



Byte Fluent

2024

Annual Magazine

Department of Computer Engineering
Guru Daksh Govt. Polytechnic, Hisar

ABOUT US

The Department of Computer Engineering was established in the year 2004 with the intake of 60 students initially. It was increased to 120 in the year 2011. The Three Years Diploma Course in Computer Engineering awarded by Haryana State Board of Technical Education, Panchkula and approved by AICTE New Delhi. The department was started to meet the demand for well qualified computer professionals. The department has the pride in showcasing its 100% of admissions. The Department has well qualified and dedicated faculty for the betterment of the students. The department has a departmental library with more than 200 books and 5 e-journals. The department has well equipped seven computer labs having 200 computer systems with latest computer software and internet facility. Each lab is equipped with projectors for interactive teaching. The PHP lab has a teacher interactive board to conduct the workshops and seminar in the department.



COMPUTER ENGINEERING DEPARTMENT

Vision:

To create competent, excellent professionals by providing quality education in the field of Computer Engineering that meets ever challenging industrial and social needs.

Mission:

M1: To provide various trainings, guidance & counseling to the students for their overall development and placement.

M2: To improve industry collaboration through internship program & interaction with professional's society through Seminar/Workshop/Hackathon/Technical events

M3: To enhance the skills of employability and entrepreneurship through self learning and skills labs.

M4: To Provide a strong theoretical and practical background in Computer Engineering and train students to solve real world problems

Program Educational Objectives (PEO's)

PEO1: Develop a positive attitude towards lifelong learning and succeed in Industry, Higher Education or Entrepreneur endeavor.

PEO2: Apply the knowledge and skills to identify and solve real world problems

PEO3: To equip students with academic, innovative environment for a successful career as Computer Engineering and entrepreneurs

PEO4: To prepare the students to work as a committed professional with strong professional ethics & values, Societal cultural and environmental issues.

Program Outcomes (POs)

PO1: Basic and Discipline specific knowledge: Apply knowledge of basic mathematics, science and Computer Engineering- specific knowledge to solve the engineering problems.

PO2: Design/Development of solutions: Demonstrate the ability to design, development, and conduct experiments, interpret and analyze data and report results for well defined technical problems.

PO3: Engineering tools: Demonstrate the ability to model a live problem or a project that meets desired specifications and requirements using appropriate tools.

PO4: Engineering practices for society: Demonstrate the ability to understand the impact of Computer Engineering on society and incorporate them in engineering solutions

PO5: Sustainability and environment: Apply appropriate technology in context of environment and sustainable development.

PO6: Individual and team work: Demonstrate the ability to function in multidisciplinary or diverse environment as a member or leader of the team

PO7: Life-long learning: Ability to analyze individual needs and engage in updating in the context of technological changes.

Programme Specific Outcomes (PSOs)

PSO1: The ability to employ modern computer languages, tools, environments, and platforms in creating innovative career paths to be an entrepreneur, lifelong learner and to pursue higher studies and also to act as a good citizen by inculcating societal and environmental concerns.

PSO2: Ability to analyze, design, develop, enhance, tests, and maintain software that satisfies the specified requirements.

Editorial Team

Students Members

1. Tanisha - 220040800131
2. Ravita - 220040800095
3. Aditya Singh - 220040800005
4. Sunil Kumar - 220040800129

Faculty Members

1. Mr. Kapil Bhorla, Lecturer
2. Mr. Amit Kumar, Lecturer

Editor's Note

Every publication carries within it the fingerprints of those who built it — and *BYTE FLUENT* is no exception. What began as scattered fragments of thought has coalesced into a chronicle of our department's collective endeavor: the quiet perseverance of late-night deadlines, the flashes of ingenuity born in classrooms and corridors alike, and the tenacity that defines every student who has ever stared down a stubborn line of code.

To our contributors — you who dared to articulate what others merely felt — we owe an immeasurable debt. To our faculty, whose counsel steered raw ambition into polished prose, our gratitude knows no bounds.

The Editorial Team



HOD Message

It gives me immense pleasure to lead the department of Computer Engineering. The department has well qualified and eminent faculty. The main objective of department is to develop the students both personally and professionally to achieve successful career in Industry, and Academics. The magazine attempts to present the Department and its activities for general information to all concerned.

Rajeev Sardana
Head of Department
Computer Engineering



The Architects of Inspiring Futures and The Mentors of Tomorrow (Our Faculty Members)

From Left To Right :

- | | |
|-------------------------------|------------------------------|
| 1. Sh. Kapil Bhoria (Lect.) | 8. Dr. Mukesh Bansal (TPO) |
| 2. Sh. Rajesh Kumar (Lect.) | 9. Smt. Rekha Jangir (Lect.) |
| 3. Sh. Ravi Sangwan (Lect.) | 10. Smt. Rajbala (Lect.) |
| 4. Sh. Amit Kumar (Lect.) | 11. Dr. Ajit Kumar (Lect.) |
| 5. Sh. Nitin Arora (Lect.) | 12. Sh. Manish Nagar (Prog.) |
| 6. Dr. Kulbhushan Bansal (SL) | 13. Sh. Munish Kumar (SL) |
| 7. Dr. Sanjeev Sharma (Lect.) | |

Technical Articles

Sr. No	Name of Article
--------	-----------------

1.	Technology & Industry Trends
----	------------------------------

2.	Game-Changers in Code
----	-----------------------

3.	Human Errors VS AI Errors
----	---------------------------

4.	Computer Networking
----	---------------------

5.	Cloud Computing
----	-----------------

6.	Cloud-The Infrastructure of Modern Tech
----	---

7.	Personal Data Security
----	------------------------

8.	Prompt Engineering
----	--------------------

9.	Ethical Hacking
----	-----------------

10.	AI Memory Systems
-----	-------------------

11.	Quantum Internet
-----	------------------

12.	IoT in Future
-----	---------------

13.	Empowering Diploma Students Through Advanced Technical Skills
-----	---

14.	Future of VR and AR: A New Digital Reality
-----	--

15.	Wars Beyond Borders: How Global Conflicts Are Reshaping the IT Industry
-----	---

"Technology & Industry Trends"

The industrial landscape is undergoing a rapid transformation driven by technological advancements, digitalization, and innovation. Industries across the globe are adopting smart technologies to improve efficiency, productivity, and sustainability. For students pursuing technical education, understanding these emerging trends is essential to remain competitive and industry-ready.



Artificial Intelligence and Machine Learning

Artificial Intelligence (AI) and Machine Learning (ML) have become integral parts of modern industries. From healthcare and banking to manufacturing and education, AI-powered systems are being used for automation, predictive analysis, customer support, and decision-making. Organizations are increasingly seeking professionals who possess skills in data analysis, AI tools, and intelligent system development.

Internet of Things (IoT)

The Internet of Things has revolutionized the way devices communicate and interact. Smart homes, smart cities, industrial automation, and intelligent transportation systems are examples of IoT applications. Industries are deploying connected devices and sensors to monitor operations in real time, reduce downtime, and improve efficiency.

Cloud Computing

Cloud technology has transformed data storage and computing services. Organizations are shifting from traditional infrastructure to cloud-based platforms to achieve scalability, flexibility, and cost-effectiveness. Knowledge of cloud platforms and cloud security has become a valuable skill for aspiring professionals.

Cyber Security

As digital dependence increases, cyber threats have become more sophisticated. Industries are investing heavily in cyber security solutions to protect sensitive information and critical infrastructure. Professionals with expertise in ethical hacking, network security, digital forensics, and information security are in high demand.

Industry 4.0 and Smart Manufacturing

Industry 4.0 represents the integration of automation, robotics, artificial intelligence, and data analytics into manufacturing processes. Smart factories use interconnected systems to optimize production, reduce waste, and improve quality. Technical graduates with knowledge of automation and digital manufacturing technologies have excellent career prospects.

Data Science and Big Data Analytics

Data has become one of the most valuable assets for organizations. Companies use data analytics to understand customer behavior, optimize operations, and make informed business decisions. Skills in data visualization, analytics, and database management are increasingly sought after across industries.

Renewable Energy and Green Technologies

Sustainability has emerged as a major focus area worldwide. Industries are adopting renewable energy sources, energy-efficient systems, and environmentally friendly technologies. Green technology initiatives are creating new opportunities for engineers and technicians in solar energy, electric vehicles, and sustainable infrastructure.

Robotics and Automation

Automation is transforming industrial operations by increasing productivity and reducing human intervention in repetitive tasks. Robots are widely used in manufacturing, logistics, healthcare, and agriculture. The demand for professionals skilled in robotics, automation systems, and control technologies continues to grow.

Blockchain Technology

Blockchain is no longer limited to . Industries are utilizing blockchain for secure transactions, supply chain management, digital identity verification, and smart contracts. This technology offers enhanced transparency, security, and efficiency in business processes.

Soft Skills and Continuous Learning

While technical expertise remains important, industries also emphasize communication skills, teamwork, leadership, problem-solving abilities, and adaptability. Continuous learning through certifications, online courses, internships, and industry projects has become essential for career growth.

Conclusion

The future belongs to individuals who can adapt to technological changes and embrace innovation. Emerging technologies such as Artificial Intelligence, IoT, Cyber Security, Cloud Computing, and Industry 4.0 are reshaping industries and creating new career opportunities. Technical institutions must continuously align their curriculum and training programs with these trends to prepare students for the evolving demands of the modern workforce.

By acquiring industry-relevant skills and maintaining a commitment to lifelong learning, students can position themselves as valuable contributors to the digital economy and the technological advancement of society.

Author : Dr. Mukesh Bansal
Designation:TPO

Game-Changers in Code: How Computer Engineering is Revolutionizing Cricket & the Olympics

In today's fiercely competitive sporting world, the line between victory and defeat is often drawn not just on the field, but in the data centre. Computer engineering is rapidly transforming how athletes train, compete, and win — from the roaring IPL stadiums to the grandest stage of all, the Olympics.

IPL: Where Data Meets the Pitch

In the IPL, teams now harness advanced analytics and machine learning to decode opposition strategies. Ball-tracking sensors, AI-powered video analysis, and real-time biomechanics tools allow coaches to refine a bowler's action or predict a batsman's weaknesses with pinpoint accuracy. Wearable tech monitors player fatigue, reducing injury risks and maximising on-field performance.



a supporting act — it is the new playbook of champions. The future of sport belongs to those who master both athletic skill and the power of technology.

Technology-driven training helps athletes reach the Olympic podium

Olympics: Engineering Gold Medals

At the Olympics, computer engineering fuels breakthroughs in aerodynamics simulations, gait analysis, and nutrition optimisation.

Sprinters use motion-capture software to perfect their starts, while swimmers benefit from fluid dynamics modelling. Real-time biometric feedback helps coaches make split-second decisions that translate into medals.

Computer engineering is no longer

Author Name: Kapil Bhoria

Contact Number: 9992013899

Human Errors vs AI Errors

Introduction

The field of Computer Engineering is undergoing a revolutionary transformation due to the rapid growth of Artificial Intelligence (AI), cloud computing, cybersecurity, and data-driven technologies. Today's diploma students are no longer expected to merely learn programming languages; they must develop analytical thinking, problem-solving abilities, and the capacity to work alongside intelligent machines.

In this context, understanding the differences between human errors and AI errors has become essential for future engineers.

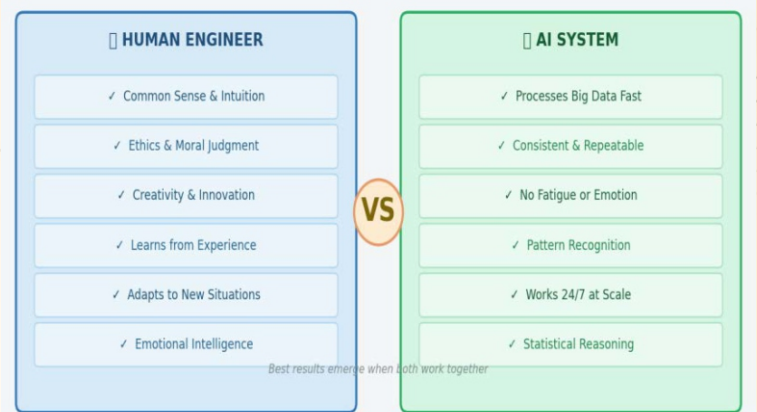
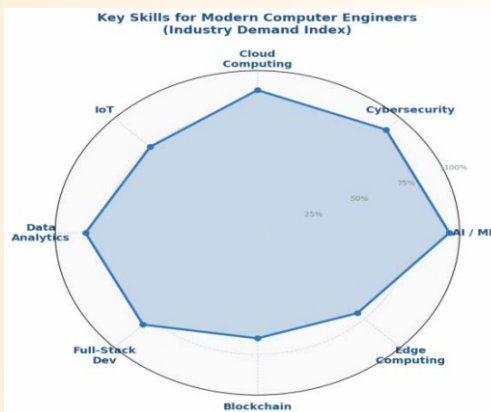


Figure 1: Human Engineer vs AI System — Core Characteristics

What Should Computer Engineering Students Learn Today?

To remain relevant in the modern technological landscape, students should focus on emerging domains. The spider chart below illustrates the key technical areas and their relative industry demand:

Figure 2: Key Skill Areas for Modern Computer Engineers (Industry Demand Index)



However, technical knowledge alone is insufficient.

Students must also cultivate:

- Logical reasoning and analytical thinking
- Creativity and innovation
- Communication and collaboration skills
- Ethical decision-making and responsibility

The engineers of tomorrow will not be those who simply know technology, but those who can intelligently apply it to solve real-world problems.

Human Errors in Engineering

Human errors generally arise from fatigue, lack of concentration, insufficient knowledge, stress, or poor judgment. Common examples include:

- Writing incorrect program logic
- Misconfiguring network devices
- Ignoring software testing procedures
- Making calculation mistakes during system design

Although humans make mistakes, they possess the ability to learn from experience, apply common sense, and adapt to unfamiliar situations. These qualities are irreplaceable in complex, novel scenarios.

AI Errors in Engineering

Artificial Intelligence can process enormous amounts of data and generate solutions rapidly. However, AI is not free from errors. Its mistakes typically arise from:

- Incomplete or biased training data
- Incorrect prompts or instructions
- Lack of contextual understanding
- Algorithmic limitations

For example, an AI coding assistant may generate syntactically correct code that contains security vulnerabilities or inefficient algorithms. Unlike humans, AI may confidently present incorrect information without recognizing its mistake.

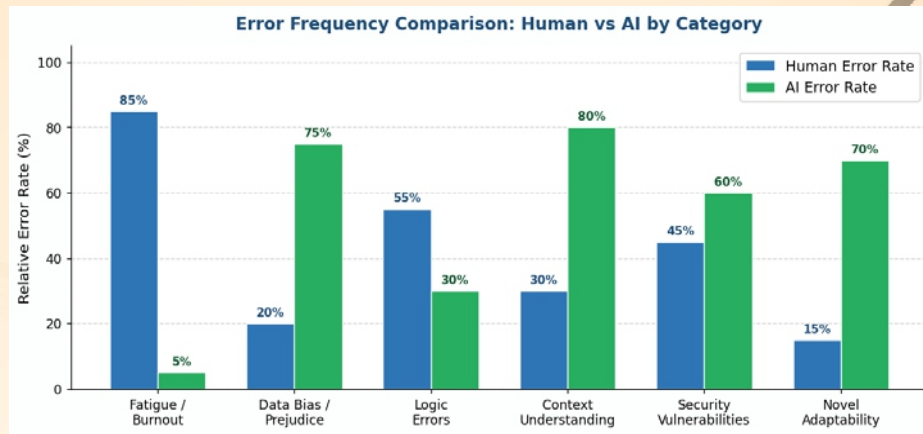


Figure 3: Error Frequency Comparison — Human vs AI by Category

Comparison Between Human and AI Errors

Aspect	Human Errors	AI Errors
Primary Cause	Fatigue, emotions, lack of experience	Data quality and model limitations
Pattern	Often random and inconsistent	Often systematic and repeatable
Reasoning	Uses common sense and intuition	Uses statistical pattern recognition
Learning	Through experience and reasoning	Through data and training algorithms
Ethics	Can understand ethics & consequences	Cannot genuinely understand ethics
Novel Situations	Adapts better to completely new cases	Performs best within learned patterns

The future engineer must understand that neither humans nor AI are perfect. The most effective results emerge when human intelligence and artificial intelligence complement one another.

Human–AI Collaboration in Practice

The workflow diagram below shows how human engineers and AI systems effectively collaborate through each phase of problem-solving:

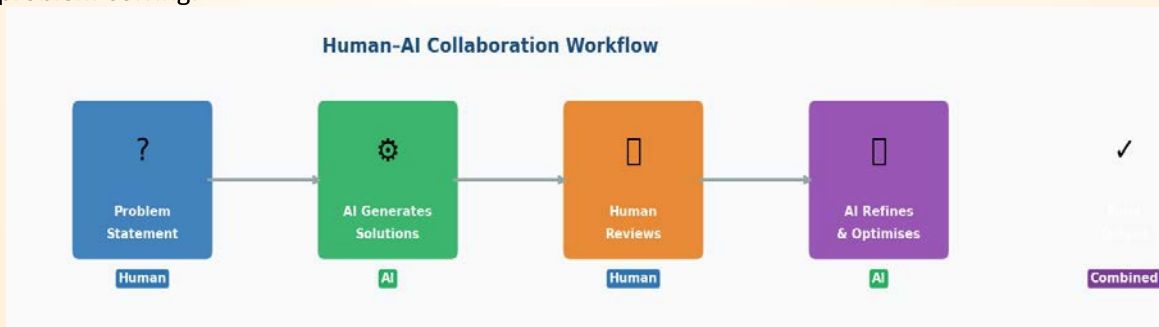


Figure 4: Human–AI Collaborative Problem-Solving Workflow

How Can Students Reduce Human Errors?

- Strengthen Fundamentals** — A strong foundation in programming, data structures, algorithms, networking, and databases reduces conceptual mistakes.
- Develop Analytical Thinking** — Before solving a problem, analyse its root causes, constraints, and possible solutions.
- Practice Systematic Debugging** — Follow structured debugging and testing methodologies rather than guessing.
- Improve Documentation Habits** — Maintain proper records, comments, and design documents to minimise misunderstandings.
- Use AI as an Assistant, Not a Replacement** — Every AI-generated output should be verified independently.
- Learn Through Projects** — Practical projects expose students to real-world challenges and improve decision-making skills.
- Cultivate Continuous Learning** — Technology evolves rapidly; engineers who continuously learn are less likely to make outdated-knowledge errors.

The Future of Engineering Education

The next generation of Computer Engineers will work in partnership with AI systems. Routine tasks may be automated, but human creativity, critical thinking, ethical judgment, and innovation will remain irreplaceable. Educational institutions should encourage students to move beyond memorisation and focus on understanding, experimentation, and problem-solving. The table below summarises what changes — and what stays the same — in future engineering roles:

What AI Will Automate	What Humans Must Master
Repetitive coding tasks	Creative system design
Data entry & processing	Ethical decision-making
Routine testing & QA	Critical & analytical thinking
Pattern-based analysis	Communication & leadership
Report & doc generation	Innovation & problem-solving

Conclusion

Human errors originate from limitations in attention, experience, and judgment, while AI errors arise from limitations in data and algorithms. The goal of modern engineering education is not to eliminate one in favour of the other, but to create professionals who can recognise, analyse, and correct both.

By combining strong technical fundamentals with analytical thinking and responsible use of AI, Computer Engineering diploma students can become highly capable engineers prepared for the intelligent future.

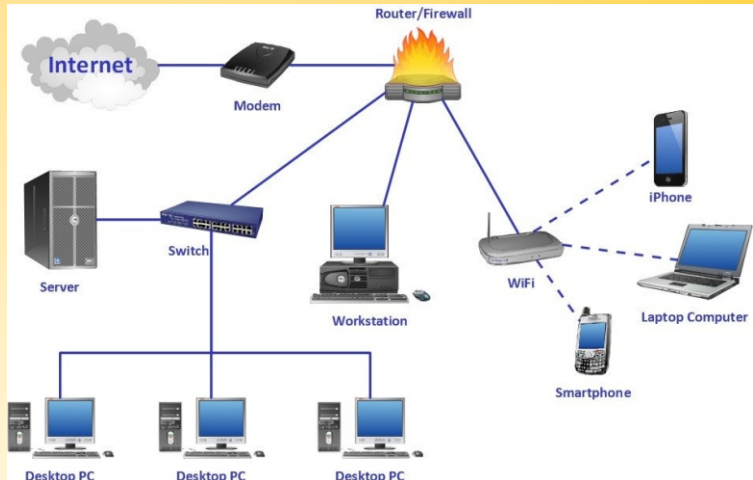
Human Intelligence + Artificial Intelligence = Future Engineering Excellence

Author Name: Amit Kumar
Designation: Lecturer

Computer Networking

Abstract / Brief Description of Paper:

Computer Networking is the practice of connecting computers and other devices to share data, resources, and services efficiently. With the rapid growth of technology, modern networking has evolved significantly through innovations such as 5G networks, Software-Defined Networking (SDN), Network Function Virtualization (NFV), Cloud Computing, Internet of Things (IoT), Artificial Intelligence (AI)-based network management, and advanced cyber security solutions.



These latest technologies provide faster communication, improved network performance, enhanced security, and better scalability for organizations and individuals. 5G technology enables high-speed wireless communication, while IoT connects billions of smart devices worldwide. Cloud networking allows flexible access to computing resources, and AI helps automate network monitoring and troubleshooting.

Computer Networking is continuously evolving to meet the increasing demand for faster, more secure, and reliable communication. Modern networking technologies are transforming the way devices connect, communicate, and share information. Some of the latest advancements include 5G Networks, Internet of Things (IoT), Software-Defined Networking (SDN), Network Function Virtualization (NFV), Cloud Networking, Artificial Intelligence (AI) in Networking, Edge Computing, and Wi-Fi 6/6E.

This paper discusses the concepts, applications, advantages, challenges, and future scope of the latest networking technologies and their impact on modern communication systems.

Latest Technologies in Computer Networking

1. 5G Technology – Ultra-fast wireless communication with low latency.
2. Internet of Things (IoT) – Interconnection of smart devices over the internet.
3. Software-Defined Networking (SDN) – Centralized and programmable network management.
4. Network Function Virtualization (NFV) – Virtualization of network services.
5. Cloud Networking – Network services delivered through cloud platforms.
6. Artificial Intelligence (AI) in Networking – Automated network monitoring and optimization.
7. Edge Computing – Processing data closer to users for faster response.
8. Wi-Fi 6 and Wi-Fi 6E – Improved wireless speed, capacity, and efficiency.
9. Cybersecurity and Zero Trust Networks – Advanced security mechanisms for modern networks.
10. Blockchain in Networking – Secure and decentralized network transactions.

Author Name: Ashish
Roll No.: 240040800024

Cloud Computing

Cloud computing is a modern technology that allows users to store, manage, and access data and applications over the internet instead of using a personal computer or local server. It provides services such as storage, databases, networking, software, and processing power through online platforms. Popular cloud service providers include Amazon Web Services, Microsoft, and Google.

Cloud computing is divided into three main types: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS).

These services help businesses and individuals use technology without buying expensive hardware or software. Users can access cloud services anytime and anywhere with an internet connection.

One of the biggest advantages of cloud computing is cost efficiency because companies only pay for the services they use. It also offers flexibility, data backup, security, and easy collaboration among users. Many organizations use cloud computing for online meetings, data storage, web hosting, and application development.

Today, cloud computing plays an important role in education, healthcare, business, and entertainment industries. As technology continues to grow, cloud computing is becoming more important for digital transformation and innovation around the world.



Applications OFF CLOUD COMPUTING

➤ Data Storage and Backup

Cloud computing is used to store and back up important files, documents, photos, and videos securely online.

➤ Online/Education

Schools and universities use cloud platforms for online classes, assignments, and virtual learning systems.

➤ Business Management

Companies use cloud services for accounting, customer management, communication, and teamwork.

Web Hosting

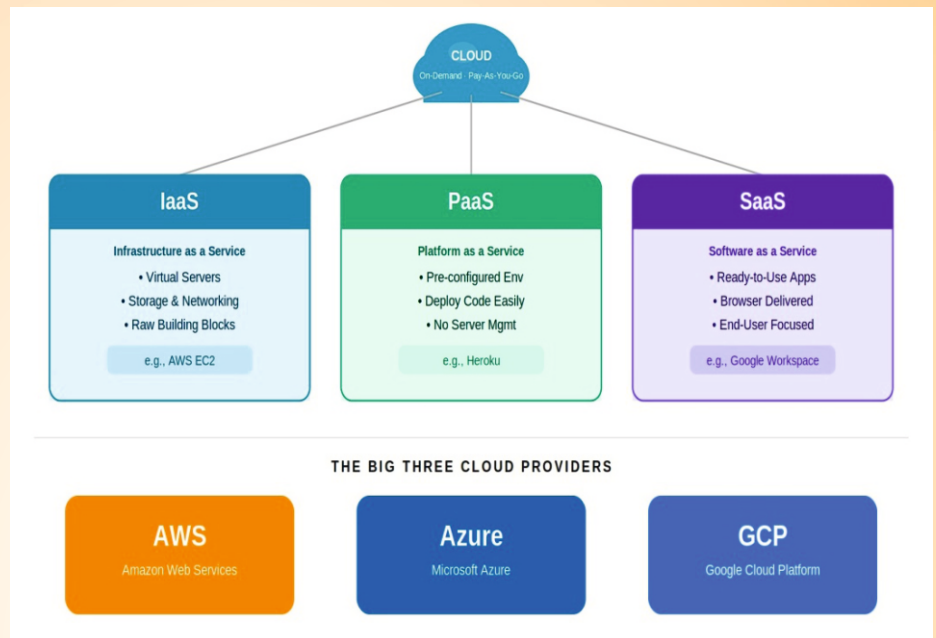
Websites and applications are hosted on cloud servers for better speed, security, and performance. Cloud computing is a technology that provides storage, software, and computing services through the internet. It helps users access data and applications anytime and anywhere without depending on physical devices. Cloud computing is widely used in education, healthcare, business, entertainment, and communication. It offers benefits such as low cost, flexibility, security, easy collaboration, and fast data access, making it an essential part of modern digital technology.

Author Name: MONIKA
Roll No. 240080400073

Cloud–The Infrastructure of Modern Tech

The days of companies buying, managing, and maintaining massive, expensive server rooms in their basement are largely over. Today, the world's digital infrastructure runs on Cloud Computing – the on demand delivery of computing power, database storage, applications, and IT resources over the internet, utilizing a flexible pay pricing model.

Cloud services are generally grouped into three main categories:



Model	Type	Description
IaaS	Infrastructure as a Service	Provides raw building blocks like virtual servers, storage, and networking (e.g., AWS EC2).
PaaS	Platform as a Service	Delivers a pre configured environment where developers can deploy code without worrying about server maintenance (e.g., Heroku).
SaaS	Software as a Service	Fully functional, end-user applications delivered directly over a web browser (e.g., Google Workspace).

The modern cloud landscape is overwhelmingly dominated by three major providers: *Amazon Web Services (AWS)*, *Microsoft Azure*, and *Google Cloud Platform (GCP)*.

Pick any one of the platforms, set up a free tier account, and practice deploying a basic web application or database. Learning how to scale applications automatically to handle thousands of users, manage virtual private networks, and control cloud data storage are highly marketable skills. Bridging the programming knowledge with cloud infrastructure skills opens up highly lucrative career pathways in modern **DevOps** and Cloud Architecture, making an incredibly versatile asset to any development team.

Author Name: MUNISH KUMAR
Designation: Sr. Lecturer (Computer Engineering)

Personal Data Security: The Hidden Technology Battle Behind Every Click

The first thing I do every morning is reach for my smartphone. Before I have even finished my first cup of tea, I have unlocked my phone using facial recognition, checked my email, scrolled through social media, paid a utility bill through a banking app, and asked a voice assistant about the day's weather. It feels routine—almost automatic. Yet each of these actions generates data about me, quietly adding to a digital profile that exists somewhere in the cloud. Today, I worry more about losing control of my personal data. My wallet might contain a few cards and some cash, but my digital identity contains far more valuable information—banking credentials, personal photos, location history, online purchases, and years of conversations stored across multiple platforms.



What fascinates me is how seamlessly technology has become part of our lives. When I make a payment through UPI, stream a movie on Netflix, order groceries online, or store documents in cloud services such as Google Drive or Microsoft One Drive, complex systems work behind the scenes to process and protect my information. Most of the time, we do not think about these technologies because they simply work. However, convenience often comes with hidden risks. Cybercriminals are becoming increasingly sophisticated. They no longer rely solely on traditional malware. Today, attackers use artificial intelligence to create convincing phishing emails, clone voices, and even generate realistic fake videos. A message that appears to come from a trusted bank or colleague can sometimes be difficult to distinguish from a genuine one.

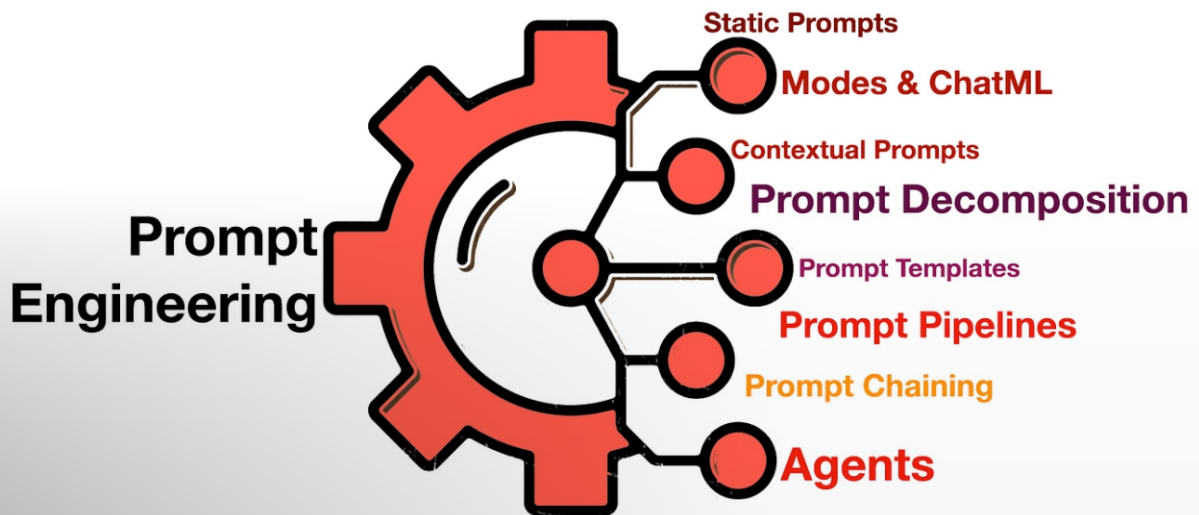
Fortunately, technology is also helping us fight back. Every time I log into an account using a fingerprint scan or receive a one-time password on my phone, I am benefiting from modern security technologies. Multi-factor authentication, end-to-end encryption, biometric verification, and AI-powered threat detection systems have become essential tools in protecting personal information.

I often think about the number of connected devices surrounding us. Smart watches track our heart rate, fitness apps monitor our daily activities, smart speakers listen for voice commands, and connected vehicles continuously collect driving data. These innovations make life easier and more personalized, but they also raise important questions about privacy and security. Every connected device becomes another doorway that must be protected.

What I have learned is that personal data security is no longer just a concern for cybersecurity experts or technology companies. It is something that affects all of us. A strong password, a software update, or a moment of caution before clicking a suspicious link may seem insignificant, but these small actions can prevent major consequences.

As technology continues to evolve through artificial intelligence, cloud computing, and the Internet of Things, our digital lives will become even more interconnected. In this environment, protecting personal data is about more than securing information—it is about preserving trust, privacy, and control over our own digital identity. The most valuable thing we own may be invisible, but that makes protecting it even more important.

Author Name: Rekha Jangir
Designation: Lecturer



Prompt Engineering

Prompt engineering is the process of designing and giving clear instruction to an artificial intelligence system so it can generate accurate, useful and high quality responses. It involves choosing the right words, structure, example and context to guide AI models effectively. A good prompt helps the AI understand the task properly, whether it is writing content, generating code, solving problems, creating images, Summarizing information or answering questions from engineering is becoming an important skill in the IT and AI industry because it improves productivity saves time and helps users get better results from AI tools. It combines creativity, communication skills, logical thinking and technical understanding to and direct effectively with modern AI systems.

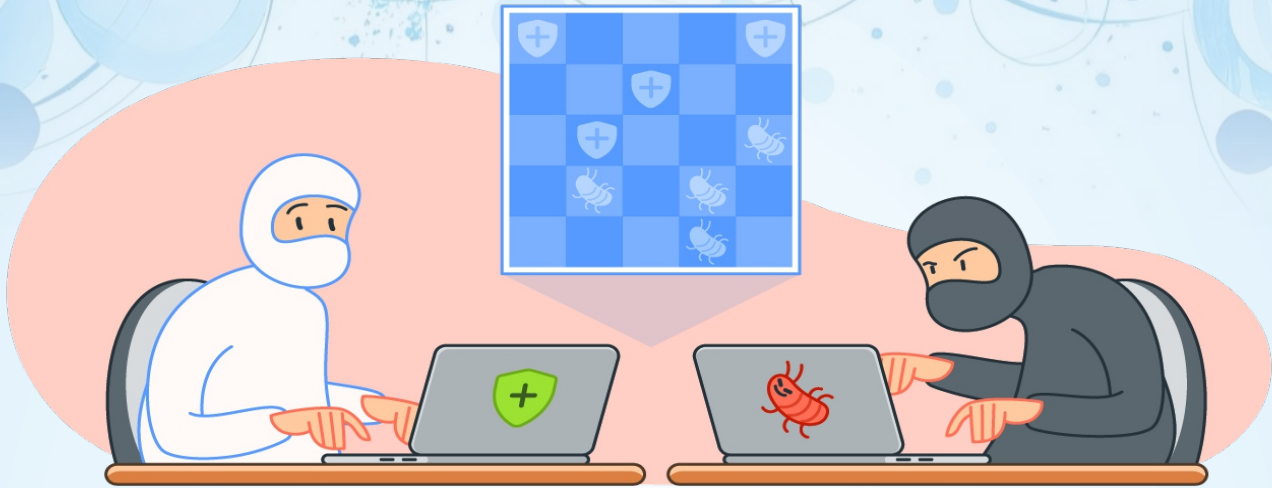
Author Name: Muskan

Roll No.:240080400078

WHISPERING TO MACHINES



Ethical Hacking: Detecting and Preventing Cyber Attacks



Ethical hacking is an important part of modern cybersecurity that helps organizations detect and prevent cyber attacks before real hackers can cause damage. Ethical hackers, also known as white-hat hackers, use their technical knowledge and hacking skills legally and responsibly to identify weaknesses in computer systems, networks, websites, and applications. Their main objective is to improve security by finding vulnerabilities and fixing them before malicious attackers exploit them. In today's digital world, cyber attacks such as phishing, ransomware, malware, data breaches, and identity theft are increasing rapidly. Businesses, governments, educational institutions, and individuals all depend on secure digital systems, making cybersecurity a major concern. Ethical hackers perform activities like penetration testing, vulnerability assessment, password testing, and network scanning to evaluate the strength of security systems. They use various cybersecurity tools and techniques to simulate real-world attacks and discover security gaps.

After identifying vulnerabilities, they provide detailed reports and recommendations to organizations for improving their security measures. Ethical hacking also helps companies comply with cybersecurity laws and standards while protecting sensitive information from unauthorized access. Preventing cyber attacks involves using strong passwords, firewalls, antivirus software, encryption, regular software updates, and employee awareness training. Ethical hackers play a significant role in educating organizations about cyber risks and safe online practices. With the rapid growth of the internet, cloud computing, and digital transactions, the demand for ethical hackers is increasing worldwide. Ethical hacking not only protects valuable data and systems but also helps maintain trust, privacy, and business continuity. Therefore, ethical hacking is considered a powerful and necessary approach for detecting cyber threats and ensuring a safe and secure digital environment for everyone.

Applications:

- Protects computer networks from cyber attacks.
- Secures websites and online applications from hackers.
- Prevents data theft and unauthorized access.
- Helps organizations identify and fix security weaknesses.

Ethical hacking is used to improve cybersecurity and protect digital systems from cyber attacks. Ethical hackers identify vulnerabilities in networks, websites, and applications to prevent unauthorized access and data theft. It is widely used in banking, government, mobile security, and cloud computing to secure sensitive information.

Author Name: RAKESH

Roll No.: 240080400099

AI Memory Systems & Human Behavior Modeling

What happens when AI starts to truly know you and learn from you over time.

The Problem With Forgetting

Most AI systems today have no memory. Every conversation starts from zero. That makes them useful for one-off tasks — but not for anything that requires understanding context, history, or the person behind the request.

What Memory Changes

AI memory systems fix this by storing what matters: past preferences, recurring goals, key decisions, and patterns of behavior. Over time, the system builds a model of you — not just what you said, but how you think and what you care about. A doctor's AI that remembers your history doesn't just look things up — it notices what's changing before you do.

Where This Actually Matters

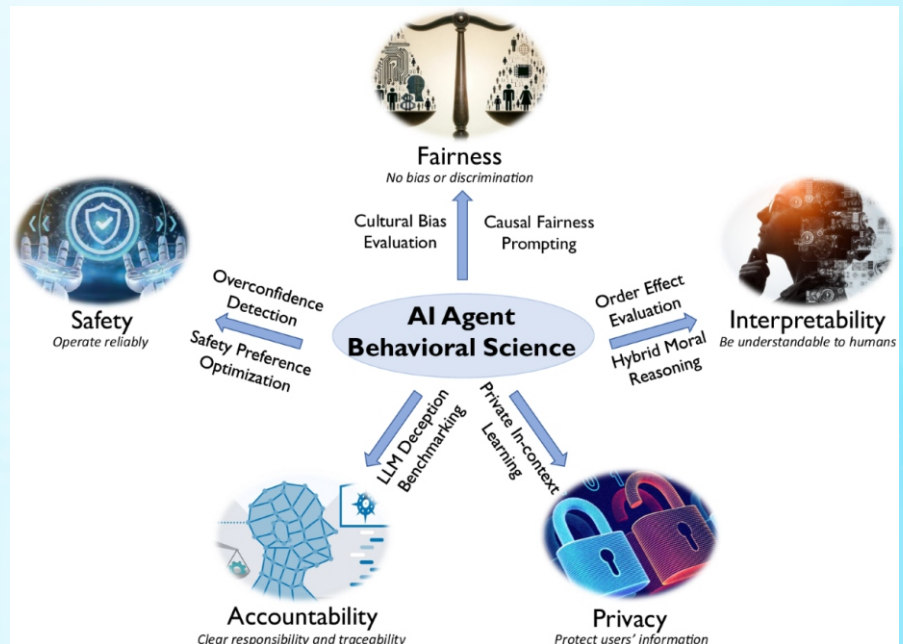
In healthcare, it catches early warning signs. In education, it adapts to how a student actually learns — not just what they score. In productivity, it stops asking what you've already told it. The shift is from AI as a search engine to AI as a genuine collaborator.

How This Can Be Achieved

This works through a combination of memory systems, machine learning, and behavior analysis. The AI stores important interactions, converts them into searchable patterns, and retrieves relevant information when needed. Technologies like vector databases, embeddings, and Retrieval-Augmented Generation (RAG) help the system remember context instead of starting from scratch every time. Over time, the AI learns from repeated interactions, feedback, and behavior patterns to provide more personalized and adaptive responses.

The Honest Tradeoff:

The same capability that makes this valuable makes it risky. Memory without boundaries is surveillance. Behavior modeling without transparency is manipulation. Getting this right means giving users real control — over what's stored, what's used, and what's forgotten.



Author Name: Ranju Kumari

Roll No: 240040800100

Quantum Internet : The Future of Ultra-Secure Communication

Quantum Internet is an advanced next-generation communication network that uses the principles of quantum mechanics to transmit information with extremely high security and speed. Unlike the traditional internet, which transfers data in the form of bits (0s and 1s), the Quantum Internet uses quantum bits called qubits. These qubits can exist in multiple states simultaneously through a phenomenon known as superposition, making communication faster, smarter, and nearly impossible to hack.

Quantum Internet works by using quantum entanglement, a unique property where two particles remain connected regardless of the distance between them. If one particle changes its state, the other changes instantly. This allows highly secure communication because any attempt to intercept or measure the data immediately changes the quantum state, alerting the system about the intrusion.

The most significant advantage of Quantum Internet is cybersecurity and secure communication. Governments, military organizations, research institutions. Major organizations like IBM, Google, China Quantum Network, and NASA are actively researching and developing Quantum Internet technologies..

Two key concepts in Quantum Internet research are:

Quantum Entanglement: A phenomenon where two quantum particles become linked and instantly affect each other regardless of distance, enabling ultra-secure communication.

Quantum Key Distribution (QKD): A security method that uses quantum mechanics to generate encryption keys. If anyone tries to intercept the communication, the system automatically detects the intrusion.

Applications:-

- **Cybersecurity and Secure Communication :** Quantum Internet can create unbreakable encryption systems for banks, governments, and military organizations, protecting confidential information from hackers.
- **Quantum Computing Networks :** Multiple quantum computers can be connected together through Quantum Internet, increasing computing power and solving complex scientific problems faster.
- **Military and Defense:** Defense organizations can use Quantum Internet for secure battlefield communication, drone control, and intelligence sharing without interception risks.
- **Scientific Research:** Scientists can securely exchange experimental data across international laboratories and collaborate on advanced quantum experiments.
- **Space and Satellite Communication:** Quantum satellites can provide highly secure global communication systems for space missions and international defense operations.

Author Name: SANDEEP

Roll No.: 240040800120

IoT in Future: Transforming the Smart World

The Internet of Things (IoT) is one of the fastest-growing technologies in the modern world. The Internet of Things (IoT) is a system where physical devices are connected to the internet and communicate with each other using sensors and software. IoT refers to a network of smart devices connected through the internet that can collect, share, and exchange data automatically. From smart homes and smart watches to connected cars and industrial machines, IoT is changing the way people live and work. These devices can monitor data, perform tasks, and make decisions with minimal human effort. In the future, IoT will become even more powerful with the support of artificial intelligence, 5G networks, cloud computing, and automation. It will improve daily life, increase efficiency, and create smarter cities and industries.



Important future developments include:

Smart Cities: Traffic control, smart parking, and energy-saving systems.

Healthcare: Remote patient monitoring and smart medical devices.

Agriculture: Smart farming using sensors for water and crop monitoring.

Industries: Automated factories and intelligent machines.

Transportation: Self-driving cars and smart traffic management systems.

IoT is a high-demand technology with professionals needed across many industries. It offers career opportunities in networking, cybersecurity, embedded systems, and automation. IoT drives innovation by helping build smart solutions for real-world problems. With billions of IoT devices expected to connect worldwide in the coming years, the future scope is huge.

Advantages

IoT saves time and human effort by increasing automation and efficiency while improving communication between devices. It enables real-time monitoring and control, making daily life easier and smarter. Challenges of IoT.

Future

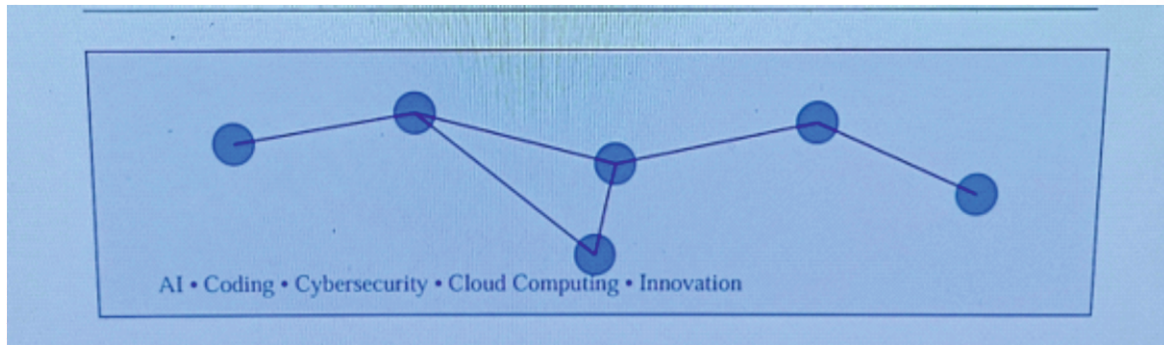
The future of IoT is very promising because more devices are becoming internet-enabled every year. IoT technology will help create a smarter and more connected world.

Author Name: SHITANSHU KUMAR PANDEY

Roll No.: 240040800122

Empowering Diploma Students Through Advanced Technical Skills

Preparing Computer Engineering students for future technologies and industry demands



The future belongs to students who continuously learn, innovate, and adapt to new technologies.”

Technology is evolving rapidly, and diploma students in Computer Engineering must continuously upgrade their technical knowledge and skills to remain industry-ready. Traditional classroom learning alone is no longer sufficient in today's competitive digital world. Students need practical exposure to emerging technologies such as Artificial Intelligence (AI), Cybersecurity, Cloud Computing, Web Development, Data Science, and the Internet of Things (IoT).

Skill development through coding platforms, internships, workshops, hackathons, and online certifications has become equally important as academic education. Modern industries expect students to possess problem-solving abilities, communication skills, teamwork, and hands-on technical expertise. Learning programming languages like Python, Java, and JavaScript can significantly improve career opportunities.

In India, the growing IT sector offers immense opportunities for technically skilled youth. Government initiatives like Digital India and Skill India encourage students to adopt innovation and digital learning. Polytechnic institutions also play a vital role by introducing industry-oriented training and practical projects.

By continuously upgrading their technical know-how and professional skills, diploma students can confidently face future technological challenges and contribute effectively to the growth of the IT industry.

Author Name: SORAV
Roll No.: 230040800119

Future of VR and AR: A New Digital Reality

Virtual Reality (VR) and Augmented Reality (AR) are becoming some of the most exciting technologies in the digital world. These technologies are changing the way people learn, play games, shop, communicate, and work. VR creates a completely virtual environment, while AR adds digital elements to the real world using devices like smartphones and smart glasses.

In the future, VR and AR will become more advanced with the support of artificial intelligence, 5G networks, and powerful graphics technology. These technologies will provide immersive experiences in education, healthcare, entertainment, business, and many other fields.

What Are VR and AR?

Virtual Reality (VR):

VR is a technology that creates a fully digital environment where users can interact using VR headsets and controllers. It gives users the feeling of being inside a virtual world.

Augmented Reality (AR):

AR adds digital objects, sounds, or information to the real-world environment through mobile devices or AR glasses.

Examples include:

VR gaming headsets

AR filters on social media

Virtual classrooms

AR navigation apps

Virtual shopping experiences



Future of VR and AR

The future of VR and AR is very bright because these technologies are rapidly improving and becoming more affordable. They are expected to become an important part of daily life.

Future developments include:

Education: Virtual classrooms and interactive learning experiences.

Healthcare: Virtual surgeries and medical training simulations.

Gaming & Entertainment: More realistic games and virtual concerts.

Business Meetings: Virtual offices and online collaboration spaces.

Shopping: Customers can try products virtually before purchasing.

Why Learn VR and AR?

Growing Industry: Many companies are investing in VR and AR technologies.

Career Opportunities: Jobs in game development, software engineering, animation, and design.

Innovation: VR and AR help create interactive and creative digital experiences.

Future Technology: These technologies are expected to become part of the metaverse and future internet systems.

Advantages of VR and AR

Provides realistic and immersive experiences.

Improves learning and training methods.

Enhances gaming and entertainment quality.

Helps businesses improve customer interaction.

Saves time and cost in training and simulations.

VR and AR are transforming the digital world by creating interactive and immersive experiences. These technologies will play an important role in education, healthcare, business, and entertainment in the future. Although there are some technical and security challenges, VR and AR have huge potential to shape the future of technology. Students and professionals should learn these technologies to stay prepared for the next generation of digital innovation.

Author Name: TANISHA

Roll No.: 220040800131

Wars Beyond Borders: How Global Conflicts Are Reshaping the IT Industry

The Russia–Ukraine war and Middle East tensions are influencing technology, cyber security, and digital economies worldwide



The Russia–Ukraine war and the ongoing conflicts in the Middle East have created major challenges for the global IT industry. Supply chains have been disrupted, energy prices have increased, and international business confidence has weakened. Semiconductor production and hardware transportation have also suffered due to shortages of raw materials and rising shipping costs. At the global level, technology companies are now investing heavily in cybersecurity and cloud protection systems because cyberattacks and digital warfare have become more common during geopolitical conflicts. Rising operational and fuel costs have further increased expenses for data centers and IT infrastructure. In India, the IT sector has experienced both risks and opportunities. Global economic uncertainty and higher oil prices affected outsourcing demand and slowed business growth in some areas. However, Indian IT companies gained from the rising need for cybersecurity services, remote working technologies, and digital transformation projects. India is also becoming an important alternative destination for technology manufacturing and semiconductor investment as global firms reduce dependence on conflict-prone regions.

Author Name: Kapil Bhorla
Designation: Lecturer

DEPARTMENT EVENTS

स्वच्छता जागरूकता रैली निकाली

■ गुरु दश राजकीय बहुतकनीकी के एनएसएस स्वयंसेवकों ने संस्थान व स्टाफ कॉलोनी में किया जागरूक

हरिगुणि वृज्जु >>> हिसार

गुरु दश राजकीय बहुतकनीकी में स्वच्छ हरियाणा मिशन के तहत स्वच्छता जागरूकता रैली आयोजित की गई। यह अभियान एनएसएस स्वयंसेवकों द्वारा छात्रावास सोनू सिंह और लॉफ्टनेट एनओ संदीप ओला के नेतृत्व में संपन्न हुआ। स्वयंसेवकों ने संस्थान परिसर और स्टाफ कॉलोनी क्षेत्र का दौरा कर छात्रों व निवासियों को नियमित स्वच्छता के महत्व के बारे में जागरूक किया।



हिसार। स्वच्छता जागरूकता रैली निकालते स्वयंसेवक।

फोटो: हरिगुणि

उन्होंने लोगों को अपने आसपास के वातावरण को स्वच्छ और स्वस्थ बनाए रखने का संदेश दिया। इस अवसर पर प्राचार्य सुनील कुमार ने स्वयंसेवकों के प्रयासों की सराहना की।



‘एआई टूल्स और इन-डिमांड आईटी स्किल्स’ पर दी नई जानकारी

■ राजकीय पॉलिटेक्निक कॉलेज के कंप्यूटर साइंस विभाग में कार्यक्रम

हरिगुणि वृज्जु >>> हिसार

राजकीय पॉलिटेक्निक कॉलेज के कंप्यूटर साइंस विभाग में ‘एआई टूल्स और इन-डिमांड आईटी स्किल्स’ विषय पर एक सेमिनार-कम-वर्कशॉप का आयोजन किया गया।

इस कार्यक्रम का आयोजन आईसीएस के कंप्यूटर एप्लिकेशन के सहयोग से किया गया, जिसमें ऑर्टिफिशियल इंटेलिजेंस (एआई) के आधुनिक टूल्स और वर्तमान



हिसार। राजकीय पॉलिटेक्निक कॉलेज में विद्यार्थियों को जानकारी देते एक्सपर्ट।

समय में मांग में चल रही आईटी स्किल्स के बारे में विस्तारपूर्वक जानकारी दी गई।

इस अवसर पर आईसीएस की ओर से विनेश नागपाल ने विद्यार्थियों को इन-डिमांड स्किल्स

की अहमियत समझाई और उन्हें अपने करियर में आगे बढ़ने के लिए प्रेरित किया।

आईसीएस की ओर से रजत नागपाल ने विद्यार्थियों को एआई टूल्स की प्रैक्टिकल जानकारी दी।

महानिदेशक प्रभजोत सिंह ने गुरु दक्ष राजकीय बहुतकनीकी संस्थान में ली विभिन्न सुविधाओं की जानकारी

हिसार, 4 मार्च (नांदवाल): तकनीकी शिक्षा विभाग हरियाणा के महानिदेशक प्रभजोत सिंह ने गुरु दक्ष राजकीय बहुतकनीकी, हिसार का दौरा किया, जहां उन्होंने प्रयोगशालाओं, पुस्तकालय, शौचालय, कार्यालयों और छात्रावास सहित विभिन्न सुविधाओं का निरीक्षण किया। उनका यह दौरा संस्थान की संरचना का मूल्यांकन करने और शिक्षकों व छात्रों द्वारा उठाए गए मुद्दों को समझने के उद्देश्य से किया गया।

इस अवसर पर संस्थान के प्राचार्य सुनील कुमार ने संकाय सदस्यों और कर्मचारियों के साथ मिलकर महानिदेशक का स्वागत किया और पूरे दौरे के दौरान उनके साथ रहे। प्रभजोत सिंह ने संकाय सदस्यों और प्रशासनिक अधिकारियों से भी बातचीत की और उनकी समस्याओं व सुझावों को ध्यानपूर्वक सुना।

गौरतलब है कि प्रभजोत सिंह पिछले कुछ दिनों से हिसार में चुनाव पर्यवेक्षक के रूप में मौजूद थे। चुनावी जिम्मेदारियों एवं व्यस्त कार्यक्रम से समय निकाल, उन्होंने संस्थान को आश्वासन दिया कि छात्रों और कर्मचारियों द्वारा उठाए गए विभिन्न मुद्दों के समाधान में हर संभव मदद प्रदान की जाएगी। उनकी इस प्रतिबद्धता की संस्थान द्वारा सराहना की गई, जिससे यह दौरा संस्थान के विकास की दिशा में एक महत्वपूर्ण कदम साबित हुआ।



राजकीय-बहुतकनीकी संस्थान में सम्बोधित करते प्रभजोत सिंह। (नांदवाल)

राजकीय बहुतकनीकी में आयोजित रीसाइक्लिंग प्रतियोगिता में दिल्या रहीं अत्तल



रीसाइक्लिंग प्रतियोगिता में भाग लेने वाले विद्यार्थी। (नांदवाल)

हिसार, 28 जनवरी (नांदवाल): स्वच्छ हरियाणा मिशन के तहत गुरु दक्ष राजकीय बहुतकनीकी में कचरे के पुनर्चक्रण (रीसाइक्लिंग) पर एक प्रतियोगिता आयोजित की गई। इसका उद्देश्य कचरा प्रबंधन और सतत विकास के प्रति जागरूकता बढ़ाना था।

गुरु दक्ष राजकीय बहुतकनीकी संस्थान में 'साइबर धोखाधड़ी जागरूकता' कार्यक्रम आयोजित



सिटी पल्स न्यूज, हिसार। गुरु दक्ष राजकीय बहुतकनीकी, हिसार में 'साइबर धोखाधड़ी जागरूकता' कार्यक्रम का आयोजन किया गया। यह कार्यक्रम पत्रकारिता के सदस्य शिवानी एवं अमित के प्रयासों और हिसार की साइबर सेल की टीम के सहयोग से संपन्न हुआ। इस कार्यक्रम में लगभग 100 छात्राओं ने भाग लिया। हिसार के सेक्टर-14 साइबर सेल के इंचार्ज नरेश कुमार और समिति ने विभिन्न प्रकार के साइबर धोखाधड़ी के बारे में जानकारी दी, विशेष रूप से लड़कियों के खिलाफ होने वाले साइबर अपराधों जैसे कि वित्तीय धोखाधड़ी, डिजिटल गिरफ्तारी, ब्लैकमेलिंग, पीछा करना (साइबर स्टॉकिंग) आदि पर चर्चा की। नरेश कुमार ने रोचक ढंग से ऑनलाइन धोखाधड़ी से बचने के उपाय बताए। संस्थान के प्राचार्य डॉ. सुनील कुमार ने इस प्रकार के जागरूकता कार्यक्रमों की सराहना की और साइबर सेल टीम का आभार व्यक्त किया। संस्थान की ओर से डॉ. दिनेश नैन एवं आशु ने कार्यक्रम को सफल बनाने में अहम भूमिका निभाई।

पोस्टर मेकिंग प्रतियोगिता में मंदीप सोनी रहे प्रथम स्थान पर



सिटी पल्स न्यूज, हिसार। राजकीय पॉलिटेक्निक हिसार में रेड रिबन क्लब के तहत पोस्टर मेकिंग प्रतियोगिता का आयोजन कर 'विश्व एड्स दिवस' मनाया गया जिसमें 25 विद्यार्थियों ने भाग लिया। इसमें फाइनैस अकाउंट एवं ऑडिटिंग के मंदीप सोनी ने प्रथम स्थान, फैशन टेक्नोलॉजी की पंकी ने द्वितीय स्थान तथा कंप्यूटर इंजीनियरिंग की कनिका ने तृतीय स्थान प्राप्त किया। प्रिंसिपल अशोक कुमार की प्रेरणा से स्टाफ सदस्य टीना, भारती, प्रदीप कुमारी ने स्वयंसेवकों के साथ मिलकर कार्यक्रम का सफलतापूर्वक आयोजन किया। छात्रों ने पूरे उत्साह के साथ भाग लिया और एड्स के खिलाफ जागरूकता के लिए बहुत अच्छे पोस्टर तैयार किए। इस अवसर पर राजीव सरदाना, तरूण शर्मा और डॉ. घनश्याम माहिया मौजूद रहे। विजेताओं को पुरस्कार और प्रशंसा प्रमाण-पत्र वितरित किए गए। अशोक कुमार प्राचार्य ने बड़े पैमाने पर छात्रों के बीच जागरूकता और भागीदारी बढ़ाने के लिए 05 सांवना पुरस्कारों का भी मार्गदर्शन किया।

```
elif operation == "MIRROR_X":
    mirror_mod.use_x = False
    mirror_mod.use_y = True
    mirror_mod.use_z = False
elif operation == "MIRROR_Z":
    mirror_mod.use_x = False
    mirror_mod.use_y = False
    mirror_mod.use_z = True

# At the end - add
mirror_mod.select = 1
modifier.ob.select = 1
bpy.context.scene.objects.active = modifier.ob
print("Selected" + str(modifier.ob))
mirror_ob.select = 0
```