to protect the user's sensitive data.

4. Technical glitches and user experience issues in the Metaverse

Providing a smooth, immersive, and no glitch experience in purchasing is the most difficult challenge related to retail in the metaverse. Complex visuals, real-time rendering, and effective settings are required in the metaverse, which may lead to multiple technological obstacles like lag and performance concerns, unreal product depictions and poor graphics, AR and VR calibration issues, and so on.



The Future

Despite the difficulties, the metaverse is poised to become an important factor in the future of retail. Leading users are already reaping the benefits of this improvement. Various brands like Nike and IKEA have launched virtual storefronts or experiences, appealing to customers and distinguishing themselves in a highly saturated marketplace.

The metaverse also provides chances for small and medium-sized organizations (SMEs). Because internet shops have lower overhead expenses than physical sites, SMEs can reach a larger audience and compete more fairly with larger competitors.



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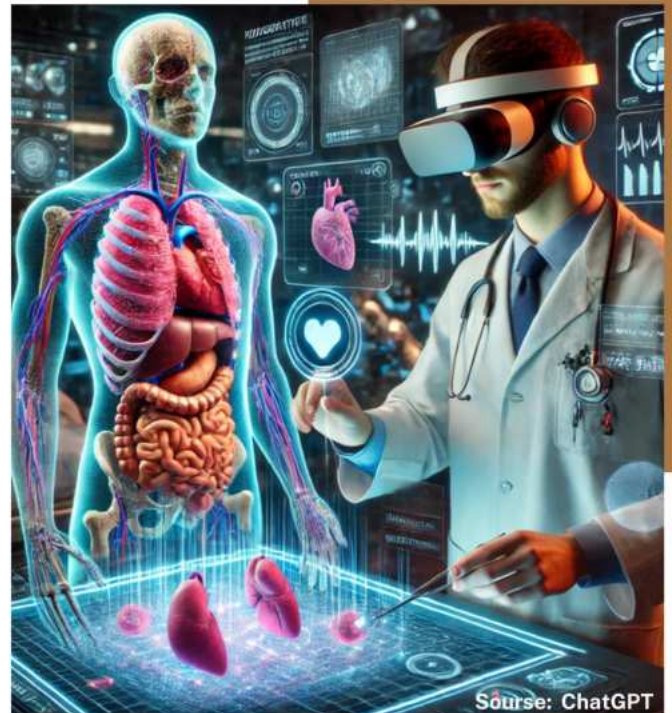
HEALTHCARE IN METAVERSE

The Metaverse is rapidly becoming a space that converts a virtual world into a real one to perform daily activities more efficiently. Like numerous other industries, the metaverse has also revolutionised the healthcare sector. It offers technologies built from AI(Artificial Intelligence), IoT(Internet of Things), Digital Twin, Big Data, Edge Computing, 3D Modeling, Extended Reality, Computer Vision, HCI(Human Computer Interaction), and Blockchain to improve existing healthcare facilities. After the global COVID-19 pandemic in 2020, the development and implementation of the metaverse in healthcare rose, and the term telehealth came into use.

Now, understand how the metaverse has a remarkable impact practically in healthcare:

1.Health Monitoring and Personalized Care

It involves enhanced visualisation and examination of patients' medical data with proactive monitoring. In these detailed digital avatars (3-D models of organs) or digital twins (virtual model or replica) of a patient are created that take the live data from the wearable devices(IoT devices) of the patient to visualize complex medical data like MRI scans and blood test results. Doctors can identify potential risks by analyzing the data and creating a personalized treatment plan within the metaverse



Metaverse makes it easy for the patient to understand their condition in a realistic environment and also provides daily goals or games to increase the engagement of patients towards the maintenance of their health. Thus, this is referred to as “Telemedicine” or “Telehealth”, as patients and healthcare providers can interact in a virtual clinic.

2. Medical Training and Education

AI, AR, VR, and MR allow more efficient understanding and visualization of diagnosis for medical students. It provides a real-world scenario in the metaverse with a 360-degree view of the anatomy of the body and surgical procedures. It simulates a real-world-like environment for students to understand each organ and tissue and train together with the team for a realistic surgery experience without harming anyone. It is reported that the 38% rate of complications is reduced in cataract surgery among medical trainees using VR(Virtual Reality).

Similarly, in June 2020, spinal fusion surgery was done by surgeons at Johns Hopkins University using AR(Augmented Reality) known as “xvision”, which gave them an “X-ray vision” throughout to navigate and conduct a successful surgery easily.

Metaverse also helps to prepare for disasters, pandemics, or emergencies with regular mock drills, programs, and certain emergency systems for ensuring proper training of medical teams even in critical situations.

3. Rehabilitation and Therapy

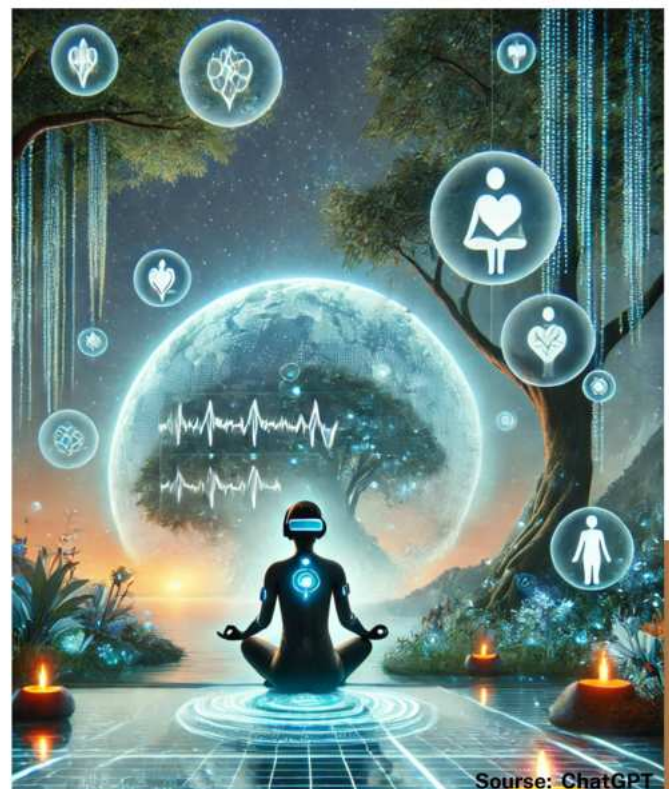
Metaverse helps regain capabilities and improve health by simulating real-world environments under the guidance of medical experts. It conducts physical exercises in immersive VR environments and motivates patients with games or challenges to recover consistently, while patients with mental health conditions like PTSD and anxiety are treated in an environment to reduce distress and build confidence in the patient. These are built on the type of therapy or recovery, patients are required to understand and engage with them.

In June 2020, Akili Interactive created a therapeutic video game, EndeavorRx, to treat children aged 8-17 years old suffering from ADHD (Attention-deficit/hyperactivity disorder).

Potential Benefits of Metaverse in Healthcare

- It will ensure personalized care and treatment with proper pain management, rehabilitation, and therapy sessions, thus increasing patient participation.

- People would not be required to go to the hospital physically for regular checkups and minor inconveniences, they would be able to connect with the healthcare providers in a real-like environment for their satisfaction as well as protect themselves from any unwanted infections.
- Metaverse will provide a cost-effective and effective way in comparison to in-person meetings.
- Metaverse provides a safe space for medical trainees to collaboratively learn and master in a controlled environment without risking anyone's life.
- Virtual healthcare facilities in the metaverse allow a wider market to reach the public and also prepare organizations for unexpected emergencies or disasters.



Challenges in Adopting the Metaverse in Healthcare

- **High Implementation Costs:** Building metaverse sites or applications requires considerable hardware costs, such as patient wearables, software, development, deployment, and maintenance.
- **Technical Problems:** Metaverse requires high-speed 5-G data for building communication among heterogeneous computing devices, which might not be available in most areas. Alongside, it is difficult to share and collaborate across different virtual environments, making it difficult for the system to integrate.
- **Data Privacy and Security Concerns:** Most technologies rely on user-sensitive data like medical history, biometrics, and behavior patterns. This makes it challenging for organizations to comply with privacy laws while ensuring data utility. Additionally, strong protection is needed to prevent hacking risks.
- **Transition state of Technology:** Technologies used in the metaverse are still evolving and have an unclear direction that may gain widespread acceptance. Many people are unaware or confused about the investment or adoption of healthcare in the metaverse, while some have overhyped expectations.
- **Health and Safety Concerns:** Doctors can't perform physical inspections through avatars in the metaverse. Some users may experience motion sickness or disorientation with AR headsets, while those with visual impairments may struggle to use VR/AR technology.

Application of Healthcare in the Metaverse in India

- Yashoda Hospitals Group in Hyderabad has bought land in Decentraland, a popular metaverse platform, to conduct virtual health awareness programs to educate the public and conduct consultations in virtual hospitals.
- Apollo Hospitals Group has collaborated with 8chilli Inc. to integrate VR, AR, and AI to enhance the training of medical trainees and increase patient engagement.
- Tata Consultancy Services (TCS) has developed a Cognitive Assistant application that provides personalized patient assistance by answering patient queries, timely notifications, reminders, and other health-related recommendations for a proactive experience.
- In January 2022, AIIMS New Delhi surgeons conducted a digital surgery with 3-D visualization under ImmersiveTouch, a Chicago-based VR company.



Conclusion

Metaverse is a rapidly growing technology and it has undeniable opportunities in healthcare. It provides a platform that is accessible, efficient, and interactive to healthcare providers and patients. As technology advances, more efficient simulations can be created that provide more personalized and proactive healthcare and patient engagement. It truly looks fascinating and transformative for global healthcare facilities, but it has to first overcome its practical limitations to offer a seamless interactive experience to a large number of users. Alongside healthcare providers and patients also need to be aware of the usage of these technologies for their tasks to be done. With the evolution of technologies, the future of the metaverse in healthcare will also unlock new possibilities.

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मेटावर्स में यात्रा और पर्यटन का नया अनुभव



यह सभी चीजें हमारी समाज को उन्नति और आधुनिकीकरण की ओर ले जा रही हैं।

आधुनिकता की बहती सरिता में मेटावर्स एक महत्वपूर्ण धारा है, जो शायद आने वाले समय में हमारे जीवन का एक अनिवार्य अंग बन जाएगा। इसी कड़ी में मेटावर्स अपने पैर पर्यटन और यात्रा के क्षेत्र में भी पसारना शुरू कर चुका है।

तकनीकी प्रगति दुनिया को बदल रही है, और अब यात्रा और पर्यटन का क्षेत्र भी इससे अछूता नहीं रह सकता। मेटावर्स, यानी आभासी दुनिया, अब पर्यटन क्षेत्र में क्रांतिकारी बदलाव ला रहा है। यह न केवल यात्रियों को नई संभावनाएँ दे रहा है, बल्कि पर्यटन उद्योग को भी डिजिटल रूप से समृद्ध कर रहा है।

आज हम इसी विषय पर चर्चा करेंगे कि किस प्रकार मेटावर्स यात्रियों और पर्यटन के क्षेत्र में नई संभावनाओं को जोड़ रहा है।

1. वर्चुअल टूरिज्म (Virtual Tourism)

जहाँ एक समय यात्राएँ लंबी और समय-साध्य हुआ करती थीं, वहीं आज मेटावर्स के कारण कुछ ही घंटों में वर्चुअल यात्रा संभव हो गई है।

मेटावर्स को एक डिजिटल ब्रह्मांड कहा जाता है, जहाँ लोग वर्चुअल रियलिटी (VR) और ऑगमेंटेड रियलिटी (AR) के माध्यम से एक नई दुनिया का अनुभव कर सकते हैं।

पर्यटन और यात्रा में यह तकनीक लोगों को अपने घर बैठे ही दुनिया के किसी भी कोने में जाने की सुविधा देती है। अब आप घर बैठे ताजमहल, एफिल टॉवर, नायग्रा फॉल्स, गीज़ा के पिरामिड जैसी जगहों की यात्रा कर सकते हैं। कंपनियाँ 360-डिग्री वर्चुअल टूर की सुविधा दे रही हैं, जिससे लोग इंटरैक्टिव अनुभव प्राप्त कर सकते हैं।

उदाहरण

- Google Earth VR और National Geographic VR जैसी सेवाएँ पहले से ही वर्चुअल टूरिज्म को बढ़ावा दे रही हैं।
- मेटावर्स का एक और बड़ा लाभ यह है कि यह लुप्त हो चुके ऐतिहासिक स्थलों को भी जीवंत कर सकता है। मिस्र के गीज़ा पिरामिड्स, रोम का कोलोसियम, भारत का नालंदा विश्वविद्यालय जैसी ऐतिहासिक धरोहरों को 3D मॉडलिंग के जरिए पुनः बनाया जा रहा है।

2. होटल और रिसॉर्ट्स का वर्चुअल अनुभव

मेटावर्स का विस्तार केवल घूमने तक ही सीमित नहीं है, बल्कि होटल बुकिंग सेवाओं में भी हो रहा है।

अब होटल बुक करने से पहले आप उसका वर्चुअल टूर कर सकते हैं। यह सुविधा लक्जरी होटलों में तेजी से लोकप्रिय हो रही है।

उदाहरण:

- Marriott International और Hilton Hotels जैसी बड़ी होटल चेन मेटावर्स में निवेश कर रही हैं।
- ग्राहक VR हेडसेट पहनकर होटल के कमरों, स्विमिंग पूल और रेस्टोरेंट का वर्चुअल अनुभव प्राप्त कर सकते हैं।

3. एडवेंचर और पर्यटन की दुनिया में मेटावर्स

मेटावर्स उन लोगों के लिए भी एक शानदार विकल्प है, जो एडवेंचर पसंद करते हैं लेकिन वास्तविक खतरों से बचना चाहते हैं। VR तकनीक के माध्यम से लोग स्काईडाइविंग, स्कूबा डाइविंग, माउंटेन ट्रेकिंग जैसी गतिविधियाँ घर बैठे ही कर सकते हैं।

उदाहरण:

- The North Face VR Experience नामक कंपनी वर्चुअल हाइकिंग और एडवेंचर ट्रिप्स ऑफर कर रही है।

4. मेटावर्स पर्यटन के फायदे और नुकसान

➤ फायदे:

1. यात्रा में समय और पैसे की बचत।
2. भौतिक सीमाओं से मुक्त अनुभव।
3. विकलांग और बुजुर्ग लोगों के लिए यात्रा आसान।
4. ऐतिहासिक और सांस्कृतिक धरोहरों को संरक्षित करने का अवसर।

➤ नुकसान:

1. असली यात्रा का रोमांच नहीं मिल पाता।
2. VR हेडसेट और इंटरनेट की आवश्यकता।
3. अत्यधिक स्क्रीन टाइम से स्वास्थ्य पर प्रभाव।
4. डेटा प्राइवेसी और साइबर सुरक्षा के खतरे।

5. मेटावर्स पर्यटन में सक्रिय कंपनियाँ

कई कंपनियाँ मेटावर्स में पर्यटन को विकसित करने पर काम कर रही हैं। प्रमुख कंपनियाँ इस प्रकार हैं:

- Facebook (Meta) – Horizon Worlds में वर्चुअल टूरिज्म विकसित कर रहा है।
- Google – Google Earth VR के जरिए दुनिया के

अनुभव में अग्रणी है।

- Microsoft – Hololens और Mesh प्लेटफॉर्म पर वर्चुअल पर्यटन को बढ़ावा दे रहा है।
- TravelXR – वर्चुअल टूरिज्म की विशेषज्ञ कंपनी, जो VR ट्रैवल एक्सपीरियंस प्रदान कर रही है।
- Decentraland – वर्चुअल दुनिया में पर्यटन और रियल एस्टेट के नए अवसर उपलब्ध करा रहा है।

निष्कर्ष

मेटावर्स ने यात्रा और पर्यटन के क्षेत्र में एक नए युग की शुरुआत कर दी है। यह न केवल यात्राओं के तरीकों को डिजिटल बना रहा है, बल्कि पर्यटकों को नई सुविधाएँ भी प्रदान कर रहा है। हालाँकि, असली यात्रा का रोमांच मेटावर्स से पूरी तरह नहीं बदला जा सकता, लेकिन यह समय, बजट और स्वास्थ्य कारणों से यात्रा न कर सकने वालों के लिए एक बेहतरीन विकल्प है।

“आइये, मेटावर्स के साथ दुनिया को घूमें!”

रेफरेंसेज

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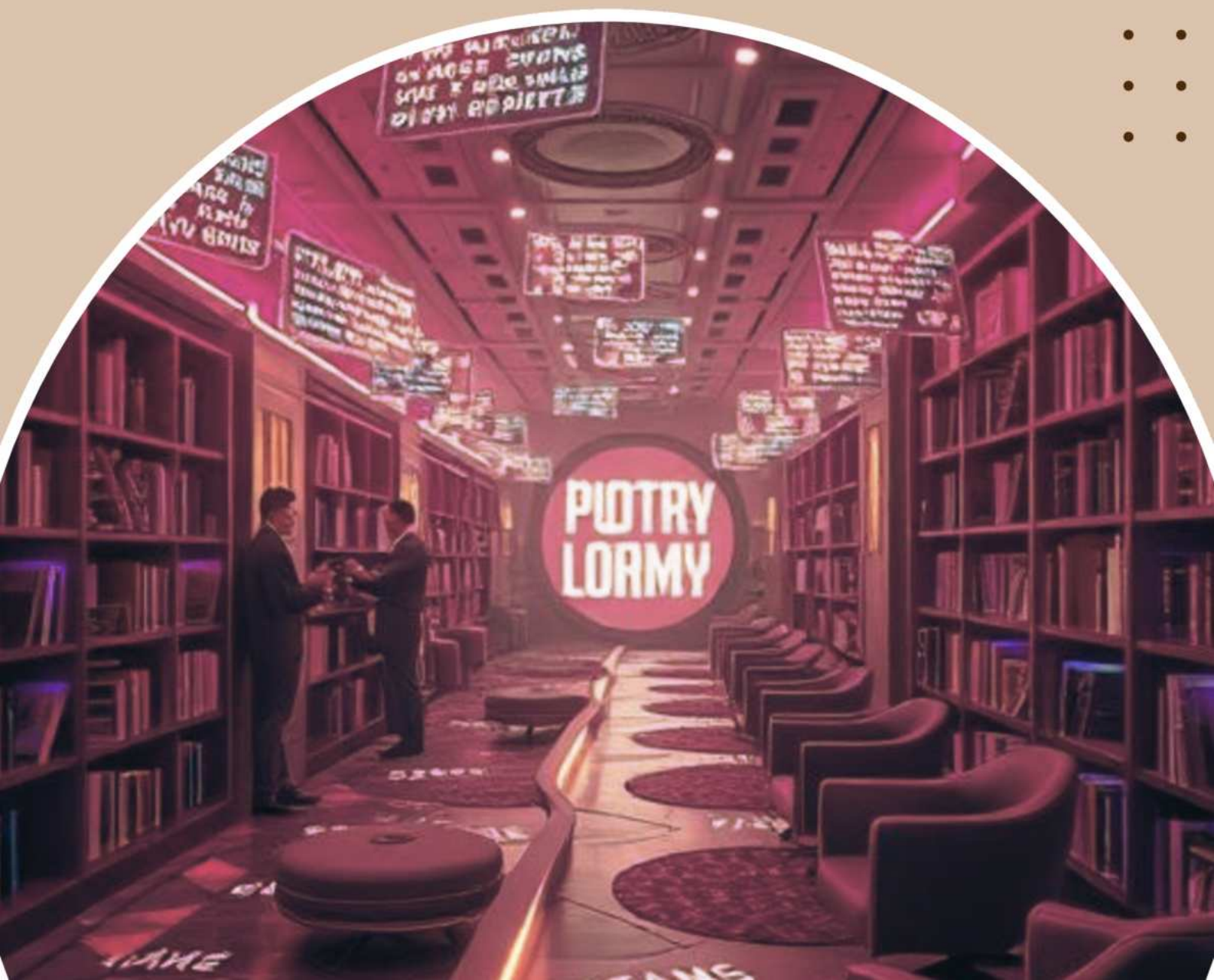
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संगणक विज्ञान के साथ
प्रथम वर्ष

META RHYMES

***POETRY THAT ECHOES
THROUGH VIRTUAL WORLDS***





MULTIVERSE: INFINITY'S EDGE

**Beyond the stars, some secret lies, a curious heart eager to know,
The real history behind—echoes of worlds beyond our skies.**

**Among the darkness, where light does shine,
Let's gather up all the galaxies and the wind divine.**

**Sometimes cravings open doors, revealing multiverse designs,
Surprising reality whispers like a comic rhyme.**

**An ocean of possibilities in every cosmic fold,
How much mystery is there? What secrets does the multiverse hold?**

**Fascinating celestial bodies dance side by side,
As we enter the multiverse, where wonders reside.**

**Infinite paths unfold, a tapestry so fine,
A cosmic ballet where stars and planets align.**

This imagination within me, since I was nine!

**Through space and time, through wormholes and black holes,
We'll find the answers we seek, to mysteries the multiverse holds.**

**Exploring beyond time, where magic resides,
Navigating the cosmos, traveling far and wide.**

**And finally, when we understand the cosmic reason,
We will find ourselves in the multiverse's grand season!**

**Hera Sadaf
B.Sc. (Prog) Physical Science
with Computer Science
1st year**

सपनों से हकीकत तक: मेटावर्स की उड़ान

हम सभी हर रात, हर शाम सपने देखते हैं,
कुछ अधूरे से, कुछ पूरे से,
कभी उम्मीदों से भरे, कभी हकीकत से परे।
मगर इस भागती हुई दुनिया की भीड़ में,
कितने ख़्वाब बिखर जाते हैं,
और हम खुद से ही खो जाते हैं।
फिर मिलती है एक नई दुनिया... एक नया आकाश...
वह है मेटावर्स।
जहाँ सोच सिर्फ़ सोच नहीं रहती,
वह हकीकत सी बन जाती है।
जहाँ सपने सिर्फ़ देखे नहीं जाते,
बल्कि जिए भी जाते हैं।
जहाँ हर कल्पना एक नई कहानी लिखती है,
जहाँ "असंभव" नाम का कोई शब्द ही नहीं होता।
यहाँ न कोई दीवारें हैं, न कोई हदें,
जो चाहो बना सकते हो, जहाँ चाहो जा सकते हो।
तुम ही अपने सपनों के निर्माता हो,
यहाँ तुम्हारी सोच ही तुम्हारी हकीकत है।
यहाँ डर नहीं, बस बेशुमार आज़ादी है,
जहाँ हर ख़्वाब को पंख मिलते हैं,
और हर चाहत को नई उड़ान।
जो कभी आँखें बंद करके देखा था,
अब वही सपना खुली आँखों के सामने है।
तो क्यों न एक ऐसी दुनिया बनाई जाए,
जहाँ सपने सिर्फ़ सोचे नहीं, जिए भी जाएँ।
जहाँ ख़्वाबों का जादू हकीकत से भी खूबसूरत हो।
क्योंकि मेटावर्स सिर्फ़ एक जगह नहीं,
बल्कि एक नई शुरुआत है।





LEGACY OF AVATARS

**I am adorned with a mask I did not create,
Blindly, I roam through worlds of massive scope.**

**I glide through boundless heights,
Only to never experience the cooling air below.**

**I contact, but never truly grasp,
I pursue, but never encounter the chills.**

**It is a territory constructed with fragments and
programming,
In this realm, humans are illuminated, while spirits
deteriorate.**

**Oh Metaverse! You reflect the brightness of them all,
Another chance to live—a specter in brilliance.**

**But I seem to ask, will I stumble upon or will I misplace
The matter I possessed, along with the choices I made for
myself?**

**Shubhi Sahu
B.Sc.(Hons.) Computer Science
1st year**

तकनीक की चमक और सच्चाई की छांव

हम आज वर्चुअल जग में जीना चाह रहे,
हकीकत से मुँह मोड़ना चाह रहे।

एक क्लिक में दुनिया बदल रही,
नई राहें हमें बुला रही।

सपनों को आकार देने के साधन हैं,
हर चाहत के पूरे होने के कारण हैं।

जो असंभव था, अब संभव लगे,
आभासी दुनिया में हर मंज़र जगे।

कभी यह अच्छा लगता है,
जब शौक हमारे सजता है।

नई उड़ान, नए हैं रास्ते,
कल्पनाओं के खिलते बाग़ जैसे।

पर धीरे-धीरे बढ़ती भूख,
रियलिटी से बढ़ रही दूरी अनूक।

जो असली था, छूट रहा,
संबंधों का एहसास टूट रहा।

तकनीक ने दुनिया बदल दी सही,
मगर एहसासों की कीमत न रही।

सपनों को जीना, मगर इतना भी नहीं,
कि असली दुनिया लगे अजनबी कहीं।

पायल बर्नवाल
बी.एससी. (ऑनर्स) संगणक विज्ञान
प्रथम वर्ष





GATE TO NEW ERA

**Technology is evolving at a rapid pace,
We all know it's a race.**

**Humanity is at its peak,
A level no one can chase.**

**A virtual universe awaits—
The so-called Metaverse.**

**A world of magic,
Where we set the course.**

**Imagine a place where you can be,
A virtual character, wild and free.**

**If the future is a book,
Metaverse will be its first chapter.**

**Deependra
B.Sc.(Hons.) Computer Science
3rd year**

META CANVAS

**WHERE CREATIVITY MEETS
THE FUTURE**





Designed in Blender, Adobe animation cc

Anubhav Bharti
3rd year



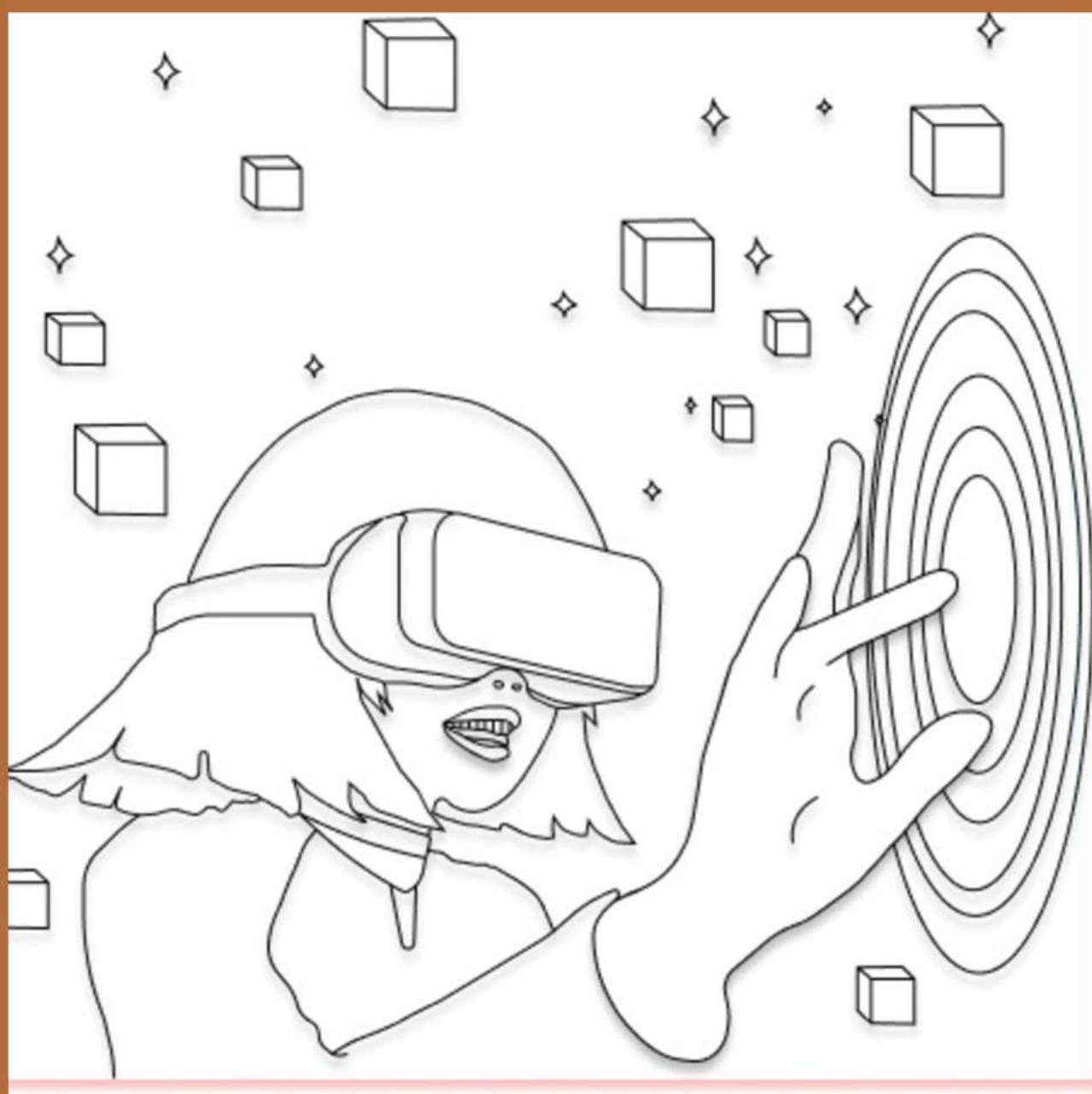
Designed in Blender, Adobe animation cc

Anubhav Bharti
3rd year



Designed by Hand

Kritika Anand
2nd year



Designed in Figma

Lipika
3rd year

PLAY VERSE

***FUN REIMAGINED IN THE
VIRTUAL WORLD***



CYBERSPACE

BLOCKCHAIN

AUGMENTATION

RENDERING

SANDBOX

HOLOGRAPHY

WORD GRID

GAMIFICATION

SIMULATION

AVATARS

IMMERSIVE

FUTURIST

START

WEBCOMIC

SPEEDSTER



FINISH!

START AGAIN

CRYPTOVERSE

TECHNOSPHERE

METAHUMAN

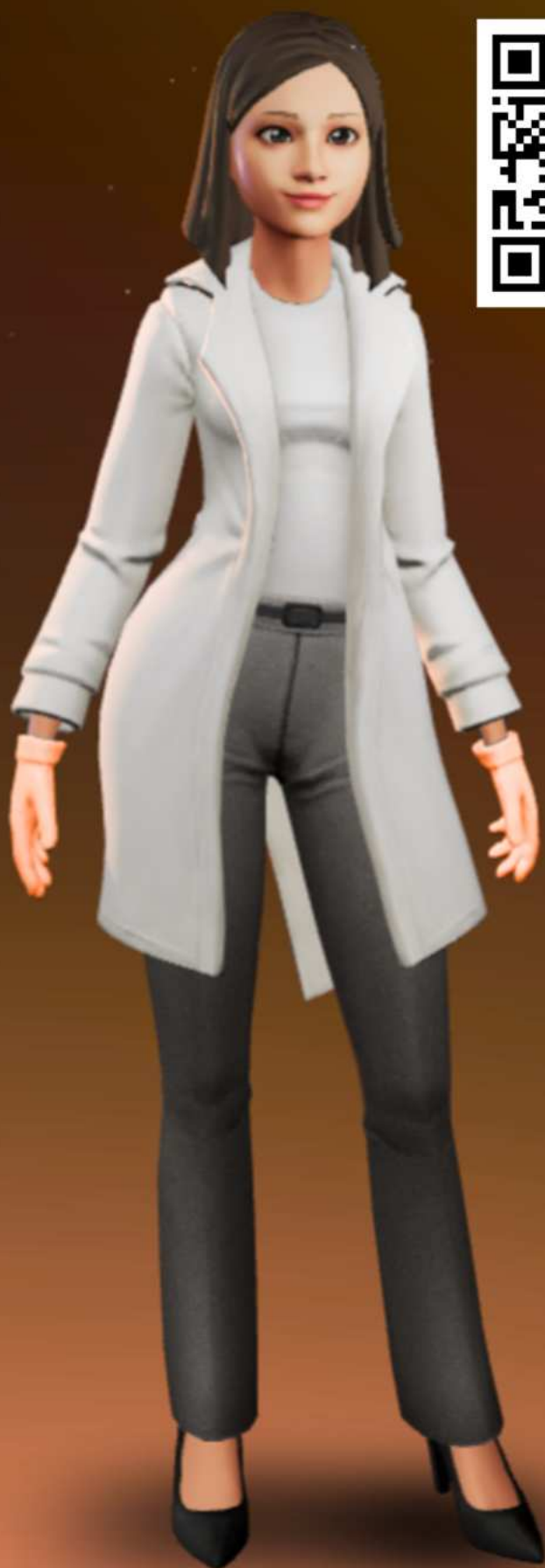
PLAY NOW



Lucky Joshi
B.Sc. (Prog) Physical Science
with Computer Science
1st year



Make your own **3D AVATARS**



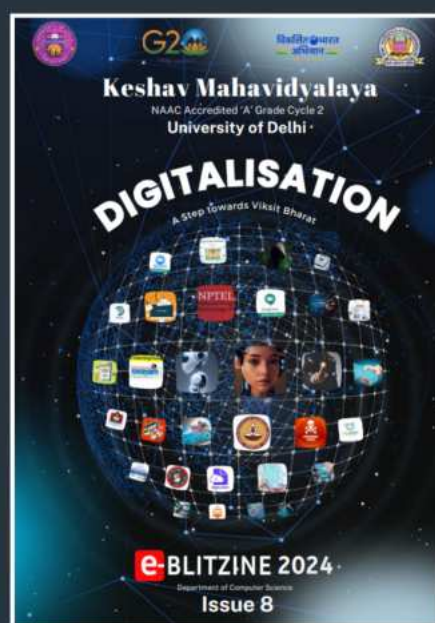
AUGMENTED CARDS



e-BLITZINE
THE DEPARTMENTAL SOCIETY



SCAN ME





HOW TO MAKE HEADSET AT HOME

Ever wondered how virtual reality works? You don't need expensive gadgets to experience it! With just a few simple materials, you can create your own VR headset at home. Get ready to dive into the world of virtual adventures with this fun and easy DIY project!

1. GATHER YOUR MATERIALS

You'll need sturdy cardboard, plastic lenses (magnifying glass works), tape or glue, foam padding, and a smartphone.

2. CUT OUT THE FRAME

Use a template or draw your own design to cut out the main headset shape. Make sure to include openings for the lenses and phone.

3. ATTACH THE LENSES

Place the lenses in the designated spots to focus the VR images correctly. Secure them with glue or tape.

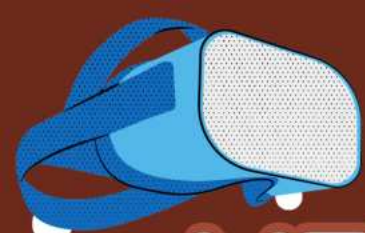
4. CREATE A PHONE SLOT

Make a compartment where your smartphone fits snugly. This will act as your VR screen.

5. CUSTOMIZE IT

Attach foam padding around the edges for comfort. Decorate your headset with colors, stickers, or designs to make it unique!





METaverse FACTS

Metaverse is Hiring! 🔥

Companies like **Google** and **Microsoft** are now conducting **virtual job interviews inside the Metaverse**. In the future, employees may work in VR offices instead of commuting!

Crime Exists in the Metaverse! 🚓

Just like in real life, **hackers and cybercriminals** are committing **identity theft, virtual heists, and online harassment** in the Metaverse. VR police are working to stop them!

Virtual Sneaker Sold for \$100K! 📈

Big brands like **Nike** and **Gucci** are investing in **Metaverse fashion**. Nike's **NFT sneakers** once sold for **\$100,000!**

Metaverse Shopping Beats Real Malls! 🛍️

Big brands like **Zara** and **Adidas** are launching **virtual trial rooms** where you can try on outfits on your avatar **before buying them!**

Million Attend Virtual Concert! 🎵

Rapper **Travis Scott** held a **virtual concert in Fortnite**, and a record-breaking **12 million people** attended—way more than any stadium can hold!

3D Avatars to Mirror Your Emotions! 🧠

Future Metaverse avatars will use **AI and facial tracking** to mirror **your real-life expressions and emotions** in real-time!



Trending Apps



Decentraland

It is a virtual world that is based on blockchain. Here users can trade and develop their digital assets (LAND) with the cryptocurrency (MANA).



ROBLOX

It has been very popular among young users. It has special features like social interaction, gameplay and game building.



It is Meta's own VR space which is focused on cross platform VR interactions. It also allows users to attend 3D environments.



It is a virtual space that provides social interactions via user-built avatars. It supports both VR users and desktop users.



This is a gaming metaverse which is powered on blockchain where users themselves can develop or own their games using SAND tokens.



It is integrated into Microsoft Teams for collaborative meetings. Here, the meeting members interact in virtual meetings via their avatars.

MILESTONES & CAREER TRIUMPHS

***CELEBRATING ACHIEVEMENTS
AND PUBLICATIONS***



Academic Achievements



NAME	POSITION	CGPA	YEAR
VINIT DUBEY	I	9.419	3rd
SIMRAN DUREJA	II	9.189	3rd
YASH VISHNOI	III	9.162	3rd
RAHUL ARORA	I	9.27	2nd
LIPIKA	II	9.09	2nd
VISHAL	III	9	2nd
ANUSHA GARG	III	9	2nd
VISHAL	III	9	2nd
ANUSHKA	I	9.50	1st
SHIVAM CHAUDHARY	II	9.36	1st
TARUN JAISWAL	III	9.23	1st

Exam Achievers

Keshav Mahavidyalaya is one of the leading colleges for Computer Science at the University of Delhi. The department and faculty continuously put a mammoth effort into providing the students the best with different pedagogies and practical approaches to help them understand the core of the field. The students are always encouraged to embrace new technological trends and expertise for personal growth and development. The healthy competitions and events held by the department enhance the students to nurture their skills effectively for future progress.

With pride and pleasure, we present a comprehensive collection of impressive headways of the 2024 batch students in their respective careers.

NAME OF THE STUDENTS	EXAM CLEARED	COURSE AND COLLEGES
PRASHANT KUMAR MISHRA	NIMCET	MCA, NATIONAL INSTITUTE OF TECHNOLOGY, PATNA
YASH VISHNOI	CUET-PC	MCA, UNIVERSITY OF DELHI
KONICAA SHARMA	NIMCET	MCA, NATIONAL INSTITUTE OF TECHNOLOGY, SURATHKAL
SHEKHAR MISHRA	CUET-PC	MCA, UNIVERSITY OF ALLAHABAD

In today's competitive exams, college education is integral in moulding student career path opportunities. Colleges not only provide students with academic knowledge but also offer various opportunities for skill development and professional growth. Thus, the faculty of Keshav Mahavidyalaya always looks forward to fostering the students with trending technical skills, critical thinking, and global perspective so that they can witness remarkable success of the graduates.

RESEARCH GATE

Publications in International Journals

Garg S., Jindal V., and Johari R. (2025), "ROAP: Resource Optimization, Allocation and Provisioning in cloud ecosystem with cognitive computing", in "Journal of Information Systems Engineering and Management", Vol. 10, No. 8s ISSN: 2468-4376. DOI: 10.52783/jisem.v10i8s.1112.

Garg S., Jindal V., and Johari R. (2025), "Security Analysis of Cloud Attacks using Conventional Cryptographic Techniques, A Case Study based on CloudSim Tool", Grenze International Journal of Engineering and Technology, Grenze Scientific Society, Grenze ID: 01.GIJET.11.1.506_1, 2025

Dua A., Jindal V., and Bedi P. (2024). "LC-IPL: locating covert data in the IPv4 header using LSTM", International Journal of Information Technology (2024). DOI: 10.1007/s41870-024-02284-0, ISSN: 2511-2112. Pg. 1-14.

Gupta R., Jindal V. and Kashyap I.(2024), "Recent State-of-the-art of Fake Review Detection: A Comprehensive Review", The Knowledge Engineering Review, Oct 2024, Cambridge University Press, Vol. 39 (2024), e8, ISSN: 1469-8005 DOI: 10.1017/S0269888924000067[Impact Factor 2.8].

Bedi, P., Rani, S., Gupta, B., Bhasin, V., & Gole, P. (2025). EpiBrCan-Lite: A lightweight deep learning model for breast cancer subtype classification using epigenomic data. Computer Methods and Programs in Biomedicine, 260, 108553. [Impact factor 4.9]

Jain, M., Kaur, H., Gupta, B. (2025) Incremental learning algorithm for dynamic evolution of domain specific vocabulary with its stability and plasticity analysis. Scientific Reports, Springer Nature, 15, 272. [Impact factor 3.8]

Bedi, P., Thukral, A., Dhiman, S. (2024). Explainable AI in Disease Diagnosis. In: Aluvalu, R., Mehta, M., Siarry, P. (eds) Explainable AI in Health Informatics. Computational Intelligence Methods and Applications. Springer, Singapore. https://doi.org/10.1007/978-981-97-3705-5_5.

Sharma, R., Thukral A., Kapoor, Y., Varshney, A., & Bedi, P. (2024). Aggregating, Summarizing, and Restructuring News-Related Tweets into Compositions Using Deep Learning. *Computing Open, World Scientific*, Vol. 2, 2450001. <https://doi.org/10.1142/S2972370124500016>, ISSN (online): 2972-3701.

Bansal R., Sharma R., Jain P., Arora R., Pal S., Vishal (2024). DeepYoga: Enhancing Practice with Real-time Yoga Pose Recognition System. *Engineering, Technology & Applied Science Research*, 14(6): 17704-17710.

Sharma R., Goyal A., Bansal R., Yadav C., Lipika, James E. R. (2024). Digital Empowerment: Understanding Public Awareness of Digital India Initiatives. *Journal of Theoretical and Applied Information Technology*, 102(21): 7763-7779.

Sehgal P., Bansal R., Singh, P., (2025). A Fuzzy System to Detect the Degree of Severity of Dental Caries. Accepted for Publication in *Pattern Recognition and Image Analysis*, Springer [Impact Factor 0.7].

Pal A., Sehgal P., Bansal R. (2025). Enhanced Smartphone Imaging: Assessment of Deep Learning based Image Signal Processing Pipeline. Accepted for Publication in *Digital Signal Processing*, Elsevier [Impact Factor 2.9].

Kumari, J., Sinha, S. & Singh (2024), L. Advancing lung cancer diagnosis with bio-inspired algorithms: a comprehensive assessment. *Multimed Tools Appl* . <https://doi.org/10.1007/s11042-024-19795-4>.

Sharma S, Dureja S, Saini D, Jose R, Pant R, Singh A, (2025), Empowering impaired learners: Technological advancements in higher education, *Technology and Disability*. vol (35) , pg 1-14.

Goyal, A and Kashyap, I. (2024, July), A data-driven analysis to determine the optimal number of topics 'K' for latent Dirichlet allocation model, *Indonesian Journal of Electrical Engineering and Computer Science*, vol. 35, no. 1, pp. 310–310.

Publications in International Conferences:

Nikita, Johari R., and Jindal V., "ITAS: Intelligent Traffic Automation System", Accepted in International Conference on Engineering Trends in Education Systems and Sustainability (ICETESS2025), Springer, Apr 18-19, 2025, Jaipur, India.

Gupta, R., Kashyap, I., Jindal, V. (2024, October 19). "A Comprehensive Survey on Fake Review Detection System with Future Directions". In: Santosh, K., Nandal, P., Sood, S.K., Pandey, H.M. (eds) Advances in Artificial-Business Analytics and Quantum Machine Learning. Lecture Notes in Networks and Systems, vol 1053. doi: 10.1007/978-981-97-4860-0_1

Kumari, J., Sinha, S., Singh, L.(2024), "Optimized Residual Attention U-net based Lung Cancer Detection", in an international conference on Computational Intelligence and communication network(CICN-2024), IEEE, 22-23rd Dec,2024, Indore, India

Kumari, J., Sinha, S., Singh, L.(2024), " A Review on Lung Cancer Detection and Classification Using Deep Learning Techniques", in International Conference on Modeling, Simulation and Optimization (CoMSO-2022), Springer, 22-23rd Dec, Silchar, India.

Other Academic / Research Achievements

Prof. Priti Sehgal served as a Program Committee member in 20th International Conference on Computer Graphics Theory and Applications held on February 26 to 28 ,2025.

Prof. Priti Sehgal served as a reviewer in Computers in Biology and Medicine.

Prof. Vinita Jindal acted as a Resource person for an online session on the topic "ICT in Education: Transforming Learning" organized by Ramanujan College, University of Delhi, for the GURU-DAKSHTA Faculty Induction Programme (FIP) under the UGC-Malaviya Mission Teacher Training Program (MMTTP), Ministry of Education, Government of India on Jan 21, 2025 held between January 20, 2025, to January 29, 2025.

Prof. Vinita Jindal is an editorial board member of Scientific Reports, Springer Nature, Discover Computing, Springer Nature and International Journal of Modern Computing

GLIMPSES

**BEHIND EVERY PHOTO
A BEAUTIFUL STORY**



Team e-BLITZINE



First Row (Left-to-Right): Simran (Content Head), Ms. Jyoti Kumari, Prof. Priti Sehgal (Convenor), Dr. Ashutosh Singh, Mannat Pathak (Content Executive)

Second Row (Left-to-Right): Lipika Goyal (Editor-in-Chief), Ankit Negi (Head of Operations), Lovely Mahour (Creative Head), Payal Barnwal (Design Curator), Shubhika Srivastav (Content Curator), Khyati Jain (Design Curator), Nikhil Sahni (Head of Operations) Deependra Kumar Singh (Design Executive)

Not in Picture: Rushank Garg (Design Executive), Tanishka (Content Curator)

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Third Row (Left-to-Right): Natya Vidhan Biswas (Executive), Riya Arora (Executive), Priyanshi Jain (President), Nancy Gupta (Treasurer), Isha Sharma (Executive), Sourabh Pal (Senior Executive)

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

Not in Picture: Ms. Astha Goyal, Mr. Pradeep Kumar, Ms. Maulein Pathak, Ms. Richa gupta

Non-Teaching Members



Left-to-Right: Ms. Anuradha Chadha, Mr. Rajesh Wadhwa, Mr. Ritesh Gupta, Mr. Lovkesh Jairath, Mr. Akhilesh Kumar

Not in Picture: Ms. Pooja Batra

B.Sc.(H) Computer Science

1st Year Students



First Row (Left-to-Right): Khushi, Chandani, Mehak, Shubhi Sahu, Payal Barnwal, Ayushi Singh, Anushka, Shriti, Harshita

Second Row (Left-to-Right): Sakshi, Mohit, Kavyansh, Arsh, Karan, Awanish, Akarshak Goyal, Hitesh, Ankit Rawat, Urvish

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B.Sc.(H) Computer Science

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Fourth Row (Left-to-Right): Debojeet, Utkarsh Mishra, Priyanshu Pawar, Prince, Manish Dimri, Dev Kumar Chakma, Vedant, Ankit Negi, Shivam, Shivam Chaudhary, Pankaj

B.Sc.(H) Computer Science

3rd Year Students

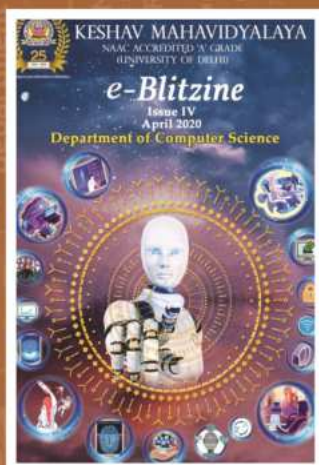
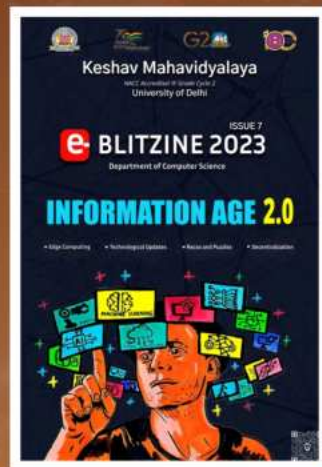
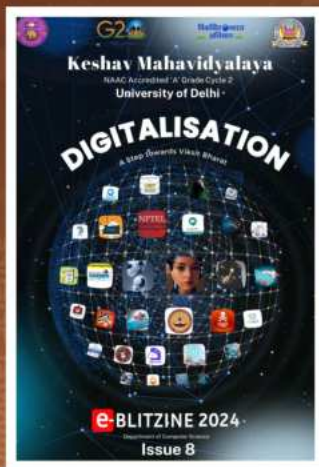


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Third Row(Left-to-Right): Sujal, Vishal, Sourabh Pal, Vinay Pratap Singh, Pawan Kumar, Tanuj Kumar, Yadav Sundarm, Shivam Kumar, Gopal Arya, San Mijing Brahma, Hiten

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e-BLITZINE 2025

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