



Shri Shankaracharya Institute of Professional
Management & Technology , Raipur



CYBER TRINITY

PRESENTS

NEWSLETTER

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ISSUE 2

IN THIS DAY AND AGE TECHNOLOGICAL ADVANCEMENT ARE BEING MADE EVERY DAY AND KEEPING UP WITH THESE TRENDS AND ADVANCEMENTS IS IMPORTANT FOR A STUDENT. THROUGH THIS NEWSLETTER STUDENTS CAN BE UPDATED WITH THE LATEST TRENDS AND DEVELOPMENTS IN THE TECH WORLD.

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

METaverse



NEWSLETTER

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING



ARRAY OF CONTENT

- ◆ INTRODUCTION TO METAVERSE
- ◆ CAREER ASPECTS IN METAVERSE
- ◆ TECHNOLOGIES IN METAVERSE
- ◆ FACTS OF METAVERSE
- ◆ APPLICATIONS OF METAVERSE
- ◆ ADVANTAGES OF METAVERSE

VISION

"To produce value-based quality Engineers with the knowledge of latest trends and research technologies to meet the developing needs of industry and society."

MISSION

- ◆ To impart quality education in line with quality teaching-learning process.
- ◆ To provide a better environment to encourage and support innovative research and development.
- ◆ To strengthen linkage between industry-academia for overall improvement of students.



MEMORANDUMS



“Education’s purpose is to replace an empty mind with an open one.”

We here at SSIPMT focus on providing quality education to the students. We mainly focus on the technical, reasoning capabilities, and, soft skills of our students to boost their knowledge and confidence, also it helps them to present themselves in front of the interviewer. Our students keep on participating in different types of hackathons, fests, and other state or national-level activities. Now, for the batch 2023, best wishes to you all for the placement, and hope you all do well. For the batch 2022, congratulations on your placement, a new page of yours has just begun, so keep exploring and enhancing your experience and keep making us proud.

**Shri Nishant Tripathi
Chairman (B.G), SSIPMT**

“Strive for progress, not for perfection. There is no substitute for hardwork.”

SSIPMT Raipur has always focused on giving the best to its students and providing a better domain of comprehension, knowledge, to enhance their capabilities. SSIPMT Raipur offers endless opportunities for their overall development. Various events like ICT quiz, Code Debugging, Android Development have been organized for the students.

Lastly wishing best of the best and a bright future to the students of Batch 2019-2023 for their upcoming placements, you all have the ability to achieve great heights. So, work hard and let your success shine.



**Dr. Alok Kumar Jain
Principal, SSIPMT**



SSIPMT particularly cornerstones on furnishing an excellent education platform with multiple opportunities. Our aspiring engineers and dynamic faculties whose expertise spans the range of disciplines in computer science stream, lays the foundation for the students of CSE, the hub of institute’s academia. We hold firm belief in our ability to succeed, and we nurture an attitude of self-reliance, confidence and commitment to the motherland that we are to serve. Our institution lays emphasis on empowering young minds by providing pioneering education and R&D options. Webinars and technical events organized by the department strengthens professional experience of the students.

Hereby, I convey my best wishes to the 2023 batch for their brilliant and successful future ahead, focus on brushing the skillset and coding ability.

Also, I heartily congratulate 2022 batch for their placements in dignified and prestigious companies, I wish them all the very best for their journey in the professional field.

**Dr. JP Patra
HOD, CSE**



MEMORANDUMS



Metaverse is the next version of the Internet. It is a computing platform that provides digital experiences as a replica of the actual world, along with its key aspects of social media, online gaming, augmented reality (AR), virtual reality (VR), and cryptocurrencies that allow users to interact virtually. The metaverse could fundamentally change how humans interact with technology and how they interact with each other and the world around them. Also, students of batch 2023, we're so proud of the countless hours of study and hard work that you all have put in to earn this amazing opportunity. Congratulations and best wishes to you all.

Explore! Discover! Dream!

Mr. Deepak Rao Khadetkar
Asst. Prof., CSE



Metaverse is the next evolution in internet history and offers opportunities in various sectors. Metaverse is a broad term but could be defined as the next iteration of the internet which offers experiences that cannot be experienced in the physical world, it offers virtual spaces shared among millions of users which don't disappear when you log off. With companies investing billions of dollars in the metaverse it is no longer just a concept but instead is a reality. Also, way to go batch of 2023! You all have proved that hard work towards a goal is guaranteed to bring results. I wish you all congratulations and am looking forward to hearing about your future accomplishments.

Ms. Shraddha Taunk
Asst. Prof., CSE



METaverse



INTRODUCTION

Metaverse is made up of 2 words meta and verse which originated from greek words, which mean Beyond and Universe. It is a network of virtual worlds that are linked into a virtual universe. Many people believe that metaverse is the future of the Internet. The meaning of the metaverse is flexible and can describe different experiences. The metaverse can be an entire virtual or non-real world where you can create and interact with other people who aren't in the same physical place as you and you can enter the metaverse via a VR headset. The metaverse can also be integrated into the real world through Augmented reality(A.R). This augmented reality gained a hike through the game Pokemon GO. In the metaverse, You can make your customizable avatars and it gives you next-level experiences which can give evolution to a new era of social interaction.

TECHNOLOGIES

The metaverse would need a critical mass of interconnected technologies mentioned in the following:-

Virtual reality -It is a type of creating a realistic copy of the environment.

Artificial intelligence - It will help the system to make decisions correctly.

Augmented reality- Creates virtual objects into the real world with the help of devices like cameras, sensors, etc.

Blockchain technology-This will help to sell or buy any asset virtually with the concept of cryptocurrencies and NFTs.

Brain-computer interface- It will allow us to control various objects and digital transactions with our brain signals.

Internet infrastructure- metaverse would require an extremely high speed of internet and bandwidth.

Mobile device processors - Small and superfast mobile processors to be fitted in the various devices to perform operations easily.



METaverse

APPLICATIONS

- ◆ **Healthcare:** Metaverse has significantly improved the communication between doctors and their patients. Digital treatments and therapy sessions in the metaverse help patients and doctors connect from anywhere in the world breaking the geological barrier.
- ◆ **Real Estate:** Metaverse offers realistic and immersive experiences to clients interested in buying a property. Allowing clients to experience properties in real time with immersive tours helps both the clients and the real estate agents.
- ◆ **Education:** Virtual reality offers powerful tools that can help students learn concepts from 3D visuals which offer better understanding and consume less time optimizing the entire learning process.

CAREER ASPECTS

There is a sizeable opportunity for software engineers with the skill of large-scale system design, networking and data storage, extensive knowledge in 3D design, and UI/UX design.

It also provides a huge space for blockchain engineers due to the growing interest in Non-Fungible Tokens (NFTs). Metaverse will be a completely new type of asset class.

It is profitable for the marketing field also, as the metaverse aims to provide a complete world virtually, so it is going to provide a completely new place for the brands to advertise their products and execute marketing strategies online effectively. For this marketers well versed in digital marketing, creative skills, and knowledge of Web 3.0 will be required.



FACTS

- ◆ Metaverse has changed the face of Facebook to meta.
- ◆ Though metaverse isn't having any particular parent organization, Google, Microsoft, and other tech giants have joined hands to make this happen.
- ◆ Experiencing the technology with Virtual reality and Augmented reality by adding complementing virtual items to our surroundings.
- ◆ While technology helps you to enjoy the metaverse, it's not the compulsion to get one. Websites like Sandbox and decentral can be accessed on phones or anywhere.
- ◆ It has its own money called Non-fungible tokens NFTs, once there was a virtual Gucci sold for \$4100.
- ◆ A platform for investment. Statically it could grow up to a valuation of \$800 bn by 2024. It could be operated just like the share market.

ADVANTAGES

- ◆ **Socializing virtually:** Metaverse provides in-person interaction, a unique environment and gatherings in a couple of minutes virtually.
- ◆ **Enhancing the gaming experience:** Games developed using metaverse technology allow users to buy, sell, and trade in-game assets in the form of NFTs.
- ◆ **Appreciable tool for healthcare professionals:** In the virtual world of the Metaverse, they can interact with the patient and have clear understanding about their health condition.
- ◆ **Virtual World tour:** Metaverse will allow its users to travel, view the monuments across the world, interact with peoples living in different geographical locations.



TECH GEEK

How does Hotstar and Netflix handle millions of users simultaneously?

Disney+ Hotstar and Netflix are among the top streaming platforms. Whenever we feel like watching our favourite shows, they are the two platforms we prioritise. They have a vast collection of content. They have a huge customer base, with Netflix having around 223 million, and Hotstar has over 300 million users. Hotstar, while streaming the IPL matches, even made a streaming record of 18.6 million users on May 13, 2022. Making itself the benchmark of streaming platforms. Now the question arises, how do they manage to stream so many users around the globe without lag or buffering? Well, let's answer your questions.



Hotstar and Netflix both are powered by Amazon AWS services, which provide high power and computing engines. They both use Amazon AWS Virtual Machines called Elastic Compute Instances. According to the report published by Hotstar, they use C4 instances, with a total power of about 8000 CPUs and 16TB RAM. Impressive right? But these aren't the ones doing the actual job. These are just for managing the user data. For storing the content, they use S3 Storage Blocks. Yet, these Storage servers aren't enough to meet the demands of such a huge user base. So, they use what we call Cloud Domain Networking (CDN).

CDNs are copies of the storage servers spread over the globe with each user served from their nearest one, so there's almost no time lag or buffering issues. So next time you consume content, it's not coming directly from Hotstar or Netflix itself. It is coming from a CDN server located near you. Hotstar uses Akamai CDN whereas Netflix prefers OpenConnect, which makes the ISP act as your CDN. This is a very good approach for reducing the server load and cost reduction.

The above configurations are for normal usage days, but what happens when we have a live TV show streaming and millions of users are streaming on the go? After the server reaches the maximum capacity, it'll start to lag. To overcome this problem, they used Auto-Scaling systems.

These systems automatically allocate more resources to the server, based on the incoming traffic i.e Traffic-Based Scaling and Ladder-Based Scaling. Traffic-based scaling triggers when the number of requests reaches the threshold that the entirety of the system can handle. Ladder-Based scaling triggers when the number of concurrent users touches the peak capacity of the server. They only take 2 minutes to deploy and run. Hold on, doesn't that mean no new user can use the website until the whole auto-scaling system is launched? Yes, and to deal with it – they show us content descriptions, advertisements, in-app games, recommendations, and sometimes just errors, they are called "Page Holds", which run separately. The entirety happens so smoothly that you would not even notice it happening, and when there are fewer users, the downscaling is as smooth as the upscaling.

So this is how streaming companies handle millions of users with a breeze!

~ Satyam Verma



TECH GEEK

Galactica AI - The Large Scientific Language Model



What is Large Language Model?

The development of natural language processing allows us to create more intelligent systems with a deeper comprehension of language than ever before, representing a recent advancement in Artificial Intelligence. Huge language models, based on the Transformer architecture, significantly increase the scope of what text-processing algorithms are able to perform. Large language models are algorithms that give software systems new ways to comprehend and create text. LLMs are pre-trained on immense text databases. Hence, they understand context and word representations. LLMs take text as an input, then algorithmically compute to achieve the most accurate and relevant output.

There are many tools available on the internet to retrieve and filter data, like search engines for example but they can only store information; they are unable to make decisions. Language models can store, mix, and reason about scientific knowledge. In contrast to search engines, they can uncover buried knowledge, draw links between study pieces, and share those discoveries. They are additionally capable of producing helpful knowledge by understanding the entire context.

What is it capable of?

- ◆ Predicting citations for the text and mathematical formulae in LaTeX.
- ◆ Scientific reasoning and sequence modelling like molecules or protein chains.
- ◆ A scientific approach to lectures, question-answering, summarization and extraction.
- ◆ Impressive IUPAC name prediction and free-form scientific text-generation.

Currently, Galactica AI is undergoing further development to aid in reliable and accurate scientific research. LLMs in the near future would revolutionise not only scientific thinking but artistic and abstract as well.

What is Galactica AI?

Significant progress has been made in large language models (LLMs) in recent years. Impressive LLMs have been revealed one after another, starting with OpenAI GPT-3, which produces texts that are incredibly accurate, and ending with its open-source equivalent BLOOM. Language-related problems that were previously intractable are reduced to a challenge for these models.

Galactica AI is an open-source LLM exclusively for scientific research and development. It was trained by the Meta AI team and PapersWithCode. Released with various sizes, the models have 110 to 160 billion parameters that have been trained on those same billions of data points.

Since Galactica is intended to be a scientific helper, research papers are the logical source of training data. In this sense, the training data for Galactica was built using more than 48 million research papers, 2 million code samples, 8 million lectures, and textbooks.



~ Astitva Pathak



ACHIEVEMENTS

PLACEMENTS

1. Mohmmmed Sahil Saify - **Pictory**
2. Aman Kumar Gupta - **Act21**
3. Shreya Gupta - **Adobe**
4. Isha Mishra - **SAP**
5. Manpreet Singh Saluja - **Josh Technology**
6. Anjali Sharma - **Nucleusteq**
7. Abhay Kumar Gupta - **Nucleusteq**
8. Vanshika Sharma - **Nucleusteq**
9. Sharmishtha Sinha - **Nucleus Software**
10. Shubhika Shukla - **Tech Mahindra**
11. Debashish Mohanty - **Tech Mahindra**
12. Anurag Lalwani - **Rubrik**

13. Charchit Patre - **TCS Digital**
14. Mudit Ranjan Shrivastava - **TCS Digital**
15. Abhinandan Adhikari - **TCS Ninja, Nucleusteq
Tech Mahindra**
16. Vishal Rathi - **TCS Ninja**
17. Aditi Sahu - **TCS Ninja, Nucleusteq**
18. Tushar Dubey - **TCS Ninja**
19. Nachiketa Mohanty - **Nucleusteq**
20. Yashwardhan Jagatramka - **Leadsquared**
21. Khushi Dugar Jain - **Collabera**
22. Mayurakshi Singh - **Collabera**
23. Geetika Malewar - **Collabera**

INTERNSHIPS

I want to express my serious gratitude to the training and Placement Department for allowing me to intern at Adobe through SheCodes as this company offered me a handsome pre-placement offer too. I also want to thank all the departmental faculties for their efforts in providing good technical and competent education. I'm glad that I will be now able to guide my juniors too, I want to advise them to stay relevant to emails, and current IT trends, and contact TPO as well as college professors for any queries.

SHREYA GUPTA, 7th Sem



Hey, I'm Sahil, a sixth semester student of Computer Science and Engineering department atSSIPMT Raipur and a software development Engineer intern at Pictory (pictory.ai). Most important part for a software developer is problem solving by using the latest technology or to innovate one.

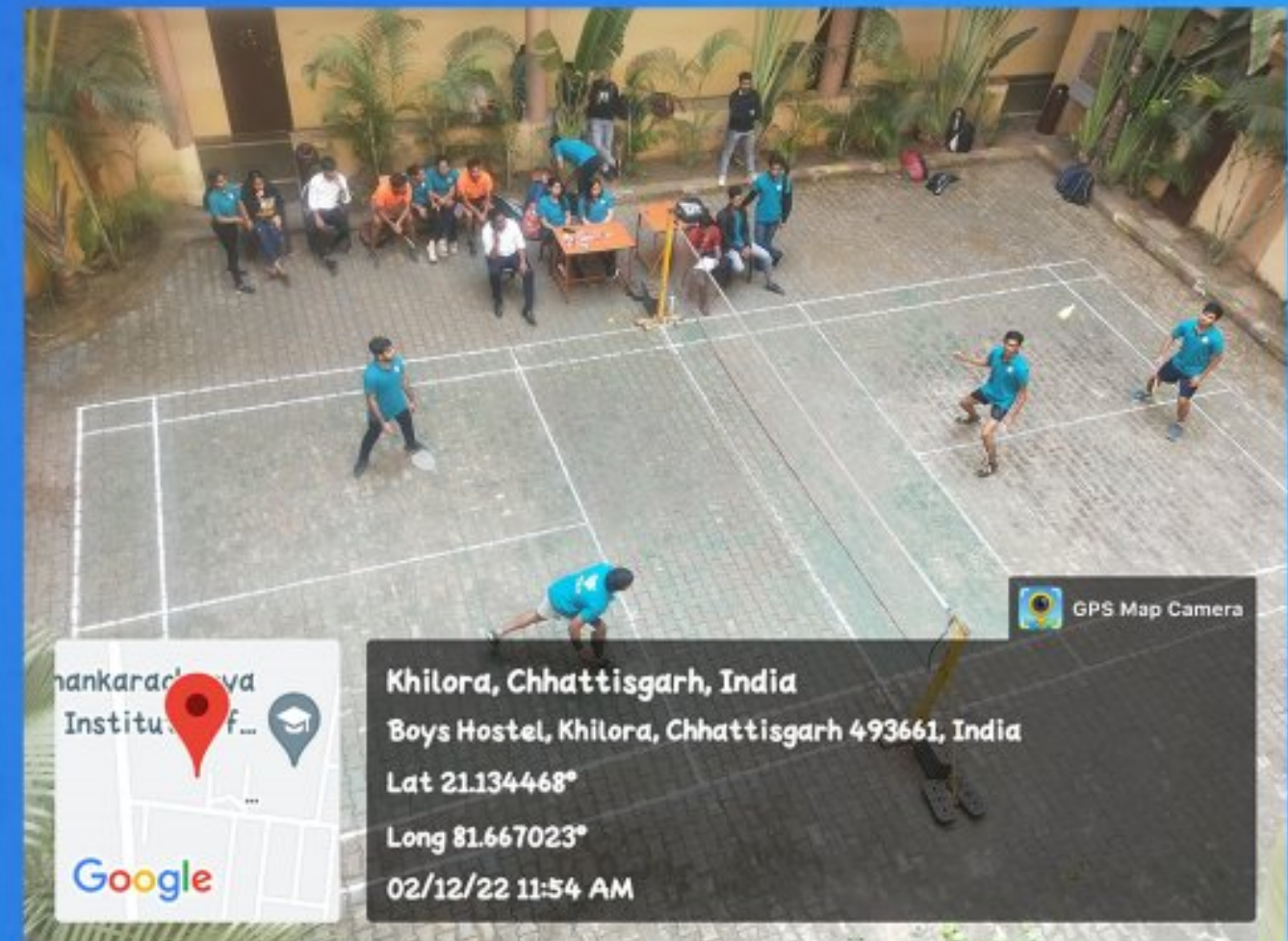
I started exploring new languages in second year of my engineering. Since I was fascinated by syntax of Java I choose that for solving problems on leetcode, geeks for geeks and codechef. I learned it by practicing regularly.

My most important tips for my juniors is , when you're in your second year, do not stick to one thing, try your hands on each and every field of CS & choose the one that works best for you. Second most important thing is that stay in touch with your seniors to get to know about the hurdles and path to get success.

SAHIL SAIFY, 7th Sem



AAYAM'22



The department of CSE has perfectly balanced the stick keeping studies on one side and entertainment on either. CSE department focuses on physical and cultural development as well to keep students as fit as fiddle, Aayam (intra department sports and cultural competition) was an instance to that. Day in and day out students keep themselves busy in coding and enhancing their corporate behavior, meanwhile we have managed creating moments for them with a spring in their steps and full of joy. Obviously, the best performer wins worthy prizes and so excites everyone to participate and making our events successful.

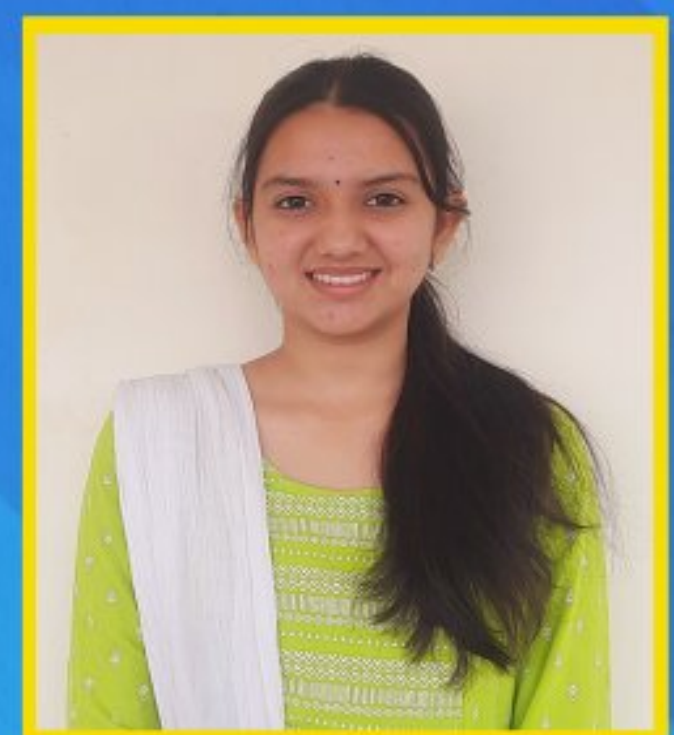
HACKATHONS

In the Month of October, I had the honor of attending my first hackathon - "iHack 2022" Hackathon Challenge conducted by IIT Bhilai and IIT Bhilai Innovation and Technology Foundation (IBITF) in association with Infineon Technologies. The track was Blockchain-based payment solution for EV and I was awarded the position of Runner Up. Then in the month of November, I participated in the Hacknovate Hackathon challenge of Technovate (annual fest) of IIIT, Naya Raipur, and secured 2nd position.

Both of these were amazing experiences and got to learn a lot of new things in terms of professional as well as technological aspects.

Suggesting all the readers to look out for opportunities around them and participate. Also, Connect and grow with students of other institutes. After all, "Experience is the teacher of all things".

HITISHA GOHIL, 5th Sem



NEWSLETTER TEAM



Mentor Sumitra Samal
Asst. Professor , CSE Dept.

In today's rapidly growing and evolving world, you should also stay up-to-date with the new technologies coming into the market. In Newsletter, we take any new technology and explain it in such a way that it is easy to understand with some different fun activities in between to make it more interactive for the reader. The main goal of the Newsletter is to spread valuable knowledge to everyone. Newsletter also fills the gap between the college and students as it is the most efficient mode of communication between the college authority and the student community which keeps them connected. In Newsletter there are multiple posts such as graphic designing, content writing, photography, and research which give them a professional environment to proceed in their career and grab the best opportunity.

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