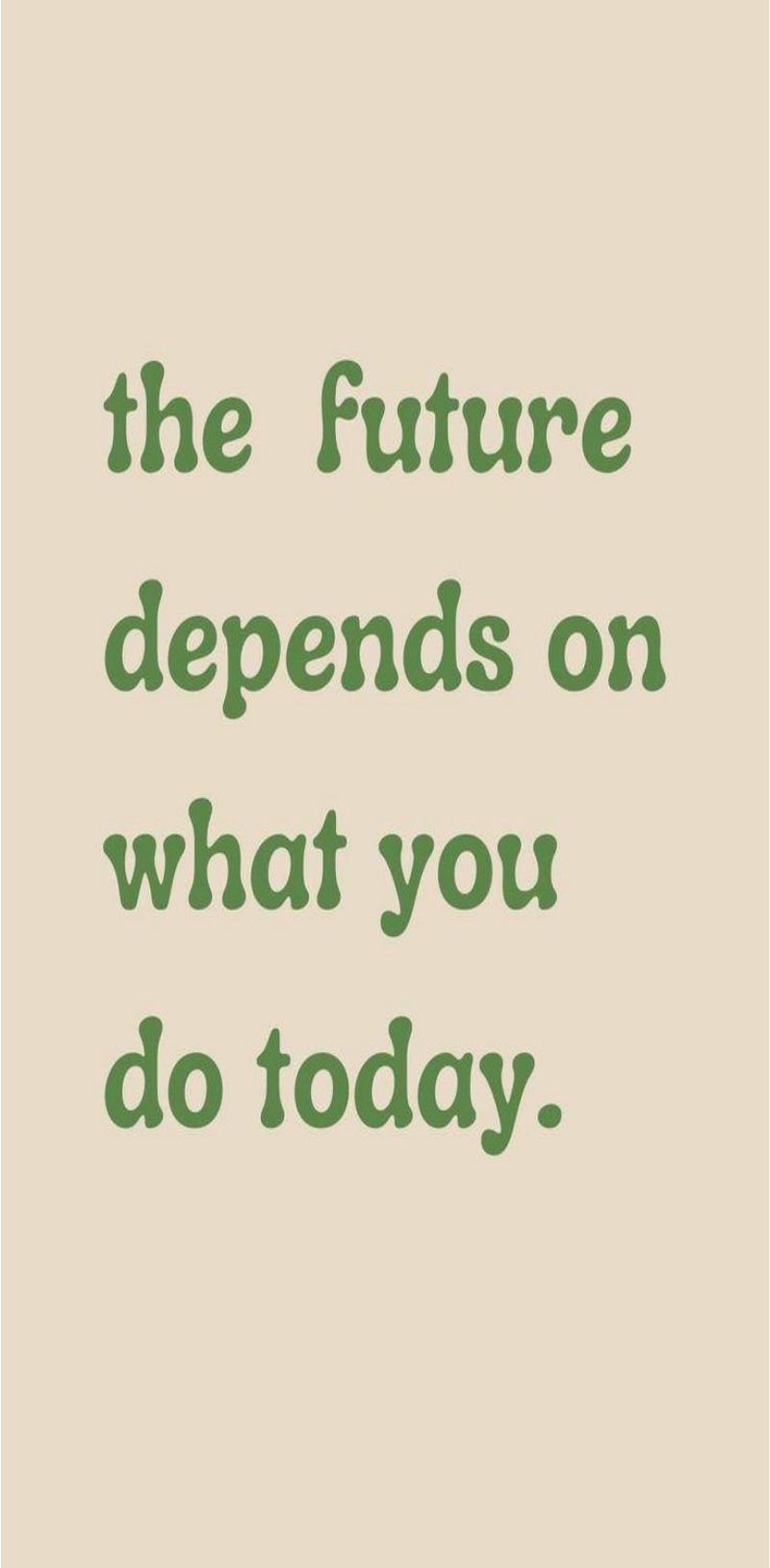
Thought of the Month



Department of Computer Science and Engineering
CEC, CGC Landran

Vision of the Chandigarh Engineering College

To become a leading institute of the country for providing quality technical education in a research based environment for developing competent professionals and successful entrepreneurs.

Mission of the Chandigarh Engineering College

1. To provide state of the art infrastructure and engage proficient faculty for enhancing the teaching learning process to deliver quality education.
2. To give a conducive environment for utilizing the research abilities to attain new learning for solving industrial problems and societal issues.
3. To collaborate with prominent industries for establishing advanced labs and using their expertise to give contemporary industry exposure to the students and faculty.
4. To cater opportunities for global exposure through association with foreign universities.
5.To extend choice based career options for students in campus placements, entrepreneurship and higher studies through career development program.

Program Educational Objectives (PEOs)

Computer Science and Engineering graduates will be able to:

PEO1: Analyse and solve Computer Science and Engineering problems through acquired knowledge in mathematical and engineering concepts.

	PEO2: Excel in the field of computing technologies with usage of modern tools and multidisciplinary approach, to succeed in diversified domains of industry and academia. PEO3: Develop professional and ethical attitude, communication skills, and an ability to relate computer engineering issues with societal needs. PEO4: Adapt to new technologies and constantly upgrade skills with an attitude towards lifelong learning. PEO5: Exhibit technical and research abilities along with a zeal to lead and work in team environment.

Editorial Board

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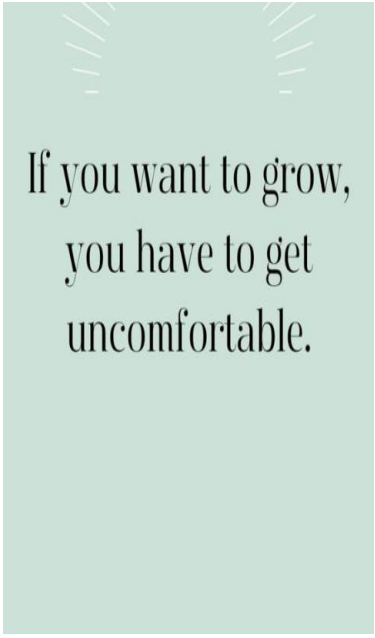
DID YOU KNOW



Chandigarh Engineering College –CGC Landran, Mohali (Punjab)

NEWSLETTER

CEC CSE BROADCAST

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Issue –

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Message from the Head HR

Mr. Barinder S. Sawhney
Head-HR

We all know that CGC is an institution par excellence in providing academic brilliance and placement opportunities. I am elated to hear that CEC is coming up with their fourteenth edition of the newsletter, since it acts as a platform to motivate the students and faculty to learn and showcase their talent and also helps them to indulge in academic activities.

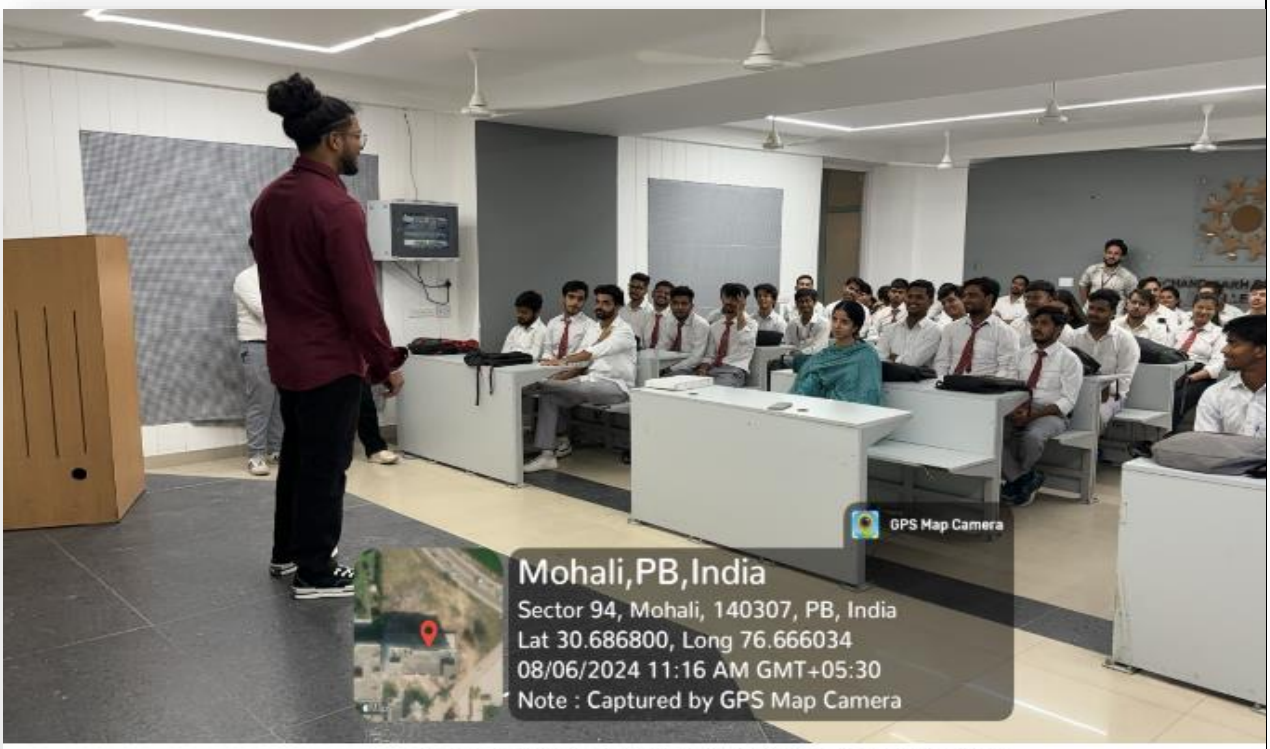
I pass on my good wishes to the entire team associated with the newsletter and wish them success for the future.

Importance of Feature Extraction methods for Real World Applications

To built any real world application there are four phases and these are Image Pre-processing, Feature Extraction, Dimension reduction and Classification. Some examples of the real world applications are Biometric authentication, Mobile phones, Surveillance cameras, For Security purposes etc. In pre-processing the steps of image enhancement and image filtering are performed. Then important and relevant features are extracted through robust and discriminant algorithms. Dimension reduction is necessary to choose the essential features for classification by removing the redundant features. Finally the matching is performed by using the effective and efficient classifier. Among all these phases the feature extraction is the most prominent and major phase. The feature extraction method is classified into different categories and these are local, global, hybrid and deep learning. For different applications application the results achieved by the deep methods is very amazing. In most of the unconstrained conditions the deep learning methods achieve astounding results. For extracting features in deep methods a pre-trained deep CNN is utilized. Some examples of deep methods are AlexNet, VGG, ResNet-50 and LetNet.

CSE Department of CEC CGC Organized Alumni talk on Essential Technological Skills for Students;

The CSE Department organized an alumni talk on & Essential Technological Skills for Students; for B. Tech 5th-semester students on August 6, 2024. Vikas Mahendra, a Senior Software Developer at Jalson Business Solutions LLP, delivered the two-hour session. He specializes in optimizing system performance, strategic project planning, and mentoring junior developers. With expertise in various software technologies and frameworks, he provides robust solutions and valuable industry insights. Drawing on his extensive experience in software development and project management, Mr. Vikas covered crucial topics, including project management, programming languages, core skills, multitasking, recession management, web development, and placement guidance.



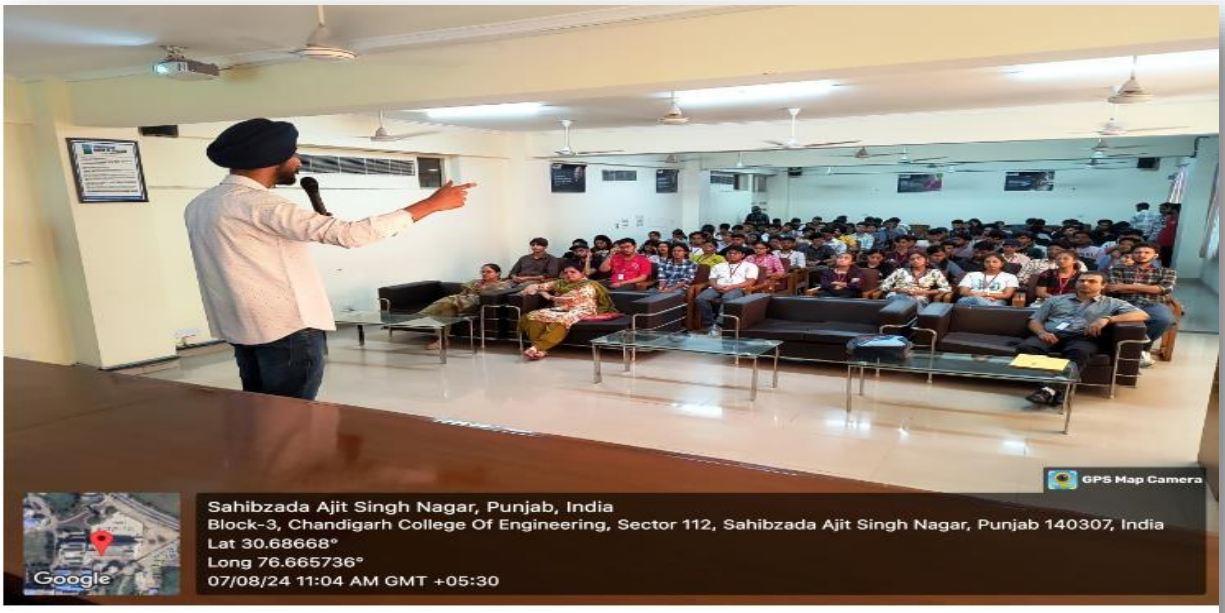
Alumni talk on Essential Technological Skills

Appreciation to Alumni with students

CSE Department of CEC CGC Organized Workshop on “Blockchain”

The CSE Department organized a 3-hour workshop on “Blockchain” for B.Tech (Data Science) and B.Tech (IoT & Cyber Security with Blockchain Technology) students on August 7, 2024. This session was conducted by Mr. Udayveer Singh, a senior blockchain developer and educator with extensive experience in the field. Mr. Singh has over 3 years of experience, having worked with CoinDCX and Antier Solutions, and is currently an educator at SwapSo, an edtech startup from IIT Bombay. His expertise includes DeFi, NFTs, blockchain gaming projects, and he has also mentored various hackathons.
The workshop covered a wide range of topics, including the basics of cryptocurrency, the client-server model, and peer-to-peer networks. Mr. Singh also discussed centralization versus decentralization of data, cryptography techniques, and the advantages and disadvantages of blockchain. The objective of the workshop was to educate students on blockchain technology and cryptocurrency, providing insights into the technical aspects, practical applications, and career opportunities in this rapidly evolving field.

Workshop on Blockchain by Mr. Udayveer Singh



Student Interaction

CSE Department of CEC CGC Organized Industrial Visit to Grazitti Interactive, Panchkula

The Department of Computer Science & Engineering at Chandigarh Engineering College (CGC), Landran, organized an industrial visit to Grazitti Interactive, Panchkula, on August 9, 2024. The visit began with an introductory session where the company representative, Ms. Vanshika Sharma, spoke about the company foundation and its various clients. The CRM, Salesforce tools, and quality assurance tools were discussed in the following sessions, conducted by Ms. Jaspreet Kaur Chhabra and Mr. Asheesh Nayak. Additionally, technologies such as UI, UX, MERN, MEAN, Django, CSS, and JavaScript were explained by the technical trainer, Mr. Sahil Deep Singh. The visit concluded with a company tour, where students were informed about the company upcoming webinar. The objective of the industrial visit was to provide students with real-time exposure, familiarize them with current technological advancements, and offer insight into industrial life. Students learned about Grazitti Interactive and its operations, gaining valuable knowledge about various technologies, including UI, UX, MERN, MEAN, Django, CSS, and more. They also gained a deeper understanding of the working environment at the organization and acquired knowledge about quality assurance tools and CRM through the technical sessions.

India With AI in 2050

India with AI in 2050: A Glimpse into the Future
India, a land of diverse cultures and rich heritage, is on the brink of a technological revolution. By 2050, Artificial Intelligence (AI) is poised to transform the country in ways that are both profound and far-reaching. The integration of AI across various sectors promises to enhance productivity, improve quality of life, and address longstanding socio-economic challenges.

Transforming Healthcare
By 2050, AI-driven innovations are expected to revolutionize healthcare in India. Advanced AI algorithms will facilitate early diagnosis and personalized treatment plans, significantly improving patient outcomes. Wearable devices and AI-powered health monitoring systems will enable continuous health tracking, allowing for timely interventions.Predictive analytics will play a crucial role in managing epidemics and pandemics, enhancing the country's ability to respond swiftly and effectively.

Revolutionizing Education
The education sector in India will undergo a dramatic transformation with the advent of AI. Personalized learning experiences tailored to individual students' needs and abilities will become the norm.. AI-powered systems will optimize crop yields by analyzing soil health, weather patterns, and pest infestations. Precision farming techniques, driven by AI, will minimize resource wastage and maximize productivity. Drones and robotic systems will automate labor-intensive tasks, reducing the burden on farmers and increasing efficiency. By 2050, AI will enable sustainable farming practices, ensuring food security for the growing population.

Boosting the Economy
AI will be a key driver of economic growth in India by 2050. The integration of AI in industries such as manufacturing, retail, and finance will streamline operations, reduce costs, and enhance productivity. The rise of AI-powered startups will create new job opportunities and drive economic development. Additionally, AI will facilitate smart city initiatives, improving urban infrastructure, traffic management, and public services.

Addressing Societal Challenges
AI will play a pivotal role in addressing some of India's most pressing societal challenges. AI-driven solutions will enhance disaster management and response, reducing the impact of natural calamities.Furthermore, AI will aid in the efficient delivery of government services, ensuring transparency and accountability.

Conclusion
By 2050, AI will be deeply embedded in the fabric of Indian society, driving progress and innovation across all sectors. The transformative power of AI will not only propel India towards economic prosperity but also address key societal challenges, paving the way for a brighter and more inclusive future. As India embraces this AI-driven future, is imperative to ensure ethical considerations and equitable access to technology, ensuring that benefits of AI are shared by all.

Meenkshi (2236879)
B.Tech. CSE

Generative AI: From Sci-Fi Dream to Reality - Unleashing a World of Creative Potential

Generative AI is no longer the stuff of science fiction movies. It's here, it's working wonders, and it's poised to revolutionize the way we create content, design products, and approach problem-solving across industries.

Unveiling the Magic: What is Generative AI and Why Should You Care?

Imagine a world where a machine can write a catchy jingle, dream up a ground breaking invention, or paint a masterpiece – all based on your instructions. That's the power of generative AI, a form of artificial intelligence focused on creating entirely new content from text and images to code and even music. Here's the exciting part: generative AI is rapidly evolving. Let's delve into the latest breakthroughs that are pushing the boundaries of what's possible in 2024.

2024 and Beyond: A Glimpse into the Cutting Edge of Generative AI

● The Wordsmith Within: How AI is mastering the Art of Language Chatterbots on Steroids: The Rise of Large Language Models (LLMs) Think of LLMs like me as super-powered catboats that can not only have conversations but also craft different writing styles – from composing a press release to penning a sonnet. ○ From Blank Page to Bestseller: AI-Powered Writing Assistants Take Centre Stage Say goodbye to writer's block! AI assistants are here to help generate ideas, overcome creative roadblocks, and even write entire drafts, making content creation faster and more efficient.

● Beyond Text: When Images and Videos Leap off the Screen Dall-E 2 and Beyond: The Age of Photorealistic AI-Generated Art Imagine describing your dream vacation destination and having a picture-perfect image appear before your eyes. Thanks to tools like Dall-E2, creating hyper-realistic images based on text descriptions is becoming a reality. Lights, Camera, Action! The Rise of AI-Powered Video Editing Thorold of video editing is also embracing AI. New software can streamline tasks like colour correction and basic editing, freeing up editors to focus on the creative aspects.

● Code and Design: When Creativity Meets Automation ○ From Scratch to Prototype: How AI is assisting with Product Design Stuck on a design concept? AI can help generate initial ideas and variations based on your specifications, accelerating the design process. Coding Companions: AI Tools that Write Code alongside You Don’t worry, coders, AI isn't here to replace you. Instead, generative models can create basic code snippets or suggest solutions, making development faster and more efficient. These are just a few examples of how generative AI is making waves in 2024. But the future holds even more exciting possibilities!

Dapinty Saini
Assistant Professor
Dept. CSE
CEC CGC

The Impact of 5G on IoT Development

Introduction:

The fifth generation of wireless technology, commonly known as 5G, is set to revolutionize the Internet of Things (IoT). This new technology promises significant improvements in speed, latency, and capacity, which will profoundly affect the development and deployment of IoT devices. This article explores how 5G will impact IoT development, highlighting the key technical advancements and their implications for various industries.

What is 5G?

5G is the latest iteration of mobile network technology designed to enhance the capabilities of current 4G LTE networks. It aims to provide:

Higher Data Rates: Speeds up to 10 Gbps, which is 10 to 100 times faster than 4G.

Ultra-Low Latency: Latency as low as 1 millisecond, significantly reducing the delay in communication.

Increased Connectivity: The ability to support up to 1 million devices per square kilo-meter.

Enhanced Reliability and Network Slicing: Offering dedicated resources for different types of applications, ensuring high reliability.

Key Technical Advancements of 5G:

1. Milli-meter Waves (mm-Wave): These higher frequency bands (24 GHz to 100 GHz) provide more bandwidth and faster speeds but have shorter ranges and are more susceptible to obstacles.

2. Small Cell Networks: These are low-powered cellular radio access nodes that can be installed densely to improve coverage and capacity, especially in urban areas.

3. Massive MIMO (Multiple Input Multiple Output): This technology uses multiple antennas to send and receive more data simultaneously, improving speed and efficiency.

4. Beamforming: Directs signals to specific users rather than broadcasting in all directions, enhancing signal strength and reducing interference.

5. Network Slicing: Allows the creation of multiple virtual networks on a single physical 5G network, tailored to different applications and services.

Impact of 5G on IoT Development:

1. Enhanced Device Connectivity

The increased capacity of 5G networks will enable the connection of a vast number of IoT devices. This is particularly important for smart cities, industrial IoT, and large-scale sensor networks, where the number of connected devices can be immense.

2. Real-Time Data Processing

Ultra-low latency is critical for applications that require real-time data processing, such as autonomous vehicles, remote surgery, and augmented reality. 5G's low latency ensures that data can be transmitted and processed almost instantaneously, enabling these technologies to function effectively.

3. Improved Energy Efficiency

5G technology includes improvements in energy efficiency for IoT devices, which is vital for battery-powered devices such as sensors and wearables. Longer battery life will lead to reduced maintenance costs and increased deployment of IoT devices in remote or hard-to-reach areas.

Conclusion:

The advent of 5G technology is set to significantly accelerate the development and deployment of IoT devices.. However, addressing the associated challenges will be crucial to fully realizing the potential of 5G in the IoT landscape. As 5G networks continue to roll out globally, the future of IoT looks more connected and intelligent than ever before.

Mohit Thakur(2236889)

B.Tech. CSE

The Impact of 5G on Education: A New Era of Connectivity

The arrival of 5G technology is poised to revolutionize various industries, and education is no exception. With its ultra-fast speeds, low latency, and higher connectivity capabilities, 5G can transform how educational content is delivered and accessed, opening up exciting possibilities for more interactive and immersive learning experiences. Here's a look at how 5G can reshape the educational landscape.

What is 5G?

5G is the fifth generation of mobile network technology, promising speeds up to 100 times faster than 4G and a significant reduction in latency, or lag time. These advancements mean that data transfer happens almost instantaneously, creating more responsive and seamless online experiences. With broader bandwidth, 5G can support more connected devices in one area, making it ideal for densely populated campuses, online classrooms, and virtual learning environments.

Key Benefits of 5G in Education

1. **Enhanced Virtual and Augmented Reality (VR/AR) Learning** 5G's high speed and low latency make it possible to support immersive VR and AR experiences without delays. This could mean virtual science labs, historical simulations, or interactive anatomy lessons, where students engage with content in 3D, fostering a deeper understanding of complex subjects.
2. **Improved Remote Learning and Access** Remote and online learning have become crucial in recent years, and 5G can enhance this experience by providing a stable, high-quality connection. For students in remote or rural areas with limited access to high-speed internet, 5G can bridge the gap, offering equal learning opportunities regardless of geography.
3. **Smart Classrooms and IoT Integration** With 5G, Internet of Things (IoT) devices like smart boards, interactive displays, and connected classroom equipment can operate smoothly and in sync. In a smart classroom, teachers could control presentations, share multimedia content seamlessly, and even track attendance or monitor student engagement in real-time.

4. **Faster Data Sharing and Cloud Access** Accessing large files, cloud-based learning materials, or online tools becomes instantaneous with 5G, allowing students and teachers to collaborate on projects without worrying about bandwidth issues. This is especially beneficial for assignments involving large datasets or multimedia projects, enabling faster and more productive teamwork.
5. **Real-Time Data Analytics for Personalized Learning** Educators could leverage 5G connectivity to gather real-time data on student performance and engagement. With insights from this data, teachers can personalize learning experiences, adjusting lesson plans to meet students' specific needs and keeping track of student progress with up-to-the-minute accuracy.

Potential Challenges

While 5G offers many benefits, there are challenges to consider:

- **Infrastructure and Cost**: Deploying 5G infrastructure, especially in rural or underserved areas, requires significant investment and time.
- **Digital Divide**: Ensuring that all students have access to 5G-compatible devices and connectivity will be essential to prevent widening the gap between those with and without access.
- **Privacy and Security**: With increased data transfer, safeguarding student information will be critical, especially as data analytics play a bigger role in personalized education.
- 

The Future of 5G in Education As 5G continues to roll out, its impact on education could be transformative. Beyond enhancing current learning models, it may open doors to completely new educational experiences, such as gamified learning modules, collaborative virtual classrooms, and global educational exchanges in real-time. In the long run, 5G has the potential to empower both students and educators, making education more inclusive, engaging, and adaptable to individual needs.

Ms. Dapinty Saini

Assistant Professor

CEC-CEC