

THREADS

CSE ASSOCIATION GCEK - TECHNICAL MAGAZINE

ISSUE
#3



Web3

Interoperability in Web3

Connecting the past with the present: Interview with Lavanya

6G network: role of quantum computing inspired techniques

MAY 2023 EDITION

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TRANSFORMERS

THE HEART OF MODERN LARGE LANGUAGE MODELS



DEMYSTIFYING AI

Importance of explainable AI in increasing transparency and trust



6G NETWORK

Role of Quantum Computing inspired techniques

MESSAGE FOR THREADS



Dr. Jayaprakash P

Principal,
GCE Kannur

All the warm wishes for Threads, the technical magazine released by our Computer Science and Engineering department for the year 2023, It's delightful to witness the dedication students put forward to make their peers voice out their thoughts and achievements with the purpose of motivating the younger ones. May this inclusion enhance awareness of the possibilities of computer science and the emerging innovations on the horizon, such as artificial intelligence. Congratulations to the contributors and the dedicated editorial team for their unwavering efforts. Let this be a stepping stone for the next rate.



Dr. Bindu PV

Head Of Department,
CSE

Collaboration, commitment, and exposure to innovation are inevitable requisites for our era. It is always supercilious to know the impactful actions and success of the young members of our department. THREADS, our technical magazine, now in its digital avatar, unveils the brilliance of our budding engineers worldwide. It is indeed a very special moment for the department to release the third edition of Threads. Congratulations to the contributors and the editorial team. Embrace the possibilities of tomorrow!

➔ **Mehnaz PP of S8 CSE** was honored with the prestigious Best Student Coordinator Award in the ISTE Kerala Section for her outstanding contributions and leadership in organizing various student activities and events.



➔ **Sheetal Sukumar of S8 CSE** was bestowed with the Best Outgoing Woman Engineer Award at the WE4U 3.0 Award Ceremony, an event organized by SHE GCEK, celebrating her outstanding achievements and contributions in the field of engineering.



➔ **Arshad Danish and Mathews Roopesh of S8 CSE**, who got placed as Software Engineers at Applied Materials, made us all proud by bagging the highest package in the campus placement drive 2023, with a whopping 10.55 LPA.



➔ **Carolene Joy of S6 CSE** got selected as the Campus Lead of Google Developer Student Clubs, initiating and spearheading the establishment of the club chapter at our college, fostering a vibrant community of aspiring developers.



➔ **Carolene Joy of S6 CSE** represented KTU University Badminton Team at South Zone Inter-University Badminton Tournament 2022 conducted at Jain University Bangalore.

➔ **Jeffrey Shijo, Amal EJ and Carolene Joy of S6 CSE** got the Best FOSS Project Award in Meenhacks V2 conducted at the College of Engineering Kidangoor.



➔ 11 students of CSE department have qualified for GATE 2023. The qualified students along with their all India ranks are given below:



Habeeba MK
7592



Aswin V Nair
6988



Anuksha V
4330



Analiya Remidios
10159



Joseph Renil
6557



Abhiram Sreejith
10445



Mathews Roopesh
6751



Aparna Rajeev
8644



Abhiram Rajeevan
4481



Joseph J Parayil
4612



Arya S Pillai
6923

CONNECTING THE PAST WITH THE PRESENT



Lavanya E V

Cloud Data Engineer, Seimens Gamesa

Q Can you simply explain how your time as a student at our college led to where you are right now?

In our college, there were many technical clubs and I was part of many clubs. It gave me the opportunity to connect with various professionals, know about various opportunities and get guidance. I also conducted and coordinated many events which helped me build a professional network and I was a part of various technical workshops which gave me knowledge about various domains in tech and it's rising opportunities. This really helped me to improve my personality, confidence, communication skills and presentation skills which are very important while you are hunting for a job. Also the teachers were really supportive in guiding us

Q What guidance would you offer to current students who hope to land high-level employment once they graduate? What essential tactics or actions should they take?

I would suggest everyone to focus on the core subjects as they are the foundation. Our foundation should be very strong to be a good engineer and to get the deep knowledge of project and its architecture while you are working for a company. Consistency is the key to get high paying jobs otherwise it's difficult to get a good job offer with a handsome package. Nowadays the competition is very high in IT field and you have to work hard, maintain a study schedule that you could follow everyday, do some coding, work on some amazing projects and do some good internships for your profile to stand out from the rest. Always follow a structured path, instead of randomly doing from here and there, this will keep you disciplined throughout your preparation journey. Along with this, enjoy your college life also. So keep a schedule for everything i.e, studying, enjoyment, trips etc. Consistency, hardwork and time management is the key to get your dream job.



How did networking events impact in your professional career? As students ,do you think that we should attend such events often?

Networking is something very very important and many students does not focus on that much. Even you have great technical skills, but if you are not aware regarding the opportunities around you, then even after having the requires skills, it would be difficult for you to get your dream job. You should build a professional network and it's equally important as your technical skills. More network means more opportunities. Utilize platforms like LinkedIn. You can find like minded people there and connect with them. You can connect with professionals working in your dream companies and ask them regarding interview preparation, even you can get referrals (if you have a good profile). Also improve your personality and communication skills , be part of some technical clubs in our college, participate and organise some tech events, connect with tech speakers and try to understand the reality of Tech industry and how to prepare for that. There are many teachers in our college who are specialised in certain booming tech domains. You can ask mentorship from them and work on some amazing projects.



What are some emerging technologies or trends that you find particularly exciting in the IT industry?

Technology is changing everyday. But the foundation always remains same. You should have that learning mindset to adapt to these changes quickly. Currently I am working as Cloud Data Engineer at Siemens Gamesa, I am really interested in exploring the Data field. If you ask me some of the trending domains in tech, there are many like Software Engineer(Frontend+Backend), Data Scientist, Data Engineer, ML/AI Engineer, Cloud Engineer, Data/Buisness Analyst, Devops Engineer, Cyber Security domain etc. This list is not fixed, it will again change. There are many domains in IT that you can explore and college is the right time for it. All free resourses are available in the internet now. Choose any domain that you want to explore and get your hands dirty in it. It will help you realise in which tech stacks you are actually interested in. All you need is some interest, learning mindset, consistency and connect with like-minded people to share your knowledge, get some help and build some great projects.

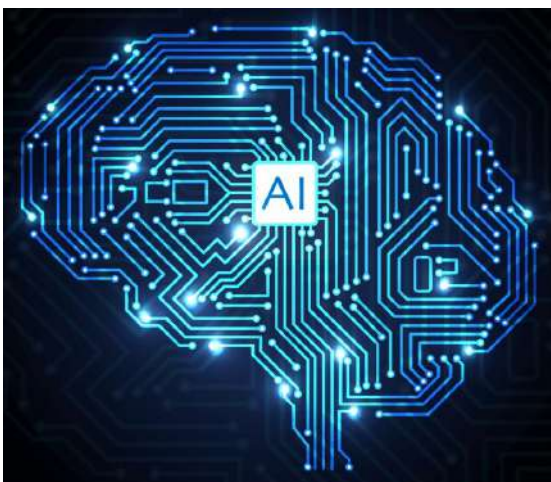
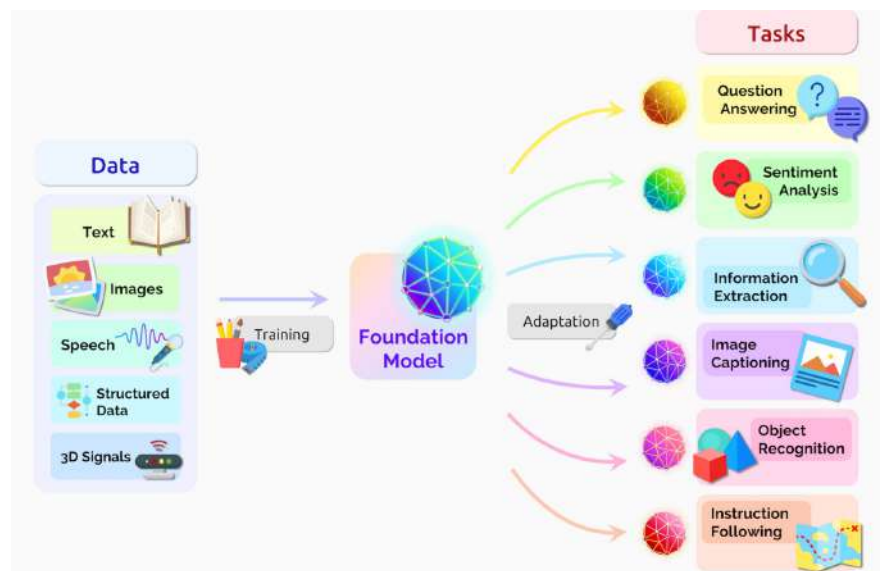
TRANSFORMERS - THE HEART OF MODERN LARGE LANGUAGE MODELS



Asjad Nabeel
Asst. Professor
Dept. of CSE

Language models are fundamental tools in natural language processing (NLP) that enable machines to understand, generate, and interact with human language. Over the years, the field of NLP has witnessed a revolutionary advancement with the introduction of transformers, a type of deep learning architecture. Conversational artificial intelligence (AI) has witnessed significant advancements in recent years. We all know, with Chat GPT (Generative Pre-trained Transformer) emerging as a game-changer. Developed by OpenAI, Transformers have emerged as the heart of all these modern language models, powering a wide range of applications, from machine translation to text generation. In this article, we delve into the transformative impact of transformers and their significance in shaping the landscape of modern language models.

Traditional language models, such as recurrent neural networks (RNNs), had limitations in capturing long-range dependencies in language due to their sequential nature. Transformers, introduced in the groundbreaking paper "Attention is All You Need" by Vaswani et al., introduced a novel architecture that revolutionized NLP. Transformers rely on self-attention mechanisms, allowing the model to weigh the importance of different words in a sentence and process them in parallel, enabling efficient modeling of both local and global relationships.



Transformers offer several benefits over traditional sequential models like RNNs. One advantage is parallel processing, made possible by the self-attention mechanism. This parallelism allows transformers to process lengthy sentences more efficiently, capturing intricate dependencies across different parts of the text. Additionally, transformers excel at contextual understanding, as they can attentively focus on relevant words and grasp the semantics and relationships within a sentence. This capability is crucial for various NLP tasks. Another strength of transformers lies in their ability to model long-term dependencies effectively. By attending to all words in a sequence, regardless of their position, transformers can capture connections between distant words, making them highly effective in tasks that require a broader contextual understanding, such as question-answering and document summarization.

Transformers have made significant contributions to various applications in the field of natural language processing. In machine translation, transformers have revolutionized systems like Google Translate by effectively capturing contextual information and long-range dependencies. This improvement has led to more accurate and fluent translations that sound natural. Transformers have also played a crucial role in language generation tasks, including text completion, summarization, and dialogue systems. By leveraging their ability to model context, transformers generate coherent and contextually relevant responses, enabling more engaging and human-like interactions. Furthermore, transformers have shown exceptional performance in sentiment analysis, accurately classifying the sentiment expressed in text. They have also excelled in named entity recognition, successfully identifying and categorizing named entities like people, organizations, and locations within textual data.

As a conclusion, Transformers have revolutionized the field of NLP and have become the heart of modern language models. Their ability to capture contextual information, model long-range dependencies, and perform parallel processing has propelled advancements in machine translation, language generation, sentiment analysis, and many other NLP tasks. As researchers continue to innovate and refine transformer architectures, we can expect further breakthroughs in language understanding and generation, leading to more sophisticated and powerful language models that truly bridge the gap between machines and human communication.



THE FUTURE OF WORK: HOW AI AND AUTOMATION IS CHANGING THE NATURE OF JOBS AND EMPLOYMENT

BY ATUL KRISHNA, S4 CSE

Decades of debate surround the topic of AI and automation's future. Some people believe that automation will eliminate human jobs and bring about the end of the world. While others are of the opinion that AI will result in a greater number of new jobs than it will take away. Although this debate is still going on, there are some facts about how automation and artificial intelligence are affecting our lives today. We can perceive what robotization has meant for the labor force in various businesses like assembling, transportation, medical services and some more.

The effect of mechanizing different jobs in these businesses should be visible to seeing what befell work rates in these areas after mechanical progressions were made. For instance, the introduction of automated manufacturing systems like industrial robots and computer-controlled machine tools resulted in a significant drop in employment rates.

THE FATE OF OCCUPATION IS DUBIOUS; HOWEVER, ONE THING IS SURE - MECHANIZATION WILL ASSUME A SIGNIFICANT PART FROM HERE ON OUT.

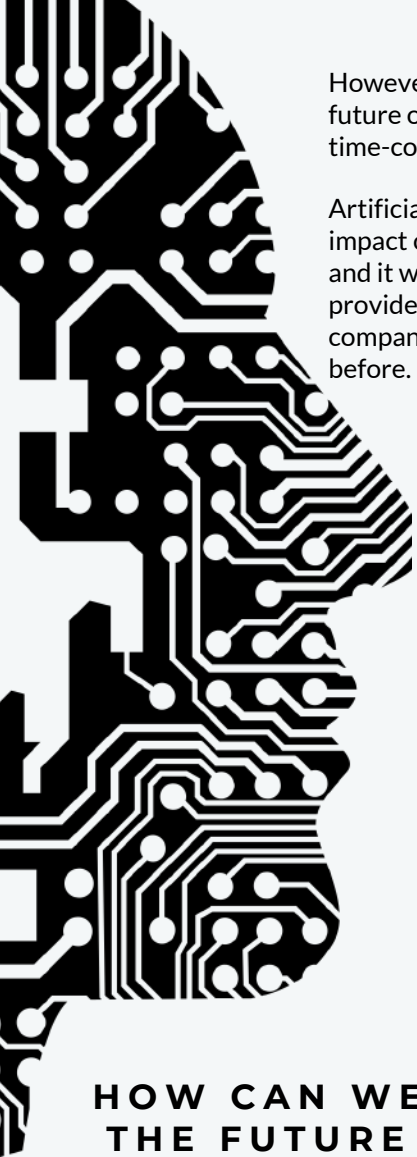
The change has already begun. Although automation has been taking place ever since the Industrial Revolution, the rate at which it is taking over has only recently accelerated. In fact, automation has eliminated more jobs than it has create. We must understand what automation means and what we can do about it.

In the future, automation and AI will have a major impact on jobs in fields such as engineering, law, medicine, and even journalism. This will lead to a different kind of job creation that focuses more on creativity and emotions than just coding or data analysis.



How Artificial Intelligence is changing the way work is performed

Automation is already replacing human workers with robots. This could be in the form of software, machines, and robots. This trend has been going on for a long time and is predicted to continue for a long time. The benefits of automation are that it can reduce labor costs, increase productivity, and improve quality.



However, this trend also poses some challenges such as job displacement and workerskilling. The future of work is changing day by day. With the help of AI, work can be more efficient and less time-consuming.

Artificial Intelligence has been around for a while now. But in the last few years, it has made a huge impact on the way we work. AI can do tasks that were considered impossible just a few years ago and it will continue to change our lives in the near future. AI can read data, learn from them and provide insights about them on its own without any human input. This makes it possible for companies to automate some of their business processes with much less human input needed than before.

The types of jobs that have a lower risk of being replaced by automation include:

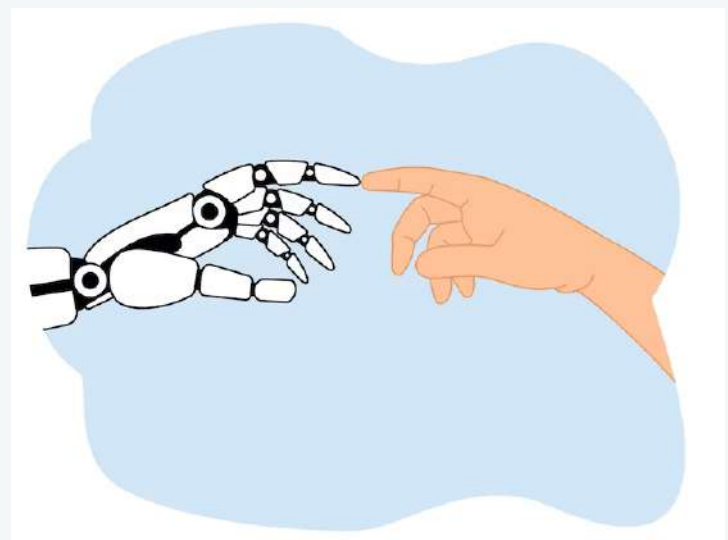
In the long run, automation will replace jobs that are highly repetitive and require little skill. For example, most of the jobs that have a lower risk of being replaced by automation include: Jobs with high levels of creativity and autonomy. Jobs that require a lot of social interaction. Jobs that require creativity and emotional intelligence.

Some jobs are more likely to be replaced by automated processes than others. The most common jobs that are at risk of being replaced by automation include administrative assistants, telemarketers, data entry and drivers.

HOW CAN WE START USING AI NOW TO PREPARE FOR THE FUTURE JOBS THAT WILL BE LOST IN 10 YEARS?

There are many industries where artificial intelligence (AI) has already made a big impact. This includes areas like finance, healthcare, transportation, and education. In the future, AI will be able to do even more things that humans can't do now. The future of jobs is uncertain, and many factors have to be considered when trying to predict what jobs will exist in the future. However, it's important to prepare for these changes because it takes time to retrain human employees so they can adapt to the new job requirements. There's intense debate on AI – it has two opposing sides that are going to continue.

Governments and corporations need to create and secure some more relevant job opportunities in light of the current world situation. There are many different ways we can start using AI now so that we can prepare for the future jobs that will be lost in 10 years. One way is by understanding how AI works and how it could help us instead of replacing us. Another way is to train AI to use data in a way that benefits humanity – this is an efficient way for each individual to contribute their own strength towards something larger. Humans just need re-skilling themselves so that they fit into the current norms of work.



DEMYSTIFYING AI: THE IMPORTANCE OF EXPLAINABLE AI IN INCREASING TRANSPARENCY AND TRUST

BY SNEHA LAKSHMI, S4 CSE

INTRODUCTION:

Explainable AI (XAI) is a crucial field of research within the realm of AI that aims to enhance the transparency and interpretability of AI systems. The goal is to enable humans to understand and trust the decisions made by these systems. Imagine the impact of having reliable and trustworthy AI, especially in domains like healthcare and finance.



APPLICATIONS OF XAI:

Despite the ongoing debates and criticisms surrounding AI, it has already become an integral part of our lives, from traffic cameras ensuring road safety to advanced language models like GPTs assisting us in writing articles. The need for XAI arises in scenarios that demand the implementation of the social right to explanation.

One notable application of XAI is in data protection. The European Union's General Data Protection Regulation includes a 'right to explanation' clause, which necessitates the use of XAI techniques to provide transparent explanations for AI-driven decisions. In the medical field, XAI finds application in Clinical Decision Support Systems (CDSS). These systems aim to predict diagnoses for patients based on their medical records. By providing convincing positive predictive values and addressing clinicians' queries about how and why a diagnosis was arrived at, CDSS becomes more valuable and logical. Defense is another domain where XAI plays a vital role. Particularly in military practices, the ability of XAI to help lethal autonomous weapon systems (LAWS) differentiate between civilians and combatants can significantly reduce unintended harm. In the banking sector, XAI can assist in reducing false positives when detecting suspicious activities. Regulators monitor overall business volumes and the number of reported cases, and any ratio that deviates from industry norms requires investigation. XAI can enhance fraud detection efficiency in such cases. Additionally, XAI has the potential to address the limitations of traditional AI models in finance. Legacy models often reject credit applicants with limited or no credit history, leaving many Americans without access to credit. On the other hand, XAI employs more comprehensive data and advanced algorithms to identify creditworthy borrowers who would have been overlooked.

CHALLENGES AND LIMITATIONS OF XAI:

Implementing XAI brings both benefits and challenges, as well as certain limitations. Data privacy and security concerns are critical factors to consider.

While analyzing public and private data can yield valuable insights for decision making, the use of sensitive data to explain certain decisions must be managed carefully to protect privacy and security. The complexity of AI models poses another challenge.

As AI models evolve, they become increasingly complex, making it more difficult to explain their decision making processes. XAI systems must continually improve to provide meaningful explanations for AI decisions.

Addressing human bias is a critical aspect of XAI. Despite its focus on transparency, XAI can still be influenced by biases present in the data and algorithms used.

It is essential to consider data sources and algorithms carefully while promoting diversity and inclusion in AI technology development. User understanding is also a challenge. While XAI aims to make AI models more understandable, some users may lack the necessary background knowledge to fully comprehend the explanations provided. Designing XAI systems that cater to different user groups' needs and knowledge levels is crucial to foster understanding



FUTURE DIRECTIONS OF XAI:



One promising direction for future XAI research is the development of more user-friendly interfaces for explaining AI systems. This could involve natural language explanations or interactive interfaces that allow users to explore and manipulate the underlying model directly. For example, an XAI system that explains medical diagnosis could use an interactive interface that allows doctors to see how the model arrived at a particular diagnosis and explore alternative diagnoses based on different symptoms

Another exciting direction for XAI is the incorporation of human feedback into the explanation process. This means that XAI systems could learn from human feedback and iteratively refine and improve their explanations over time. For example, an XAI system that explains credit card fraud detection could learn from human feedback which aspects of the explanation are most useful and adjust the explanation accordingly.

In conclusion, as we continue to develop and improve AI systems, it's important to remember that the ultimate goal of AI is not to replace humans, but to work alongside us as partners. In the words of Wall-E, "I don't want to survive, I want to live!" And with the help of explainable AI, we can ensure that AI systems are transparent, trustworthy, and able to work with humans to create a better future. So let's keep working towards a world where humans and machines can coexist in harmony, just like Wall-E and EVE



INTEROPERABILITY IN WEB3

BY ASHNI CHINNU SAM, S6 CSE

The inability of protocols to connect with one another limits blockchain technology today. Interoperability aims to solve this problem. This covers applications created on those networks in addition to layer 1 protocols like Ethereum and Polkadot. In the context of Web3, interoperability refers to the capacity of various blockchain networks, decentralized apps (DApps), and other elements of the Web3 ecosystem to interact, share data, and communicate with each other in a smooth manner. It attempts to get rid of the fragmentation and isolation that characterize d



The blockchain interoperability problem

Early blockchain platforms like Ethereum and Cardano created the framework for how extensive blockchain's potential may be. By offering a blank canvas for technical creation, study, and advancement, numerous groundbreaking systems that we now rely on were created. Just two examples include decentralized finance and on-chain data storage. Addressing the blockchain interoperability problem requires the development of standardized protocols, cross-chain communication mechanisms, and interoperability frameworks. Projects and initiatives such as Polkadot, Cosmos, Ethereum 2.0, and interoperability-focused blockchain networks aim to provide solutions that



enable seamless communication and asset transfer between different blockchain networks. These efforts strive to create a more connected and cohesive decentralized ecosystem that benefits users and developers alike.

Why is it crucial?

Web3 interoperability plays a critical role in facilitating blockchain mass adoption. Interoperability addresses one of the major barriers to widespread blockchain adoption, which is the fragmentation and isolation of blockchain networks. Here are some examples of how web3 interoperability contributes to blockchain mass adoption:



1. **Seamless User Experience:** Interoperability allows users to access and interact with decentralized applications (DApps) and assets across different blockchain networks without the need for multiple accounts or complex setups. This seamless user experience enhances accessibility and encourages mainstream adoption of blockchain technology.

2. **Expanded Use Cases and Liquidity:** Interoperability enables the transfer of assets and data across different blockchains. This unlocks new use cases and expands the potential for decentralized finance (DeFi), cross-chain tokenization, and other innovative applications. Interoperability also fosters liquidity by allowing assets to move freely between different chains, enhancing the overall efficiency of the ecosystem.

3. **Collaboration and Network Effect:** Interoperability encourages collaboration and resource sharing among blockchain projects and communities. It facilitates the exchange of ideas, expertise, and resources, leading to the development of more robust and feature-rich applications. The network effect created by interconnected blockchains attracts more users, developers, and investors, contributing to the overall growth and adoption of the technology.

4. **Reducing Vendor Lock-In:** Interoperability reduces the dependency on a single blockchain network or platform. It allows developers and users to leverage the strengths of different chains and avoid being locked into a specific ecosystem. This flexibility encourages experimentation, innovation, and healthy competition, ultimately driving mass adoption.



5. **Integration with Existing Systems:** Web3 interoperability enables blockchain technology to integrate with existing systems and infrastructure. This integration is crucial for enterprises and institutions looking to adopt blockchain solutions without completely overhauling their existing systems. Interoperability allows for smooth data exchange and collaboration between blockchain networks and traditional systems, making it easier for businesses to embrace blockchain technology.

6. **Regulatory Compliance:** Interoperability can facilitate regulatory compliance by enabling the secure and auditable transfer of data and assets across different blockchains. It provides a framework for maintaining compliance with existing legal and regulatory requirements, thereby addressing one of the concerns that may hinder mass adoption of blockchain technology.

Overall, web3 interoperability fosters a more connected, versatile, and scalable blockchain ecosystem. By removing barriers, promoting collaboration, and expanding the possibilities for blockchain applications, interoperability paves the way for widespread adoption of blockchain technology across various industries and user segments.

Future of web3 interoperability

The future of web3 interoperability is poised to be transformative for the blockchain industry. As blockchain technology continues to mature, we can expect to see a more seamless and interconnected ecosystem. Interoperability protocols will become standardized, enabling efficient communication and data sharing between different blockchains. This will lead to the rise of multi-chain decentralized applications (DApps), where users can access services and assets across multiple chains. Cross-chain asset transfers and decentralized finance (DeFi) will flourish, with increased liquidity and the creation of cross-chain financial products.



Interoperability will extend beyond blockchains, integrating with traditional systems and infrastructure, facilitating smooth data exchange and collaboration. Innovations in oracles and data interoperability will enhance the reliability and accuracy of external data sources. Governance mechanisms will evolve to enable cross-chain coordination and decision-making. Regulatory frameworks and compliance solutions will address legal aspects, ensuring a secure and compliant environment for interoperability. Overall, the future of web3 interoperability holds the promise of a more connected, inclusive, and versatile blockchain ecosystem that paves the way for widespread adoption and innovative use cases across industries.

6G NETWORK: ROLE OF QUANTUM COMPUTING INSPIRED TECHNIQUES



BY JOSEPH RENIL JOSHY, S8 CSE

6G, short for sixth-generation wireless technology, refers to the potential future iteration of wireless communication networks that would succeed the existing 5G networks. While 5G networks are still in the process of being deployed globally, the development of 6G technology has begun as a response to the increasing demands for even faster, more reliable, and more interconnected wireless connectivity.

The need for 6G network arises from several factors and evolving requirements in the realm of wireless communication. The first and important requirement is of the increasing data demand. As technology advances, we can see the improvement in the field of video streaming, virtual reality, augmented reality, cloud gaming etc which demands a massive amount of data for uninterrupted services. Development in the field of autonomous vehicles, remote surgery advanced robotics etc require ultra-low latency.

Also, a massive expansion is happening in the field of the Internet of things (IoT) which helps in various sectors like healthcare, transportation, smart cities etc. It need support to accommodate massive scale of interconnected devices and enable seamless communication between them. For all applications, the emerging technologies in the field of 6G plays a vital role.

Some of the potential features and characteristics that 6G network can offer include extreme speed and capacity, ultra-low latency, enhanced connectivity, intelligent network architecture, enhanced security and privacy etc. All these features help the network to implement the above-mentioned applications and advancements in a better way.

So, we understood about the importance of 6G network in the coming years. The technologies used for implementing networks till now is enough but not sufficient in implementing the 6G network. Also, a lot of advancements are occurring in the field quantum computing in the recent years. This emerging technology can be utilised in implementing the 6G network.





What is quantum computing?

Quantum computing is a field of computer science that focuses on developing computer systems that utilize the principles of quantum mechanics to perform certain types of calculations more efficiently than classical computers. While classical computers store and process information as bits that can represent either a 0 or a 1, quantum computers use quantum bits, or qubits, which can exist in multiple states simultaneously.

The fundamental unit of information in a quantum computer, the qubit, can represent a 0, a 1, or a superposition of both states. This property is known as superposition. This unique property allows quantum computers to perform parallel computations, potentially enabling them to solve certain problems much faster than classical computers.

As an example, all cryptographic algorithms are made in such a way that it is not tolerant against brute force attack. If we try to implement a brute force attack on any of the algorithm, it will take more than hundreds of years to break the code if we are using classical computers. But, if we are using quantum computers, we can make use the property of parallelism.

Quantum computers can perform calculations on multiple inputs simultaneously, because of the phenomenon called superposition. This parallelism allows quantum computers to explore a vast number of possibilities simultaneously, potentially speeding up the search for a solution compared to classical computers. The same algorithm which causes classical computers to work more than hundred years will break within a day, if we are using a quantum computer for computations.

Another key concept in quantum computing is entanglement. Entanglement allows qubits to be linked together in such a way that the state of one qubit is dependent on the state of another, even if they are physically separated. This property enables quantum computers to process information in a highly interconnected manner, which can be harnessed to solve complex problems efficiently. It is believed that quantum computers will be exceptionally powerful at solving certain types of problems that are currently intractable for classical computers. However, building practical, error-tolerant quantum computers remains a significant technological challenge due to the delicate nature of qubits and the susceptibility to noise and errors. Researchers and companies around the world are actively working on developing quantum computing hardware, algorithms, and error correction techniques to overcome these challenges and unlock the full potential of quantum computers.

How quantum computers can be used in realizing 6G?

Quantum computers have the potential to contribute to the development of 6G networks in several ways

- **Optimization of Network Design:** Quantum computers can help optimize the design and deployment of 6G networks. They can solve complex optimization problems that arise in network planning, such as finding the optimal placement of base stations, optimizing resource allocation, and minimizing interference.
- **Enhancing Security:** Quantum computing can play a crucial role in strengthening the security of 6G networks. Quantum communication protocols, such as quantum key distribution (QKD), can provide secure communication channels that are resistant to eavesdropping and hacking attempts. QKD utilizes the principles of quantum mechanics, specifically the behaviour of quantum particles, to establish a secure key exchange. The basic idea behind QKD is that the act of measuring a quantum system disturbs it, making any eavesdropping attempts detectable. The security of QKD lies in the fact that any eavesdropping attempt would disturb the quantum particles, causing detectable errors during the measurement and comparison stage. This property is known as “no-cloning-theorem”.
- **Machine Learning and AI:** Quantum computers can accelerate the training and optimization processes in machine learning and AI applications that are integral to 6G networks. Quantum machine learning algorithms, such as quantum neural networks, can potentially provide faster and more efficient processing of large-scale data sets.



- **Simulation and Modelling:** Quantum computers can simulate and model complex systems, including wireless channels, propagation environments, and network behaviour. These simulations can help optimize the performance of 6G networks, predict the behaviour of novel network architectures and analyse the impact of various factors on network performance.
- **Internet of Things (IoT) Connectivity:** Quantum computing can contribute to the scalability and efficiency of IoT devices and networks in the context of 6G. Quantum-inspired algorithms can improve the routing and scheduling of IoT devices, leading to better resource utilization and reduced congestion.
- **Quantum markov chain theory:** It combines concepts of quantum mechanics and Markov chain and can potentially be used in various ways in the context of 6G. Some potential applications include channel modelling, state prediction, error correction, network optimization etc.

These are some of the ways in which we can use the concepts of quantum computing in enabling 6G networks. The application of quantum computing concepts in implementing 6G can reduce the complications of this process to a greater extent

When its time to say goodbye...

This place made me realize what I am capable of and was a great teacher to me personally. The two phases of the college life taught me many things in my life. Before corona I was so freaky, chilled out, carefree and all. I slowly started hating myself, found me shattering into pieces, crying around like a stubborn kid made me hate this college as well. I wished for a break and then I came back to college after almost two years. That break from college made me realize many life lessons. I unlearned, learned and relearned many of the things. Made new connections which helped me breathe fresh air and it felt like home. Laughed again, cried again, found me again after all the battles. And here I am, leaving with these beautiful memories, carrying them in my heart wherever I go.



Josna T P

As 2k19 batch we didn't get the four years of college life, exactly one year was handled with corona. And as a LET student I got only two years. Simply I can say that more than one year we weren't in the college class room we were in google classroom. Everything moved from hardcopy to soft copy. Literally this college life completely different from what I expected.



Fathimath Mufeedha K P

When we back to our normal offline classes we have only two years were left. We only know the faces that we saw in whatsapp Dp. Especially the mask made more difficult to identify friends. I'm pretty sure that I had chat with everyone in my class. By the time I got close to everyone, the final year had arrived. The last two years we spent on top floor and it takes more than fifteen minutes from dharmashala. So I was in a Walking race Whenever I missed college bus.

Eventually I was used to attend the class at half past nine and all that credit goes to my friends who are hostellers.

Sitting in the front bench and shaking head and saying yes just for supporting the teacher even when we did not understand anything was one of the incredible moment we had.

However we are going to miss some beautiful moments, and some good buddies. And the other thing is that I will always be proud as a computer science student since we got the coolest faculties..

As I look back on my journey over the past four years, I see a different reflection of myself in the mirror, not just externally with facial hair growth, but as a changed man on the inside as well. In my first year, I spent my time exploring clubs like Robocek and IEEE, enjoying hostel life, and trying to shed my nerdy skin by making more social interactions and improving my physical fitness. I also secured an internship. However, my plans were derailed by the pandemic when the online system was introduced, reducing club activities, and canceling inter-college trips.

Returning to normal life was difficult as I struggled to reconnect with those who were once closer to me. I lost my sense of purpose, feeling as though I had nothing to do. Despite this, I kept pushing forward in my academics and was rewarded with good results. Some of my judgments, such as opting for a minor degree, turned out to be perfect choices. Soon I rediscovered myself by exploring new places, new people, new hobbies having late-night talks, rides, going to the gym, and attending college dances and events. I discovered that as our experiences change, we change as well, and the people and world around us change with us.



Akhil S Nair

One of the best experiences GCEK offered me was our industrial visits. Our first official one had more students, but the second unofficial one was more thrilling. My college taught me how to learn and understand new topics on my own through reference materials, how to work on projects, withstand academic pressure, and coordinate with others.

Despite having secured job placements, I am still uncertain whether this is what I want to do for the rest of my life. That is the beauty of pursuing a B.Tech degree at GCEK. It is not a destination or even a pit stop, but rather a journey to discover your talent and passion and to combine them to achieve success. My advice to juniors is to try everything, explore every club, drop those that do not interest you, and stick with the ones that do. Over the four years, you will gain a vision and work towards fulfilling it. Be a contrarian if that is what you feel strongly about.

Now, as I accept the fact that I am going to be an ex-GCEKian, I am content with what I have achieved. I "lived" a happy life here with my people, and I will miss them and this place, but I will keep them all alive and well in my memories



Pournami K K

I was a confused teenager when I came here, having no idea of what college life would look like and no aim other than getting a placement and making a few friends. Since the majority of our class was of bio science background and me being one among them, our initial days were of shared concerns on whether we would be able to learn programming and whether CS would be the right branch for us. But we had faculties and seniors to guide and motivate us and make us feel safe.

Towards the end of the first year, I found myself trying to come out of my cocoon, exploring outside curriculum and meeting and connecting with new people. 2nd to 4th semesters were online due to Covid and we missed a good portion of our college days. It was during the lockdown that I took part in every club event that I could, took up responsibilities and polished my technical and soft skills. Post-lockdown was mainly about trying to gather memories and

moments that we couldn't during the past 1.5 years, going for IV and then preparing for placements. Four years went too fast and before we can process it, we are in the stage to be labelled as alumni.

There were days good and bad, memories sweet and bitter, lessons learnt and unlearnt and I believe it is the combination of everything that moulded the current version of mine. The transition from the schoolgirl who was not bothered about anything other than studies to the person who worked on identifying her strength and weaknesses and finally finding the courage to speak in front of audiences, take classes and organize programs is something I'm proud of. I'm leaving here not merely as a person who had completed the degree, but with a ton of memories to be cherished for a lifetime and a good bunch of people who turned from strangers to friends who can be counted on always. As it is time to say goodbye, I'm grateful to GCEK for giving the best to me!

Industrial Visit

College trip had offer us a chance to connect theoretical knowledge with real-world experiences. We had about 55 students for this trip and almost everyone in our class came, which was awesome because we were able to make new connections even with teachers.

This was our first time we went to Microsoft office in Bangalore, which made us feel that we have achieved a small dream of our life and being there for few hours made our dreams bigger.

Our next destination was Goa which was our main goal, we headed to Goa and it was fun. Everyone enjoyed the trip and was a memorable one.

This trips provided an invaluable opportunity for us to explore the world beyond classrooms, expand our horizons, and create lasting memories.



Jomel Benny



Memories



FROM THE EDITOR'S DESK



Finally, we are here with the new edition of "Threads". Yes.. The journey was fruitful ! When there was a dramatic halt for releasing the magazine, our faculties came up with the concept of launching the new version of Threads. It wasn't that simple to give old Threads new life. But with incredible teamwork, we succeeded.

The journey in the making of this magazine was pleasant and thrilling with our enthusiastic editorial team, working relentlessly in their attempt to compile a masterpiece. Our endeavour has been to accomplish a benchmark by getting original articles, and the chain of events happened with the support of our dear faculties. The experience was extremely humble.

Connecting with the students who can truly contribute to this magazine was also quite thrilling. For the sake that we needed "Threads" with all its good essence. I'm astonished by all the little things they've accomplished, though, after giving them all the directions I've been given. Not just our students, but also our former pupils. How gleefully they greeted us and contributed. I therefore thank our entire department for reposing their faith in us and extending their wholehearted contribution in every possible way.

Now that you can all read and understand Threads, start preparing your own articles for the upcoming editions. I'm expecting that this will be distributed throughout all upcoming batches and that all editions will be released continuously.

Signing off,
Arshad Danish

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