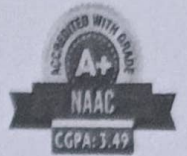




# KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)



## DEPARTMENT OF COMPUTER SCIENCE (UG)

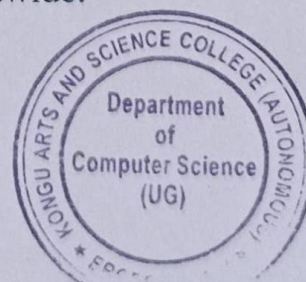
### NEWS CORNER

Date: 2/12/25

#### History and Growth of Major IT Companies

The history and growth of major IT companies have shaped the modern technology landscape, influencing how businesses and individuals interact with digital solutions. Microsoft, founded by Bill Gates and Paul Allen in 1975, began by developing software for personal computers, eventually dominating the operating system market with Windows. Apple, started in 1976 by Steve Jobs, Steve Wozniak, and Ronald Wayne, revolutionized personal computing and consumer electronics with products like the Macintosh, iPhone, and iPad. IBM, established in 1911 as a computing hardware company, transitioned over decades into software, services, and enterprise solutions. Google, founded in 1998 by Larry Page and Sergey Brin, transformed information access through its search engine and expanded into advertising, cloud computing, and AI. Amazon, launched by Jeff Bezos in 1994 as an online bookstore, evolved into a global e-commerce giant and cloud services provider through AWS. Facebook, now Meta, began in 2004 and has grown into a social media empire, acquiring Instagram, WhatsApp, and Oculus to expand its digital ecosystem. Oracle, established in 1977, became a leader in database management systems and enterprise software solutions. SAP, founded in 1972 in Germany, grew into a global provider of enterprise resource planning (ERP) software. Tencent and Alibaba have become dominant players in China's tech market, offering social platforms, e-commerce, and digital payment services. Intel, founded in 1968, revolutionized computing hardware with microprocessors, fueling the PC era. Many of these companies adapted to technological shifts, investing in cloud computing, AI, mobile technologies, and cybersecurity. Mergers and acquisitions helped them expand product offerings and enter new markets. Strategic innovation, strong leadership, and customer-centric approaches fueled their global growth. Research and development remain central to their ability to compete and lead in technology. These companies also significantly influence IT education, industry standards, and digital infrastructure worldwide.

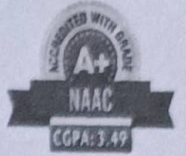
*S.D.*  
STAFF IN CHARGE  
Ms.S.DEEPIKA  
2/12/25



*P.M.*  
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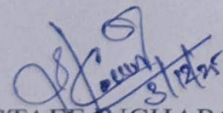
## DEPARTMENT OF COMPUTER SCIENCE (UG)

### NEWS CORNER

Date: 3.12.2025

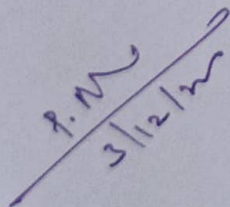
### Quantum Computing Research

Quantum computing research is rapidly advancing, promising to revolutionize computing by solving problems beyond the capabilities of classical computers. Companies like IBM, Google, and Microsoft are leading efforts to develop scalable quantum processors and practical quantum algorithms. IBM's Quantum Experience platform allows researchers and developers to experiment with real quantum systems through the cloud. Google achieved a milestone in quantum supremacy, demonstrating a quantum computer solving a problem faster than the most powerful supercomputers. Microsoft is focusing on topological qubits, aiming to create more stable and error-resistant quantum systems. Startups such as Rigetti, IonQ, and D-Wave are also contributing to hardware and software innovations in the quantum space. Researchers are exploring applications in cryptography, drug discovery, optimization problems, and materials science. Quantum computing relies on principles like superposition and entanglement to process vast amounts of information simultaneously. Challenges remain, including qubit decoherence, error correction, and scaling the number of qubits for practical use. Governments worldwide are investing in quantum research to maintain technological leadership and national security. Collaboration between academia, industry, and government is accelerating breakthroughs in both hardware and quantum algorithms. As quantum research progresses, it has the potential to transform industries ranging from finance to healthcare. With continuous innovation, quantum computing is moving from theoretical research to practical applications that could redefine the future of technology.

  
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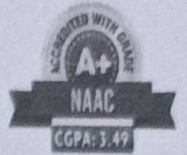


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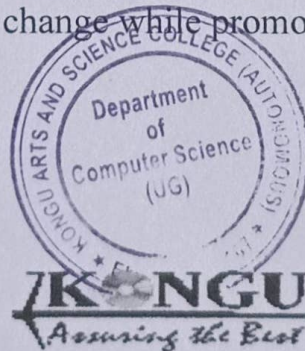
Date: 04.12.2025

#### Sustainability & Green IT Initiatives

Sustainability and Green IT initiatives are gaining momentum as technology companies recognize the environmental impact of digital infrastructure. Data centers, which consume significant amounts of energy, are being redesigned to improve energy efficiency and reduce carbon footprints. Major IT companies like Google, Microsoft, and Amazon are investing in renewable energy sources to power their operations. Energy-efficient hardware, such as servers and storage devices, is being developed to minimize electricity consumption. Virtualization and cloud computing reduce the need for physical infrastructure, further lowering environmental impact. IT firms are implementing sustainable supply chain practices, including responsible sourcing of materials and recycling electronic waste. Green software design emphasizes efficiency and optimization to reduce computational energy usage. Telecommuting and remote work technologies, accelerated by the pandemic, are helping lower emissions from commuting and business travel. Governments and international organizations are setting regulations and standards for environmentally responsible IT practices. Companies are reporting progress through sustainability metrics, carbon-neutral goals, and ESG (Environmental, Social, Governance) initiatives. Collaboration with academic and research institutions is driving innovation in green technologies. Artificial intelligence is being used to optimize energy usage and predict system loads in data centers. Awareness campaigns encourage consumers and businesses to adopt eco-friendly digital practices. Emerging technologies like edge computing are reducing latency while conserving energy. With these initiatives, IT companies are contributing to global efforts to combat climate change while promoting sustainable digital growth.

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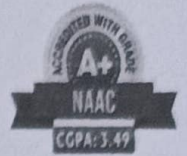
For *Sujanaj*  
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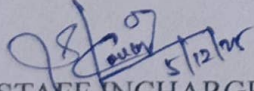
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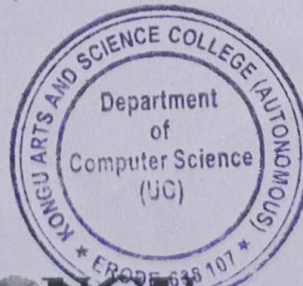
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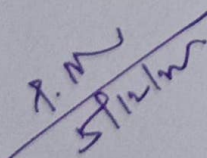
#### IT Company Mergers, Acquisitions, and Market Trends

Mergers and acquisitions (M&A) in the IT industry continue to reshape the global technology landscape, driving growth, innovation, and market consolidation. Major companies like Microsoft, Google, and IBM frequently acquire startups to access new technologies, talent, and customer bases. Cloud computing, AI, and cybersecurity are among the most active sectors for acquisitions, reflecting high demand and strategic importance. Smaller IT firms are often targeted for their specialized software solutions, niche expertise, or intellectual property. M&A activities help companies expand into emerging markets and strengthen their global presence. Market trends show increasing investment in SaaS, DevOps tools, and data analytics platforms, as businesses focus on digital transformation. Vertical integration allows IT giants to control more of the supply chain, improving efficiency and service offerings. Strategic partnerships and alliances complement acquisitions to foster collaboration and innovation. Private equity and venture capital investments in IT startups are accelerating, fueling rapid growth and competitive positioning. Regulatory scrutiny is rising, with governments monitoring large deals to prevent monopolistic practices. Digital transformation initiatives in enterprises are creating new opportunities for mergers and joint ventures. The rise of hybrid and remote work has increased demand for collaboration and cloud-based solutions, influencing market trends. Companies are increasingly focusing on sustainable and socially responsible growth as part of their acquisition strategies. Post-merger integration and cultural alignment remain key challenges for successful IT M&A. Overall, mergers, acquisitions, and market trends are driving technological advancement, competition, and innovation across the IT sector.

  
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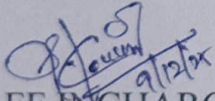
## DEPARTMENT OF COMPUTER SCIENCE (UG)

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Date: 09.12.2025

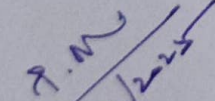
#### “Artificial Intelligence (AI)”

Artificial Intelligence (AI) is a rapidly evolving branch of computer science that focuses on creating systems capable of performing tasks that usually require human intelligence. It involves learning from data, recognizing patterns, making predictions, and adapting to new inputs. AI is present in our everyday lives through smartphones, digital assistants, recommendation systems, and even self-driving cars. Businesses use AI to improve efficiency, reduce costs, and provide better customer experiences. In healthcare, AI assists doctors in diagnosing diseases faster and more accurately. In education, it personalizes learning experiences for students and provides smart tutoring. Financial institutions rely on AI to detect fraud and manage risks. The transportation sector benefits from AI in navigation, logistics, and autonomous vehicles. Creative industries also make use of AI to generate music, art, and content. At the same time, AI raises concerns about privacy, security, and ethics. Bias in AI models can lead to unfair decisions, making responsible development crucial. Another major debate is its impact on jobs, as automation threatens to replace repetitive roles. However, AI also creates new career opportunities in data science, robotics, and system management. Governments and organizations are working on regulations to ensure safe and ethical AI use. Experts believe human creativity, emotions, and critical thinking will remain unique strengths. The future of AI is expected to involve human-AI collaboration rather than replacement. Continuous advancements in machine learning and deep learning are pushing AI toward greater capabilities. Overall, AI is not just a technological tool but a force transforming the way we live, work, and interact with the world.

  
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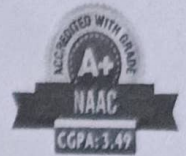


  
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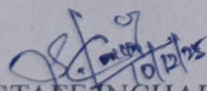
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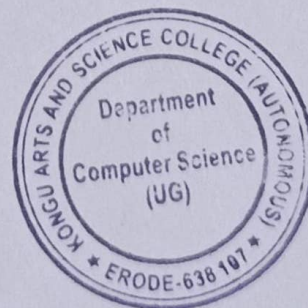
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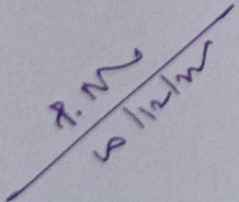
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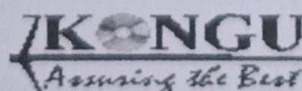
#### Quantum computing

Quantum computing is rapidly advancing in 2025, with major breakthroughs across hardware, software, and global initiatives. Google demonstrated a practical quantum algorithm called “Quantum Echo” on its 105-qubit Willow processor, achieving computation **13,000 times faster** than a top supercomputer for a specific physics simulation. Meanwhile, Cisco unveiled software to unify quantum machines from different vendors into a single cloud system, simplifying how applications are run across heterogeneous quantum hardware. In Japan, scientists at the University of Osaka turned on the country’s first fully home-grown quantum computer, built entirely with domestic components and controlled via an open-source toolchain called OQTOPUS. Microsoft also made waves by introducing its **Majorana 1** chip based on topological qubits, promising far greater error resistance and scalability. In the software domain, Quantinuum rolled out **Guppy**, a quantum programming language embedded in Python, making it easier for developers to write complex quantum logic. All these developments — from hardware leaps and error correction to software tools and financing — suggest that quantum computing is transitioning from experimental labs to practical, scalable applications.

  
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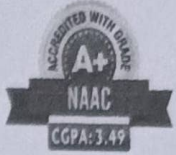








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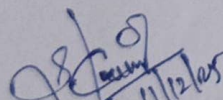
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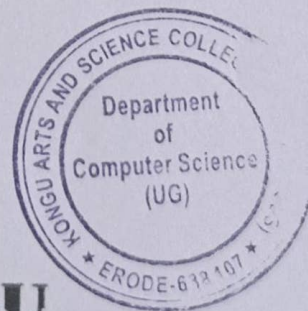
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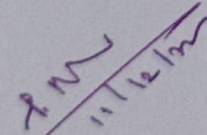
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### Real-Time Data Processing

Real-Time Data Processing refers to the ability of computer systems to collect, analyze, and respond to data the moment it is generated, without noticeable delays. It enables organizations to make instant decisions by processing continuous streams of information. Technologies like Apache Kafka, Apache Flink, Spark Streaming, and real-time databases are commonly used to support such high-speed data workflows. Real-time processing is essential in applications such as financial trading, fraud detection, emergency response systems, online gaming, and smart transportation. It allows businesses to monitor activities, detect anomalies, and take immediate actions to avoid risks. With the rise of IoT devices, massive amounts of sensor data must be analyzed continuously to support smart homes, industrial automation, and environmental monitoring. Real-time analytics enhances customer experience by enabling personalized recommendations, live tracking, and instant feedback. Low-latency networks such as 5G further improve the speed and reliability of real-time systems. Stream processing engines handle data in motion, while event-driven architectures help systems react to triggers instantly. Scalability is crucial because data volumes can increase rapidly in real-time environments. Organizations also use in-memory computing to accelerate processing by storing frequently accessed data in RAM. Ensuring high accuracy and consistency during rapid data flows remains a challenge. Security and privacy are critical, especially when dealing with live sensitive information. As businesses become more data-driven, real-time processing is becoming a core requirement for digital transformation. Ultimately, Real-Time Data Processing empowers smarter, faster, and more efficient decision-making across industries.

  
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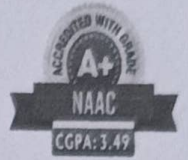


  
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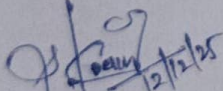
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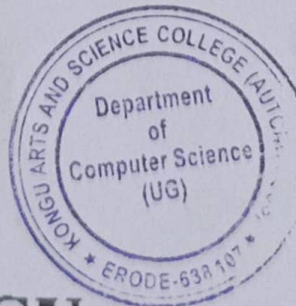
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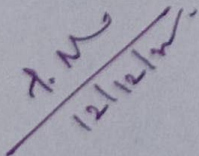
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### Brain-Computer Interfaces

Brain-Computer Interfaces (BCIs) are advanced systems that enable direct communication between the human brain and external devices without the need for physical movement. They work by detecting and interpreting neural signals using sensors placed on the scalp, implanted electrodes, or non-invasive wearable devices. BCIs translate brain activity into commands that can control computers, prosthetic limbs, wheelchairs, or other assistive technologies. This makes them extremely valuable for individuals with neurological disorders, paralysis, or communication impairments. Recent advancements in machine learning and signal processing have significantly improved the accuracy and responsiveness of BCIs. Non-invasive BCIs, such as EEG-based headsets, allow users to interact with digital environments, play games, and perform mental tasks. Meanwhile, invasive BCIs offer higher precision and are being explored for restoring lost functions like movement or speech. Companies and research groups are developing neural implants that can decode thoughts in real time, enabling more natural control of devices. BCIs are also being explored for cognitive enhancement, memory assistance, and immersive virtual or augmented reality experiences. Despite the progress, challenges remain in terms of safety, long-term reliability, and ethical concerns related to privacy and brain data. Power consumption, signal noise, and user comfort are additional obstacles researchers aim to solve. As the technology matures, BCIs may revolutionize healthcare, communication, and human-machine interaction. Ultimately, Brain-Computer Interfaces represent a bold step toward integrating biological intelligence with digital systems, opening new possibilities for the future of human capability.

  
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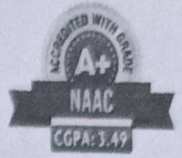


  
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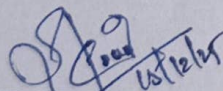
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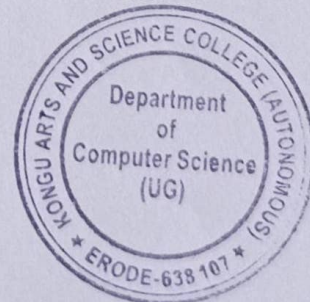
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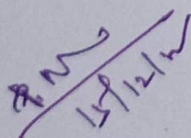
#### Humanoid Robots in Service Industries

Humanoid robots in service industries are transforming the way businesses operate by performing tasks that require human-like interaction, mobility, and communication. These robots are designed to resemble humans in form and behavior, enabling them to work comfortably in environments built for people. They assist in hospitality by greeting guests, delivering items, guiding customers, and providing information in hotels, malls, and airports. In healthcare, humanoid robots support nurses by monitoring patients, reminding them about medication, and offering companionship to reduce loneliness. Retail stores use them for inventory checks, customer assistance, and product demonstrations. Advances in AI, speech recognition, and computer vision allow these robots to understand language, recognize faces, and respond naturally to humans. Humanoids equipped with sensors and autonomous navigation can move safely through crowded spaces, making them ideal for public environments. Their ability to perform repetitive tasks consistently increases efficiency and reduces staff workload. Service robots also enhance accessibility for elderly and differently-abled individuals by helping with daily activities. Despite their benefits, challenges such as high development costs, limited emotional intelligence, and safety considerations still exist. Ethical concerns about job replacement and human-robot interaction must also be addressed. Integration with cloud services and edge AI improves their learning and performance over time. As technology advances, humanoid robots are becoming more adaptable, affordable, and capable of performing complex tasks. Ultimately, they represent a significant step toward a future where robots and humans collaborate seamlessly in service roles across various industries.

  
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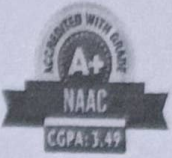


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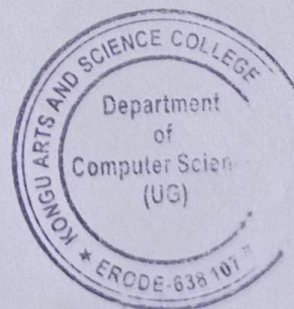
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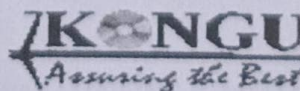
### Serverless Computing Evolution

Serverless Computing Evolution refers to the rapid advancement of cloud platforms that allow developers to build and run applications without managing servers or infrastructure. In a serverless model, cloud providers automatically handle provisioning, scaling, and maintenance, enabling teams to focus solely on writing code. This approach began with Function-as-a-Service (FaaS) offerings like AWS Lambda, Azure Functions, and Google Cloud Functions, which execute small pieces of code in response to events. Over time, serverless computing has expanded to include databases, storage, APIs, and containerized workloads that automatically scale based on demand. Modern serverless architectures support high-performance, low-latency applications through improved cold-start times and efficient resource allocation. They reduce operational costs because users only pay for the compute time they actually use. Serverless platforms now integrate with event-driven architectures to enable real-time processing and automation. The evolution also includes support for long-running workflows, microservices, and AI-driven applications that require dynamic scalability. Developers benefit from simplified deployment pipelines and reduced DevOps overhead. Edge serverless frameworks further enable execution closer to end users, improving performance and reliability. Enhanced observability tools help monitor serverless applications more effectively. Security features such as automatic patching and fine-grained permissions strengthen protection against threats. As cloud providers continue to innovate, serverless technology is becoming more flexible, powerful, and accessible. Ultimately, the evolution of serverless computing is reshaping modern software development by providing a fast, scalable, and cost-efficient foundation for building cloud-native applications.

*S. Deepika*  
16/12/25  
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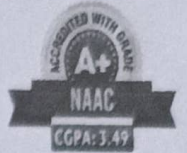


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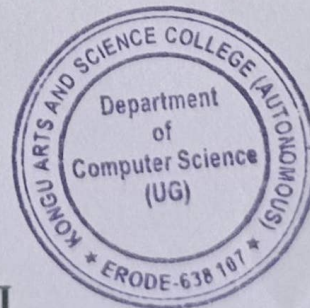
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Date: 17.12.2025

#### Generative AI & Foundation Models

Generative AI and foundation models represent a major breakthrough in modern computing, enabling machines to create text, images, audio, video, and even code with human-like quality. These models are trained on massive datasets and built using advanced transformer architectures that allow them to understand patterns, context, and relationships in data. Foundation models such as GPT, Llama, PaLM, Claude, and Gemini act as general-purpose intelligence systems that can be adapted to many tasks through fine-tuning or prompt engineering. Their multimodal capabilities allow them to process and generate different types of data within a single framework, making them highly versatile. Generative AI is now used in creative content generation, software development, customer support, education, marketing, and scientific research. Enterprises benefit from these models through automation, improved decision-making, and enhanced productivity. Techniques like Retrieval-Augmented Generation (RAG) help increase accuracy and reduce hallucinations by grounding responses in real data. At the same time, safety, ethics, and fairness remain essential concerns as AI becomes more widespread. Researchers continue to work on reducing biases, improving transparency, and ensuring responsible use. Model optimization approaches, including distillation and quantization, are making these large systems more efficient and accessible. With rapid advancements, generative AI and foundation models are shaping the future of human-computer interaction and creating new possibilities across industries.

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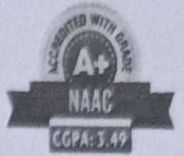


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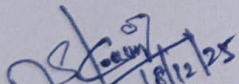
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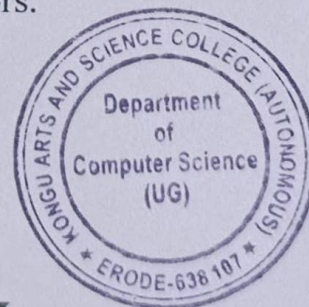
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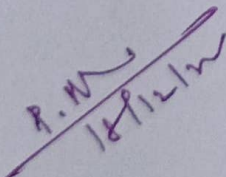
#### Edge Intelligence

Edge Intelligence is an emerging technology that combines artificial intelligence with edge computing to process data closer to where it is generated. Instead of sending all information to distant cloud servers, AI models run directly on local devices such as smartphones, sensors, vehicles, robots, and IoT systems. This reduces latency, increases speed, and enables real-time decision-making, which is crucial for applications like autonomous driving, smart cities, healthcare monitoring, and industrial automation. Edge Intelligence also enhances privacy and security because sensitive data does not need to be transmitted over the internet. Advances in lightweight AI models, TinyML, and specialized hardware accelerators are making it possible to run complex algorithms on low-power devices. Edge computing lowers network bandwidth usage and decreases operational costs for organizations. It also improves system reliability by allowing devices to function even when network connectivity is weak or unavailable. In addition, Edge Intelligence supports scalable IoT deployments by distributing computation across many smart nodes. Industries are increasingly adopting this technology for predictive maintenance, environmental monitoring, and real-time analytics. The integration of 5G and future 6G networks further strengthens edge capabilities by providing high-speed, low-latency communication. As the number of connected devices grows, Edge Intelligence becomes essential for handling massive data streams efficiently. Ongoing research focuses on model optimization, energy-efficient processing, and better orchestration between cloud and edge environments. Ultimately, Edge Intelligence is transforming how digital systems operate, enabling faster, smarter, and more autonomous solutions across diverse sectors.

  
STAFF INCHARGE  
Ms.S.DEEPIKA

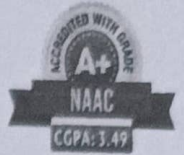


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# KONGU ARTS AND SCIENCE COLLEGE (AUTONOMOUS)



## DEPARTMENT OF COMPUTER SCIENCE (UG)

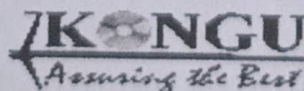
### NEWS CORNER

Date: 19.12.2025

### Quantum Computing & Quantum-Safe Cryptography

Quantum Computing is an advanced computational paradigm that uses principles of quantum mechanics—such as superposition, entanglement, and quantum interference—to perform calculations far faster than classical computers for certain tasks. Instead of traditional bits, quantum computers use qubits, which can represent multiple states simultaneously, enabling massive parallelism. This capability allows quantum systems to potentially solve complex problems in chemistry, optimization, drug discovery, cryptanalysis, and material science that are currently impossible for classical machines. However, this power also poses security risks because quantum algorithms like Shor’s algorithm can break widely used encryption methods such as RSA and ECC. To address this challenge, Quantum-Safe or Post-Quantum Cryptography (PQC) is being developed to create cryptographic systems resistant to quantum attacks. PQC relies on hard mathematical problems that even quantum computers cannot easily solve, such as lattice-based, multivariate, and hash-based cryptographic schemes. Governments and industries worldwide are now preparing for a “quantum transition” by adopting these new standards. Organizations like NIST are leading efforts to standardize quantum-safe algorithms for future security. Quantum key distribution (QKD) also offers a physics-based approach to secure communication by detecting eavesdropping attempts on quantum channels. As research evolves, hybrid systems combining classical and quantum-safe techniques are becoming more common. The shift to quantum-resistant solutions is crucial to protect data long-term, especially information that must remain confidential for decades. Quantum Computing and Quantum-Safe Cryptography together represent both a technological revolution and a necessary security evolution for the digital future.

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**DEPARTMENT OF COMPUTER SCIENCE (UG)**

**NEWS CORNER**

DATE: 20.12.2025

**Google Assistant Update Delay**

The **Google Assistant update delay** refers to Google's decision to postpone the complete replacement of Google Assistant with its new AI system, **Gemini**, on Android devices until **2026**. Initially, Google had planned to phase out Google Assistant by the end of 2025, but the company adjusted the timeline to ensure a smoother and more reliable transition for users. As a result, Google Assistant will continue to function on Android phones, tablets, and other supported devices for a longer period than expected. The delay highlights Google's focus on maintaining user experience, as Gemini is still being refined to match or exceed all the features users depend on in Google Assistant. Gemini is designed to offer more advanced natural language understanding and generative AI capabilities, but some traditional Assistant functions are still being optimized. Google wants to avoid disruptions in everyday tasks such as voice commands, reminders, navigation, and smart-home controls. The extended timeline also gives developers and device manufacturers more time to adapt their apps and services to Gemini. While Gemini is already integrated into some platforms like Android Auto and Wear OS, Google Assistant remains the default assistant on most Android devices for now. This move reflects a cautious approach, ensuring reliability rather than rushing a major AI shift. Overall, the delay shows Google's strategy of prioritizing stability, user trust, and feature completeness as it transitions to a more AI-driven assistant ecosystem.

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