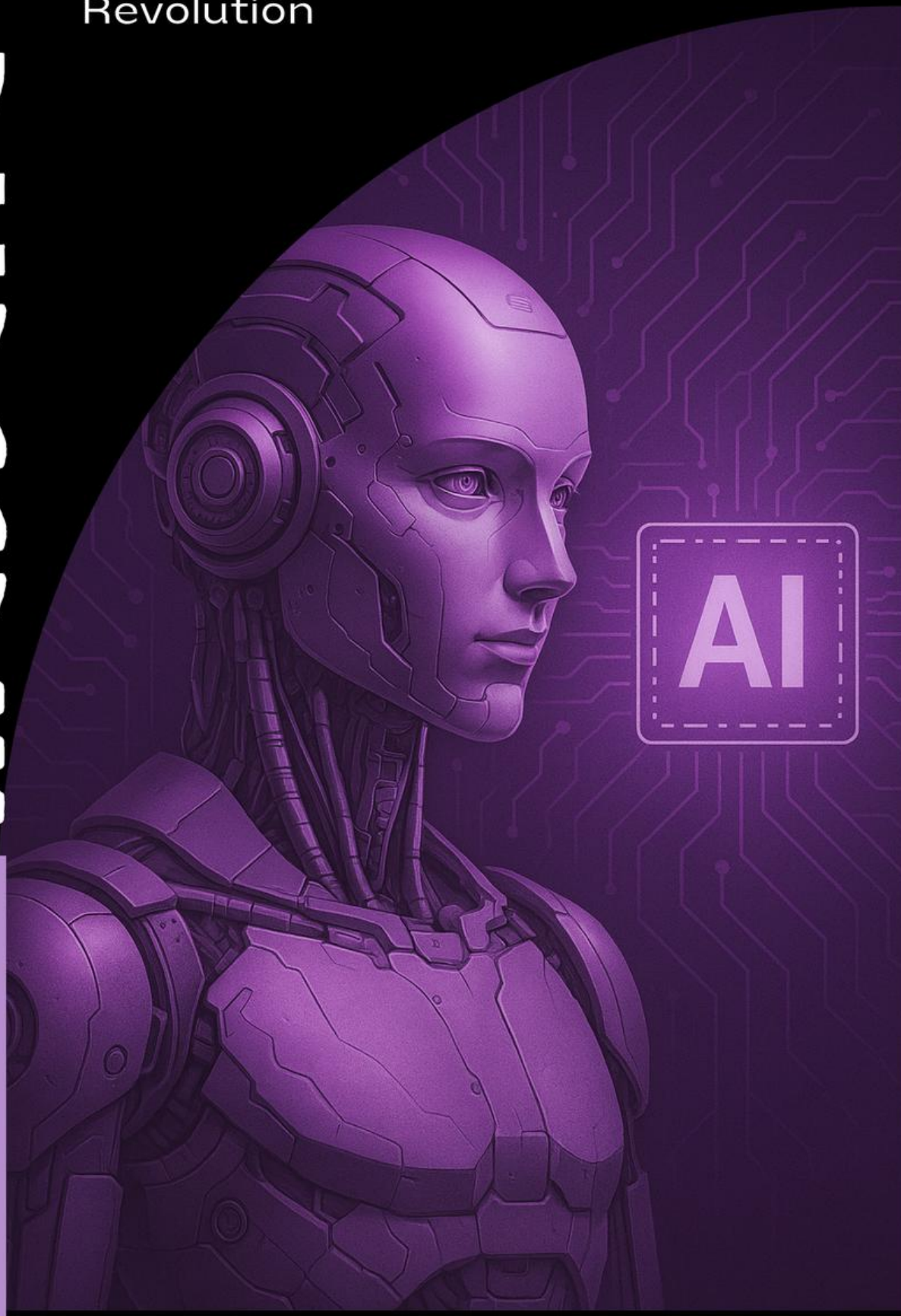
MESSENGER

CSE

2024 | VOL. 9

Your window to the Digital Revolution



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Vision of the Department

To be a centre of excellence in Computer Science & Engineering imparting quality education, competencies, skills, attitudes, and values while fostering research to create professionals capable of analysing, designing and developing computing systems for a sustainable future of mankind.

Mission of the Department

M1: To develop professionals with analytical and technical competencies for productive careers in industry, academia and as entrepreneurs.

M2: To impart theoretical and applied skills to students in computer science and engineering on industrially, environmentally, and socially relevant issues.

M3: To continuously improve and provide state-of-the-art laboratories to keep pace with the new advancements in computer science and engineering.

M4: To create an environment that empowers faculty and nurtures students towards life-long learning.

PROGRAM EDUCATIONAL OUTCOMES (PEOS)

PEO1	To develop in-depth problem-solving and technical skills in students to establish themselves in industry, academia, entrepreneurial ventures and pursuit of higher studies.
PEO2	To acquire theoretical concepts and applied knowledge to address industrial, environmental, and societal challenges by developing innovative solutions.
PEO3	To adapt emerging technologies by utilizing state-of-the-art laboratories and advanced tools for research, development, and life-long learning.
PEO4	To develop leadership, communication, and teamwork skills while fostering ethical and evolving attitudes to contribute effectively to society.

Message From Director's Desk

In an era marked by rapid technological advancements, it is crucial for our students, faculty, and industry partners to stay ahead of the curve. PIET has always been at the forefront of nurturing young minds and equipping them with the skills necessary to solve real-world challenges. *CSE Messengers* magazine of the CSE Department serves as a reflection of that commitment, offering a glimpse into the latest developments in engineering, emerging technologies, and the groundbreaking work being done by our talented students and faculty members. As we move forward, I encourage all of you to stay engaged, keep exploring new ideas, and contribute to shaping a brighter future for engineering and technology.

I would like to extend my heartfelt gratitude to all our contributors, collaborators, and readers for their continuous support

Prof (Dr) Shakti Kumar

(Director)

Message From IQAC Head's Desk

In coding, as in life, every error is simply a reminder that you're getting closer to the solution."

I express my sincere appreciation to the Computer Science & Engineering Department for creating this impressive Technical Magazine, CSE Messenger. At IQAC, we believe that innovation and the sharing of knowledge are key to preparing future professionals and this magazine is a wonderful example of that vision.

CSE Messenger provides an excellent platform for students and faculty to present their work in important areas like AI, cybersecurity, data science, and software engineering. The research papers, project highlights, and technical articles featured here show strong academic effort and the department's dedication to addressing real-world challenges through technology.

In today's fast-changing digital world, where advancements in computing open new possibilities, efforts like this help build creativity, critical thinking, and teamwork. I sincerely commend the editorial team and all contributors for their hard work in putting together this rich collection of knowledge.

May this magazine inspire many more students to discover, innovate and lead in the exciting field of computer science.

Wishing all readers an enjoyable and thought-provoking experience!

Prof (Dr) Suman Mann

IQAC Head

Message From HOD's Desk

It is with great pleasure that I present to you the latest edition of our Technical Magazine entitled "CSE Messenger". As the Head of the Department, I am incredibly proud to witness the growth and achievements of our students, faculty, and research initiatives. This magazine stands as a testament to the hard work, creativity, and innovative thinking that defines our engineering department.

In today's rapidly evolving technological landscape, it is essential that we foster a spirit of curiosity, hands-on learning, and interdisciplinary collaboration. Through the articles featured in this edition, you will gain insight into the exciting projects, cutting-edge research, and initiatives led by our talented students and faculty. These contributions not only enhance our academic environment but also create real-world impact, preparing our students to become the engineers of tomorrow. Our department continues to emphasize the importance of practical skills, critical thinking, and ethical engineering practices. I am confident that our collective efforts will shape the future of engineering and technology. I would like to express my gratitude to all contributors for their hard work and dedication. Let's continue to push boundaries, inspire innovation, and pave the way for a brighter future.

Prof (Dr) S.C Gupta

(HOD, Dept. CSE)

Editorial Team

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Dr Rashmi
Assistant Professor,
Department of CSE

Associate Editor

Mr Vikas Raman
Assistant Professor,
Department of CSE

Student Editor

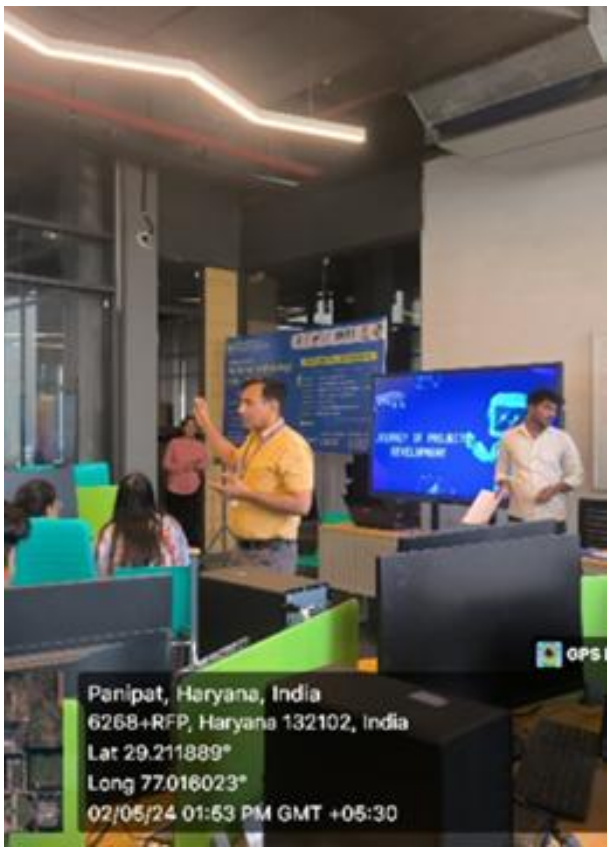
Mr Gurdarshan
B-Tech CSE
2nd Year

Student Editor

Mr Prateek
B-Tech CSE
2nd Year

Celebration of National Technology Day -2024

Panipat Institute of Engineering & Technology proudly celebrated National Technology Day 2024 and hosted Project Expo 2024, sponsored by the Haryana State Council for Science, Innovation & Technology. Held on May 14 in the RISE Building, the event was graced by esteemed guests, PIET management, and Director-PIET. Dr. Anju Bhandari Gandhi, Convener NTD-2024, inaugurated the program with Deep Blazing and Saraswati Vandana, highlighting the historic Pokhran tests and India's entry into the Nuclear Club. Over 220 participants paid tribute to scientists. Shri Rakesh Tayal, Vice Chairman, congratulated all for honoring technological innovation and student contributions.



Glimpses of National Technology Day -2024

The college would like to offer sincere thanks to Haryana State Council for Science Innovation and Technology, Department of Science & Technology, Government of Haryana for the financial support towards this event.

Headlines of National Technology Day-2024

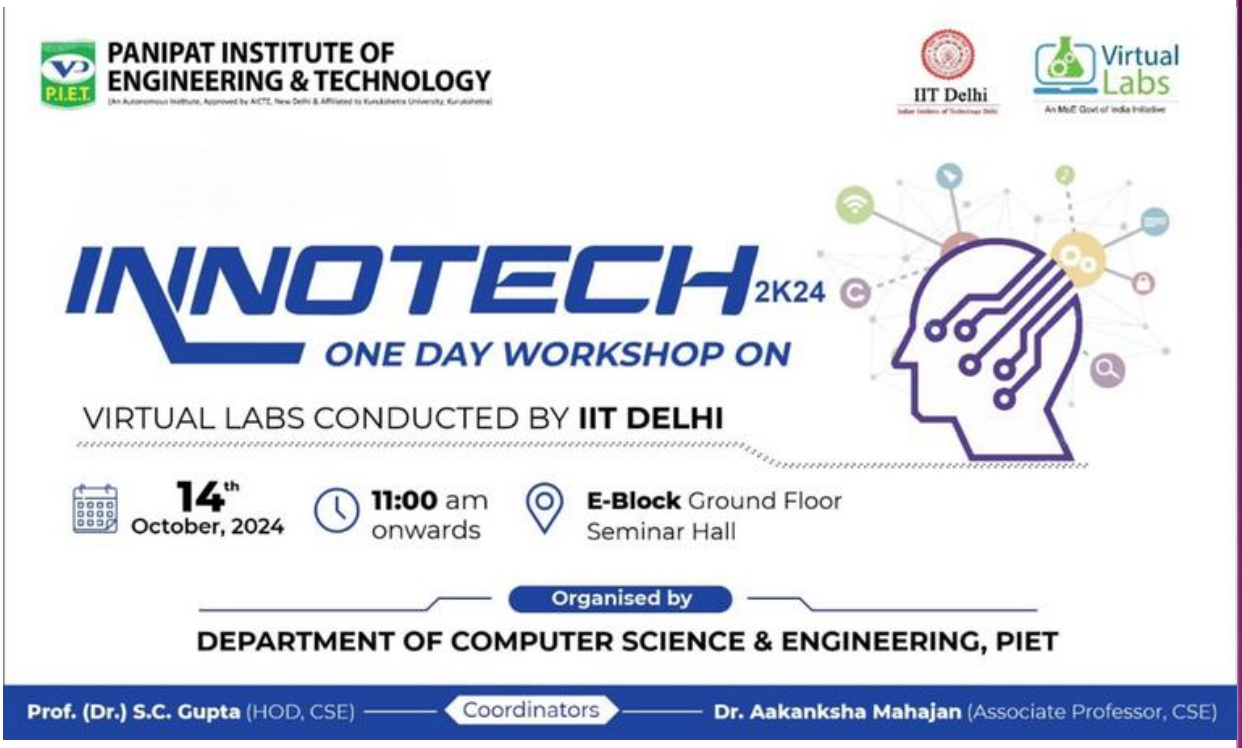
आज समाज
पानीपत, बुधवार, 15 मई, 2024
03

पाइट में नेशनल टेक्नॉलोजी सप्ताह मनाया, विजेताओं को किया सम्मानित

आज समाज नेटवर्क

समालखा। हरियाणा स्टेट काउंसिल फॉर साइंस एंड टेक्नॉलोजी, विज्ञान एवं तकनीकी निदेशालय के साथ मिलकर पाइट कॉलेज में नेशनल टेक्नॉलोजी सप्ताह मनाया गया। पायथन, आर्टिफिशियल इंटेलिजेंस, मशीन लर्निंग व अन्य एमर्जिंग टेक्नॉलोजी विषयों पर सात अलग-अलग वर्कशॉप का आयोजन किया गया।

पाइट के वाइस चेयरमैन राकेश तायल ने बताया कि इसके माध्यम से छात्र-छात्राओं को बदलती टेक?नॉलोजी को समझने का अवसर मिला। अपनी स्किल को बेहतर कर सके। जिन छात्र-छात्राओं ने रचनात्कता के साथ नए प्रयोग किए, उन्हें पुरस्कृत भी किया गया। इस वर्कशॉप का उद्देश्य इनोवेशन और स्किल डेवलपमेंट था, ताकि भविष्य के लिए बच्चों को तैयार किया जा सके। प्रो.एससी गुप्?ता, प्रो.देवेंद्र प्रसाद, नेशनल टेक?नॉलोजी इवेंट की अध्यक्ष डॉ.अंजू गांधी ने छात्र-छात्राओं का उत्साह बढ़ाया। इस अवसर पर चेयरमैन हरिओम तायल, निदेशक डॉ.जेएस सैनी, डीन डॉ.बीबी शर्मा, अंजनी, ममता हुड्डा, डॉ.उपासना, दीपक सिंगला, दीप्ती ढींगड़ा, राखी शर्मा, निकिता चावला, अंकुर, निखिल, तरुणा चावला, संदीप बिंद्रा मौजूद रहे।



The Department of Computer Science and Engineering is organizing a One Day Workshop on Virtual Labs in collaboration with IIT DELHI, sponsored by MHRD. The workshop will enhance understanding and application of virtual laboratory technologies in education and research. Participants will engage in hands-on sessions, interactive discussions, and networking opportunities.

Total No. of Participants: 201

Date: 14th October 2024


PIET


PIET


The Basic Idea
Internet
Virtual Labs
at, Karnal Division | 2024.10.14 11:25

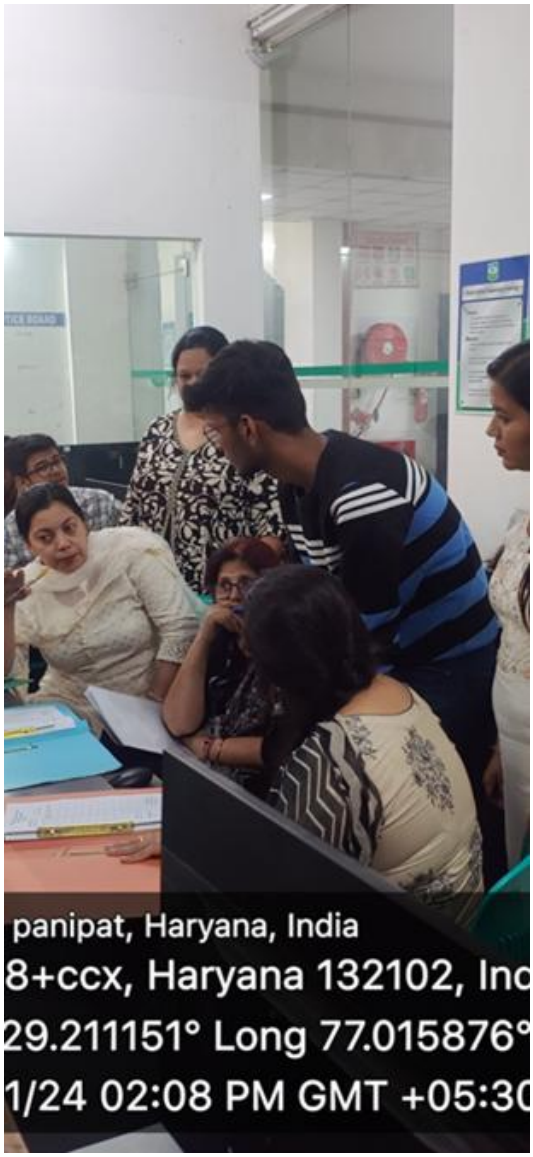

PIET
PIET
at, Karnal Divisio 2024.10.14 11:14


Thank You!
A Journey from Concept to Reality


PIET
INNOTECH
Panipat,HR,India
Samalkha, Panipat, 132102, HR, India
Lat 29.211152, Long 77.016003
10/14/2024 12:30 PM GMT+05:30
Note : Captured by GPS Map Camera

FRONTEND FRENZY

Department of CSE with PIET Comp Techies Club FRONTEND FRENZY was an event designed to stimulate student interest and proficiency in frontend web development. The event engaged participants in a competitive and collaborative environment, encouraging them to harness their creativity and technical skills in frontend design.

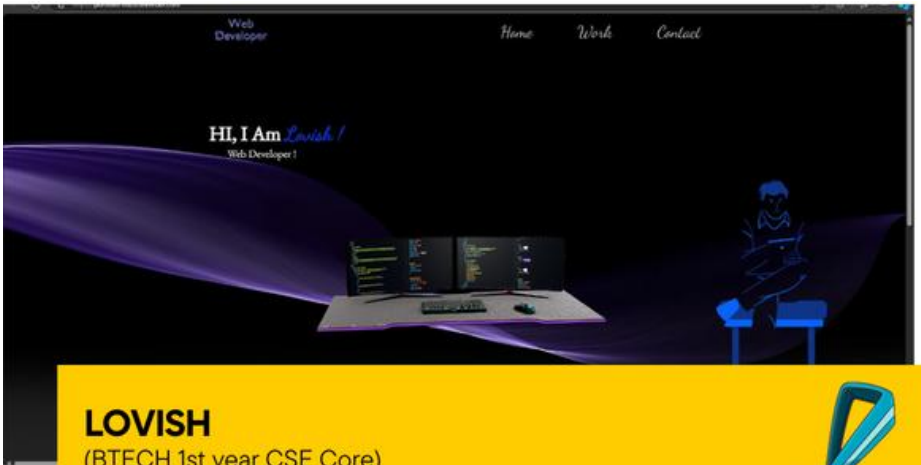


Organizers noted the importance of such events in fostering technological skills among students and fostering a sense of community. The event not only enhanced the participants' technical abilities but also helped them build connections with peers who share similar interests.

Winners of FRONTEND FRENZY

RAGHAV
(BTECH 2nd year CSE Core)
Secured 1st Position

AKASH MALIK
Secured 2nd position



LOVISH
(BTECH 1st year CSE Core)
Secured 3rd Position

ICCICA-2024
IEEE Sponsored
International Conference
On
Computational Intelligence and Computing Applications

The conference provided a vibrant platform for practitioners and educators to exchange innovative ideas and research in rapidly evolving computational technologies. With a focus on AI/ML, Deep Learning, Data Science, Optimization, Cyber-Physical Systems, and Intelligent Systems, the event featured 97 paper presentations and attracted 460 participants. Sessions were chaired by esteemed professors from reputed institutions, fostering collaboration and knowledge sharing across diverse domains like healthcare, education, robotics, and more.


INTERNATIONAL CONFERENCE
on
COMPUTATIONAL INTELLIGENCE
AND MATHEMATICAL
APPLICATIONS (ICCIMA-2023)

Smart India Hackathon 2024: A Gateway to Innovation and Student Empowerment

Unleashing Innovation: What is SIH?

The Smart India Hackathon (SIH) is a unique initiative by the Government of India designed to provide students a platform to tackle pressing real-world challenges. By engaging with industry-defined problems, students have the opportunity to demonstrate creativity, develop innovative solutions, and make meaningful contributions to society.

Why SIH 2024 Stands Out

SIH 2024 continues the legacy of fostering technological advancements through collaboration. With categories in both software and hardware, students from diverse disciplines can participate and shine. It's more than a competition—it's a movement to make India future-ready through youth-driven innovation.

From Classrooms to Boardrooms: The Impact

Past participants have transformed their lives-turning projects into startups, gaining internships and full-time offers, and even influencing policy changes through their innovative ideas. SIH nurtures confidence, sharpens problem-solving skills, and builds the leaders of tomorrow.

How You Can Join SIH 2025

1. Form a team (6 members max, with at least one female member)

2. Browse and select a problem statement from the SIH portal

3. Submit your idea with documentation

4. Get shortlisted and prepare for the grand finale

SIH is not just for coders—it's for thinkers, designers, and dreamers.

Why Every Student Should Participate

SIH empowers students to think beyond textbooks and innovate for a better tomorrow. It’s a chance to challenge yourself, network with top minds, and be recognized at a national level. As one alumnus said, 'SIH taught me that even a student can solve a national problem.' Let that student be you.

Our Achievers

Lets Join the Movement

Let SIH 2025 be the launchpad for your ideas and aspirations. Begin your journey today by visiting: https://sih.gov.in

Remember, the future belongs to those who create it. Are you ready to innovate for India?

Since Its Inception, SIH Has Garnered Significant Success In Promoting Out-of-the-box Thinking Among Young Minds, Particularly Engineering Students From Across India. Each Edition Has Built On The Previous One, Refining Its Approach And Expanding Its Impact. The Hackathon Not Only Offers Students An Opportunity To Showcase Their Skills But Also Encourages Collaboration With Industry Experts, Government Agencies, And Other Stakeholders.

Know about SIH 2025

The **Smart India Hackathon 2025** is a nationwide initiative organized by the Ministry of Education in collaboration with AICTE and various ministries, departments, PSUs, and industries. It aims to provide students with a platform to solve real-world problems and foster a culture of innovation and entrepreneurship. For SIH 2025, over 250 problem statements have been submitted by 54 ministries, departments, state governments, PSUs, and industries. These challenges cover 17 major areas/themes linked to sectors of national importance and priorities, including Healthcare, Supply Chain & Logistics, Smart Technologies, Heritage & Culture, Sustainability, Education & Skill Development, Water, Agriculture & Food, Emerging Technologies and Disaster Management.

Know more about SIH

https://scholarshiplearn.com/smart-india-hackathon-sih/

🚀 Impact and Legacy

Since its inception, SIH has significantly influenced India's innovation landscape. The hackathon has empowered students and professionals to address real-world challenges, leading to the establishment of over 100 startups, many with a strong social impact. The SIH Alumni Network continues to document and showcase these transformative outcomes.

Know Our Professor's

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Professor & IQAC Head
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Dr. Anju Gandhi
Professor and Professor Incharge (R&D)
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Dr. Aakanksha Mahajan
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Dr. Anshu Sharma
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Dr. Ridhi Arora
Assistant Professor
Research Area: Biomedical Image Processing
Email id: ridhi.cse@piet.co.in
,

Dr. Richa Choudhary
Assistant Professor
Research Area: Machine Learning, Computational Sustainability, Game Theory
Email id: richachoudhary.cse@piet.co.in

Academic Achievers of CSE Department

Batch (2023-2027)

Anshul Shrivastava
1st Position
Roll Number: 2823013
Year: 1st Year
Combined SGPA (1st & 2nd Sem): 17.1

Muskan Jain
2nd Position
Roll Number: 2823059
Year: 1st Year
Combined SGPA (1st & 2nd Sem): 17.09

Khushi
3rd Position
Roll Number: 2823054
Year: 1st Year
Combined SGPA (1st & 2nd Sem): 17.02

The future belongs to those who believe in the beauty of their dreams."

— Eleanor Roosevelt

Academic Achievers of CSE Department

Batch (2022-2026)

Yashika
1st Position
Roll Number: 2822273
Year: 2nd Year
Combined SGPA (3rd & 4th Sem): 16.86

Kashish Nayyar
2nd Position
Roll Number: 2822276
Year: 2nd Year
Combined SGPA (3rd & 4th Sem): 16.65

Palak
3rd Position
Roll Number: 2822131
Year: 2nd Year
Combined SGPA (3rd & 4th Sem): 16.63

"Success usually comes to those who are too busy to be looking for it."

— Henry David Thoreau

Academic Achievers of CSE Department

Batch (2021-2025)

Hardik

1st Position

Roll Number: 2821194

Year: 3rd Year

Combined SGPA (5th & 6th Sem): 16.96

Tripti Goel

2nd Position

Roll Number: 2821190

Year: 3rd Year

Combined SGPA (5th & 6th Sem): 16.74

Bhawna Bhatia

3rd Position

Roll Number: 2821030

Year: 3rd Year

Combined SGPA (5th & 6th Sem): 16.6

"Don’t watch the clock; do what it does.

Keep going."

— Sam Levenson

Academic Achievers of CSE Department

Batch (2020-2024)

Diksha

1st Position

Roll Number: 2820024

Year: 4th Year

SGPA : 9.25

Nimisha

2nd Position

Roll Number: 2820001

Year: 4th Year

SGPA : 9.1

Mansi Tyagi

3rd Position

Roll Number: 2820094

Year: 4th Year

SGPA : 9.08

"Excellence is not a skill, it's an attitude."

— Ralph Marston

Research Articles

QUANTUM CHAIN OF THINGS : AMALGAMATION OF BLOCKCHAIN(BC),INTERNET OF THINGS(IOT), AND QUANTUM COMPUTING(QC)- QCOT ERA

Book Name: Futuristic Trends in Information Technology Volume 3 Book 1
Authors: Shweta Jain, Anju Gandhi Bhandari, Devendra Prasad, Stuti Mehla
Keywords: Internet of things, Future Technology,Security, Quantum Technology, QCoT technology, Blockchain,Post-Quantum Cryptography
Area/Stream: Computer Science, Information Technology / Database, Information Systems and Security / Others
Published in: IIP Series
Volume: 3, **Month:**May,**Year:**2024
Page No.: 171-192
e-ISBN: 978-93-6252-902-2
DOI/Link: https://www.doi.org/10.58532/V3BBIT1P2CH2

Abstract:

The Internet of Things (IoT), which is building a new world where everything is interconnected and can be remotely operated, is one of the developing technologies. The epoch of machines conquering the universe is just getting warmed up. By 2025, there will be approximately 22 billion associated devices on the planet. The next technological innovation is blockchain, which uses a peer-to-peer communication link to preserve general transactional data and information (or blocks) across several repositories (orchains). The terminology "Digital Ledger" alludes to an instance of block storage.Quantum computing is the next quickly developing technology. It incorporates use of numerous quantum physics aspects, notably superposition and entanglement. Every foundational premise of the computational game is amended by quantum excellence.A new paradigm dubbed Quantum - Chain of Things (QCoT)[1], which is the most potent technology from the sub-emerging technologies, is presented when we scrutinize the collaboration of the three powerful advanced technologies (Quantum Computing, Blockchain and IOT).The BC-IOT (Blockchain coupled with IOT leveraging Arduino) and QC-IOT (Quantum computing merged with IOT using IBM Qiskit) subsystems are the cornerstones of QCoT technology [1].The prevailing breakthroughs in blockchain, quantum computing, and IOT will be addressed in this paper, then followed by an exploration of the recommended architectural model for the improved technology, designated as QCoT, and its implementations. We will employ the quantum chain of things to forecast future patterns and opportunities. It is a remedy for improving our everyday activities in a secured and beneficial way.

Cite this: *Shweta Jain, Anju Gandhi Bhandari, Devendra Prasad, Stuti Mehla,"QUANTUM CHAIN OF THINGS : AMALGAMATION OF BLOCKCHAIN(BC),INTERNET OF THINGS(IOT), AND QUANTUM COMPUTING(QC)- QCOT ERA", Futuristic Trends in Information Technology Volume 3 Book 1,IIP Series, Volume 3, May, 2024, Page no.171-192, e-ISBN: 978-93-6252-902-2, DOI/Link: https://www.doi.org/10.58532/V3BBIT1P2CH2*

Dr Anju Bhandari Gandhi

Dr Stuti Mehla

DOI/Link: https://www.doi.org/10.58532/V3BBIT1P1CH2

Research Articles

Conferences > 2024 International Conference...

DevConnect: Knowledge Sharing Social Platform

Publisher: IEEE Cite This PDF

Mayank Jindal ; Rahul Tomer ; Deepti Dhingra ; Anju Gandhi ; Aakanksha Mahajan **All Authors**

60 Full Text Views

Abstract

Document Sections

I. Introduction

II. Literature Survey

III. PROPOSED MODEL

IV. FEATURES OF THE SYSTEM

V. RESULTS AND EXPERIMENTAL SETUP

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Keywords

Metrics

Abstract:
"DevConnect" aims to create an interactive platform tailored for developers to collaborate, seek assistance, and discover new projects seamlessly. Through its innovative features, developers can engage in meaningful collaborations, exchange messages for help queries, and explore fresh project ideas effortlessly. At the heart of the platform lies its ability to facilitate collaboration among developers, a vibrant community where knowledge sharing thrives. Users can reach out to fellow developers for assistance, feedback, or guidance, enriching their development journey with valuable insights and support. Central to the platform{\prime}s functionality is its robust search feature, enabling developers to explore a diverse range of projects based on their interests, skills, and preferences. Whether seeking inspiration for a new endeavour or searching for specific project types, developers can easily navigate the platform to discover exciting opportunities. Furthermore, developers have the option to follow their favourite peers, allowing them to stay updated on their latest projects, contributions, and insights. This feature not only cultivates a sense of camaraderie within the community but also empowers developers to build meaningful connections and expand their networks. The Social Media Showcase project is designed with user-friendliness in mind, ensuring that developers can effortlessly navigate the platform and access its wealth of resources. With its intuitive interface and seamless functionality, developers can focus their energy on what matters most: innovation and collaboration. By providing a dynamic and interactive space for developers to connect, share, and discover, the Social Media Showcase project seeks to enrich the development community and inspire creativity in the ever-evolving landscape of technology.

Published in: 2024 International Conference on Computational Intelligence and Computing Applications (ICCICA)

Date of Conference: 23-24 May 2024

DOI: 10.1109/ICCICA60014.2024.10585202

Date Added to IEEE *Xplore*: 11 July 2024

Publisher: IEEE

ISBN Information:

Conference Location: Samalkha, India

Ms Deepti Dhingra

Dr Anju Gandhi

Dr Akansha Mahajan

DOI: 10.1109/ICCICA60014.2024.10585202

Research Articles

Conferences > 2024 International Conference...

Knowledge Navigator – Guiding You Through Your Learning Journey Using AI

Publisher: IEEE | Cite This | PDF

Anup Lal Yadav ; Navjot Singh Talwandi ; Sunny Kuhar ; Munish Kumar **All Authors**

67
Full
Text Views

Mr Sunny Kuhar

Abstract

Document Sections

I. INTRODUCTION

II. LITERATURE REVIEW

III. METHODOLOGY

IV. EXPERIMENTS AND RESULTS

V. DISCUSSION

Show Full Outline

Authors

Figures

References

Abstract:
It might be intimidating to navigate the wide array of learning resources in this era of information overload. This article presents Knowledge Navigator, an artificial intelligence (AI) system that adapts the learning process to the needs, preferences, and learning styles of each individual. Knowledge Navigator evaluates past knowledge, determines learning preferences, and comprehends user intent by combining sophisticated Natural Language Processing (NLP) and machine learning algorithms. Users are guaranteed to receive the most interesting and pertinent learning materials, according to their tastes and goals, thanks to this customized approach. The potential advantages of Knowledge Navigator, such as higher learning efficiency, better information retention, and increased student motivation, are discussed in the paper's conclusion. It also looks at potential research avenues in the future, such as gamification and integration with practical uses.

Published in: 2024 International Conference on Computational Intelligence and Computing Applications (ICCICA)

Date of Conference: 23-24 May 2024

DOI: 10.1109/ICCICA60014.2024.10584841

Date Added to IEEE *Xplore*: 11 July 2024

Publisher: IEEE

ISBN Information:

Conference Location: Samalkha, India

DOI:10.1109/ICCICA60014.2024.10584841

Research Articles

Conferences > 2024 International Conference...

YTBlend: YouTube Video Recommendations System

Publisher: IEEE Cite This PDF

Kulvinder Singh ; Tanu Sharma ; Anup Lal Yadav ; Jaya Rani **All Authors**

120
Full
Text Views

Abstract
Document Sections
I. Introduction
II. LITERATURE REVIEW
III. METHODOLOGY
IV. EXPERIMENTS
V. CONCLUSION
Authors
Figures
References
Keywords
Metrics

Abstract:
In the dynamic era of online education, the pursuit of a personalized and effective learning experience is paramount. In this research, a sophisticated smart system for learning video recommendations is proposed at the intersection of multimodal data mining and data synthesis in online education. The approach aims to enhance personalized and effective learning experiences by transcending the limitations of traditional recommendation systems. Innovative data synthesis techniques are employed to expand the dataset and improve the adaptability of the system, integrating diverse data sources including text, images, and videos. The methodology involves a comprehensive analysis of learning materials using cutting-edge technologies like natural language processing, computer vision, and video content analysis to deepen the understanding of learner-content interactions. Furthermore, the challenge of hashtag recommendation in short videos is addressed by leveraging their multimodal nature, combining sentiment and content features from image, audio, and text modalities to enhance the accuracy and rationality of hashtag recommendations. This research contributes to redefining the landscape of intelligent learning video recommendations, offering a dynamic platform designed to continuously adapt to the evolving needs and preferences of learners.

Published in: 2024 International Conference on Computational Intelligence and Computing Applications (ICCICA)

Date of Conference: 23-24 May 2024
DOI: 10.1109/ICCICA60014.2024.10585169
Date Added to IEEE *Xplore*: 11 July 2024
Publisher: IEEE
ISBN Information:
Conference Location: Samalkha, India

Ms Tanu Sharma

Ms Jaya Rani

DOI: 10.1109/ICCICA60014.2024.10585202

Research Articles

Conferences > 2024 International Conference...

Deep Learning-based Enhanced Security in Cyber- Physical Systems: A Multi-Attack Perspective

Publisher: IEEE | Cite This | PDF

Sandeep Singh Bindra ; Alankrita Aggarwal All Authors

95 Full Text Views

Mr Sandeep Singh Bindra

Abstract

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I. Introduction

II. RELATED WORK

III. PROPOSED DL-BASED MULTI-ATTACK DETECTION SYSTEM

IV. EXPERIMENTATION AND RESULT ANALYSIS

V. CONCLUSION

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Abstract:
Today{\prime}s key industries, including energy, healthcare, and transportation, rely heavily on Cyber-Physical Systems (CPS) as their foundation. All the same, these systems are seriously threatened by the wide range and growing complexity of cyberattacks. Traditional security measures typically fail when identifying intricate, multi-phase, and unique threats. This research presents a deep learning-based approach to improve CPS{\prime}s resistance against cyber threats. This work aims to detect multiple network attackers with distinct attack natures and provide a novel hybrid architecture. To analyze the performance of the proposed architecture, a publicly available dataset OPC UA is used, which contains Denial of Service (DoS), Man-in-the-middle (MITM), and spoofing attack data. The performance is compared with existing detection frameworks. The findings show a notable increase in detection accuracy over current approaches, underscoring the promise of deep learning strategies in protecting CPS against cyberattacks. This research contributes to cyber-physical security and provides valuable information for implementing intelligent attack detection systems in CPS.

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Research Articles

Conferences > 2024 International Conference...

Effective Machine Learning Model for Disease Recognition and Categorization of Mango Leaves

Publisher: IEEE | Cite This | PDF

Sandeep Kumar ; Bhupesh Gupta ; Richa Grover ; Mohit Chhabra All Authors

2 Cites in Papers | 68 Full Text Views

Ms Richa Grover

Abstract

Document Sections

I. Introduction

II. RELATED WORK

III. PROPOSED METHOD

IV. EXPERIMENTAL RESULTS

V. CONCLUSION

Authors

Figures

References

Citations

Keywords

Metrics

Abstract:
Maintaining the health and production of mango farms depends on the early detection of illnesses in mango trees. Despite the vital role agriculture plays, it remains an industry receiving limited attention from the machine-learning community. A noteworthy challenge is the lack of standardized and openly accessible agricultural datasets, impeding researchers from fully leveraging the potential of advanced computational prediction tools. The study focuses on employing deep learning and image processing techniques for diagnosing prevalent mango leaf diseases in India. The goal is to enhance both the quality and quantity of agricultural production by implementing effective disease control measures upon identifying plant diseases. The automation of plant disease detection proves particularly beneficial, reducing the monitoring efforts required by large farms. Rapid identification of leaf diseases is crucial, given that leaves serve as a plant's primary source of nutrition. Notably, none of the seven different mango leaf illnesses that have been observed in India have ever been the subject of earlier research. In this study, we provide a lightweight Resnet50 model that can reliably classify healthy mango leaves and the seven discovered illnesses on mango leaves. The performance of our proposed lightweight Resnet-50 model is evaluated against many pre-trained models, such as Exception, Resnet101, and VGG16. The findings reveal that the lightweight Resnet-50 model achieves the highest testing accuracy, reaching an impressive 95%. This underscores the model's effectiveness in automating the identification of mango leaf diseases, offering a promising solution for improving agricultural practices in India.

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Research Articles

4 Revolutionizing IoT with Blockchain

A State-of-the-Art Review

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Ms Saba Zaidi

4.1 INTRODUCTION

The Internet of Things (IoT) is rapidly evolving, with numerous devices connected to the Internet every day. However, the rapid growth of IoT has led to security and privacy challenges, as well as interoperability and data exchange issues. Blockchain, a decentralized ledger technology, has the potential to revolutionize IoT by addressing these challenges and improving the reliability and security of IoT applications. This study comprehensively reviews the state-of-the-art efforts in using blockchain to revolutionize IoT. The introduction of the chapter highlights the growing importance of the IoT in connecting digital and physical objects to enable collaboration between computing systems, users, and objects. The IoT can potentially deliver significant convenience and economic benefits, such as optimizing supply chains, enhancing manufacturing processes, and improving healthcare delivery. However, the increasing number of connected devices concerns data security and privacy. As more devices are added to the network, ensuring that the communication between them is secure and that data privacy is maintained becomes more challenging. In this context, blockchain technology presents a promising solution to these challenges. Blockchain is a distributed ledger technology that maintains an immutable record of network transactions. It offers a secure, decentralized, and tamper-proof data management approach, making it suitable for addressing the security and privacy concerns of the IoT. This comprehensive review covers the most significant blockchain-based Internet of Things (B-IoT) applications, their architecture, and security considerations. Additionally, the challenges and future directions of B-IoT, which will guide researchers toward deploying the next generation of B-IoT applications, have been

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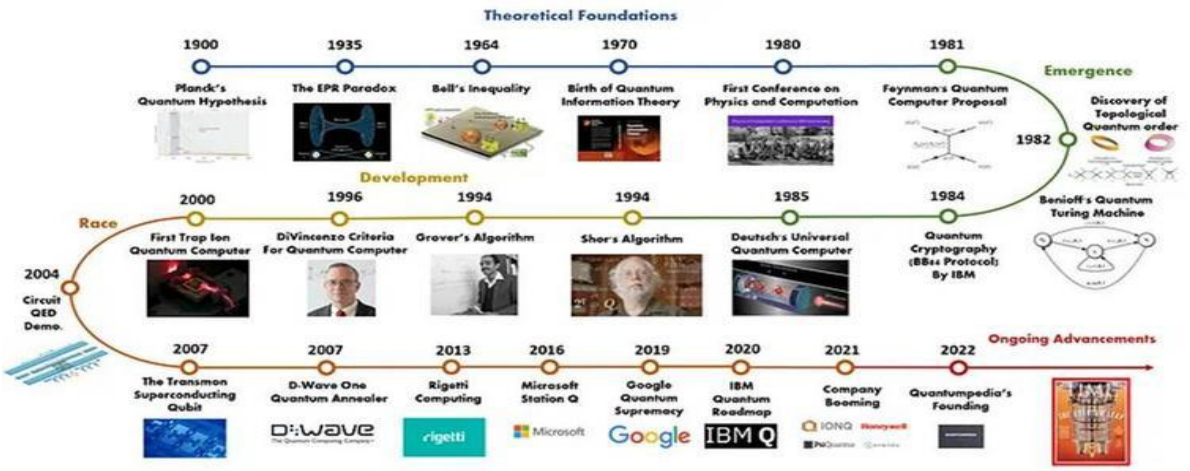
Journey from Classical to Quantum Computing

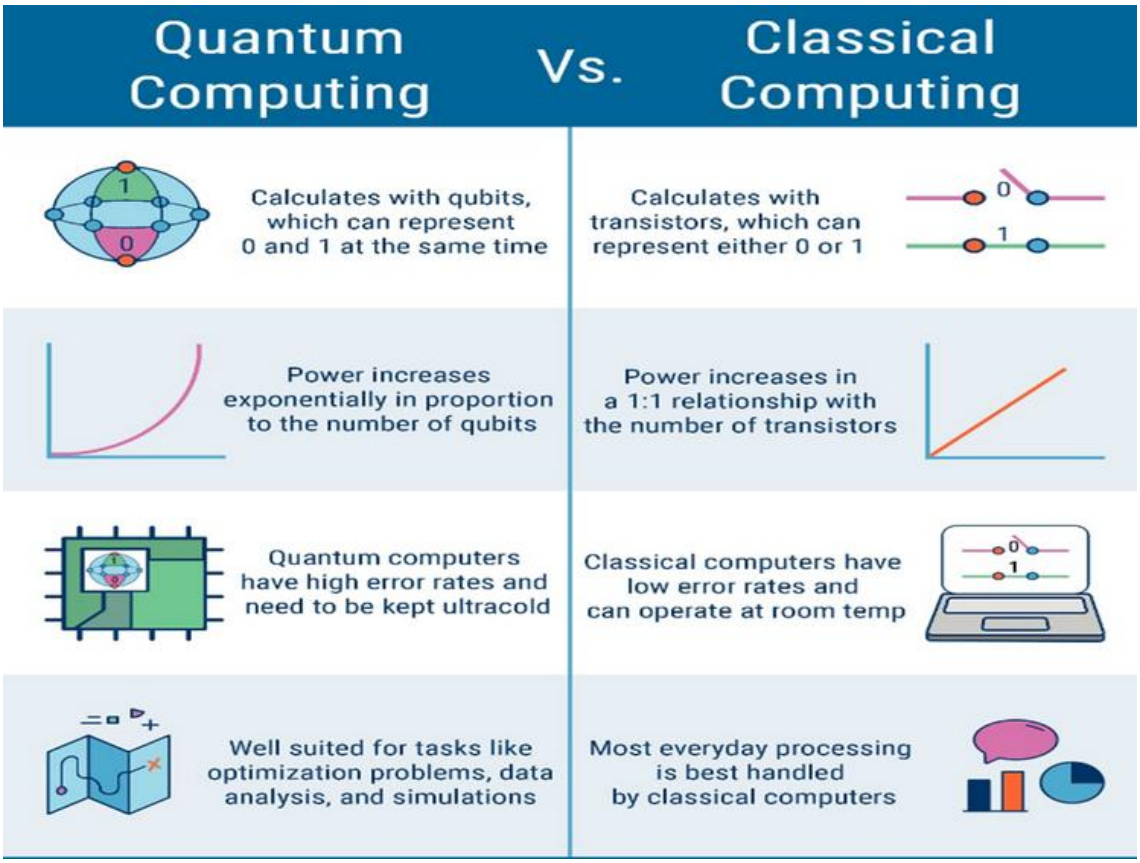
The evolution from classical to quantum computing marks one of the most significant technological shifts of our time. Classical computers, the backbone of modern computing, process information using bits i.e. binary units that exist in a state of either 0 or 1. For decades, advances in hardware and software have allowed classical systems to become faster and more efficient, following Moore's Law.

However, classical computing faces limitations when tackling highly complex problems such as simulating molecular structures, optimizing massive datasets, or breaking modern encryption. These problems often require processing power that grows exponentially with problem size-something classical systems struggle with.

Quantum computing offers a fundamentally different approach. Based on the principles of quantum mechanics, it uses qubits instead of bits. Qubits can exist in superposition, representing both 0 and 1 simultaneously. When combined with quantum entanglement and interference, this enables quantum computers to process vast amounts of data in parallel.

The idea of quantum computing began as a theoretical concept in the 1980s, proposed by physicists like Richard Feynman and David Deutsch. Today, companies like IBM, Google, and startups are developing early-stage quantum machines. In 2019, Google claimed "quantum supremacy," demonstrating that its quantum processor performed a task beyond the reach of classical supercomputers.





Though current quantum computers are still in their infancy and face challenges like error correction and qubit stability, they hold immense potential. Future quantum systems could revolutionize cryptography, accelerate drug discovery, and solve optimization problems far beyond classical reach.

All the classical problems having exponential complexity can be solved linearly using quantum mechanics. This is one of the vital traits of quantum computing over classical domain.

The journey from classical to quantum computing is still ongoing-but it's one that could redefine the future of computation.

Dr Rashmi
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Faculty Article

National and International Drift on Smart Cities

The concept of smart cities is rapidly transforming urban development across the globe. A smart city uses technology, data, and innovation to enhance the quality of life for its citizens, improve infrastructure, and promote sustainable growth. Governments worldwide are increasingly investing in smart city initiatives, recognizing their potential to address urban challenges such as traffic congestion, pollution, and resource management.

Internationally, countries like Singapore, the Netherlands, and South Korea are leading the way. Singapore's Smart Nation initiative integrates digital technology in public services, transportation, and housing. Amsterdam emphasizes energy efficiency and citizen engagement, while South Korea's Songdo is a purpose-built smart city equipped with advanced sensors and IoT systems from the ground up.

Nationally, India launched its Smart Cities Mission in 2015, aiming to develop 100 cities with improved infrastructure, digital governance, and sustainable practices. The initiative promotes public-private partnerships and citizen participation. Indian smart cities like Pune, Surat, and Bhopal are incorporating integrated traffic systems, waste management, and e-governance tools.

Stakeholders and Roles

National Government is responsible in crafting and introducing Smart City concepts to national policies, public investments, and private developments.

Local Government Units are responsible in translating the policies into their city/community level initiatives as the main implementing actor of smart city programs.

Community and citizen participation and engagement are essential to ensure that smart city programs are designed to meet the needs and preferences of the community.

Private Sector/Businesses are responsible in providing the necessary technology, expertise, and financing to implement smart city initiatives.

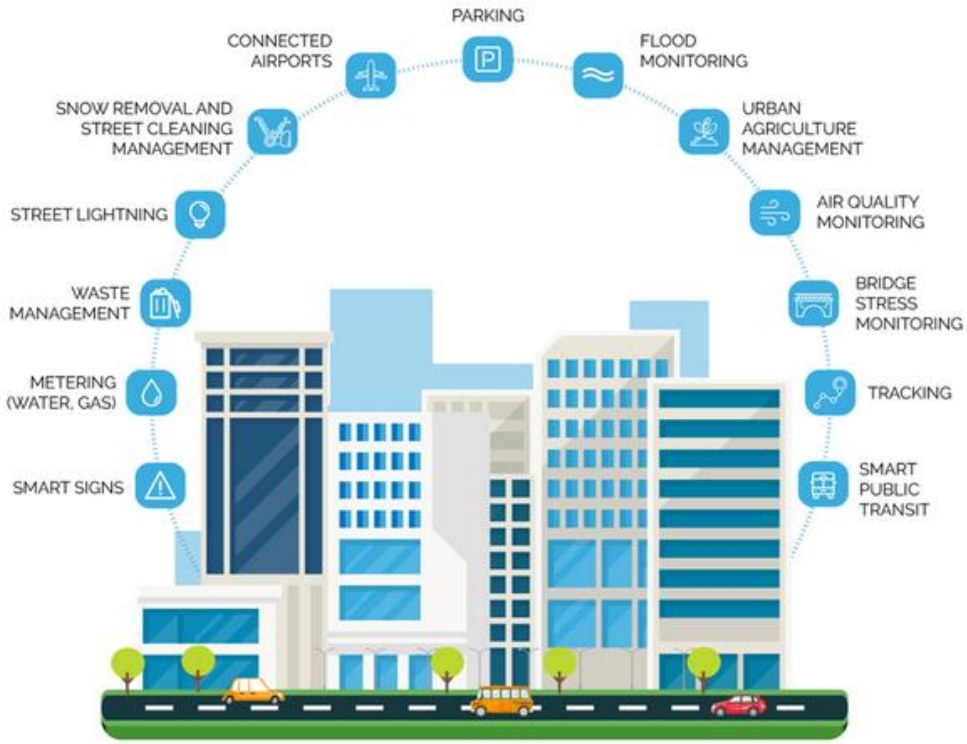
Knowledge Institutions like academic institutions play a crucial role in developing research, knowledge transfer and innovation in smart cities.

Local and International NGOs are responsible for facilitating global and regional cooperation, technology and knowledge transfer, and capacity building, as well as granting resources and international perspective and expertise.

Civil Society Organization like advocacy groups play an important role in promoting citizen engagement and participation in smart city interventions.

The drift toward smart cities is driven by rapid urbanization, the need for efficient public services, and the global focus on sustainability. However, challenges remain-data privacy, cyber security, and ensuring inclusivity are critical concerns.

As technologies like AI, IoT, and 5G mature, both national and international efforts continue to evolve. Smart cities are no longer just a vision-they are becoming a global standard for future-ready urban living.



The development of smart cities throughout India is still in its infancy. Smart cities in India should have robust legislative and governance frameworks concerning technical specifications, open data, and information privacy and security regulations, taking inspiration from the practices implemented by cities worldwide. These regulations will be crucial to maintaining smart cities' effectiveness and sustainability while defending people's rights. Some of these regulations, like India's Open Data Policy and its data protection rules under section 43A of the ITA, are already in effect. The adoption and implementation of these rules in the context of smart cities will be crucial to observe

Faculty Article

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AUGMENTED REALITY AND AI

Technology is not just evolving—it is transforming the way we perceive reality. Augmented Reality (AR) and Artificial Intelligence (AI) are two of the most groundbreaking innovations shaping this transformation. While AR overlays digital content onto our physical world, AI processes information intelligently, enabling dynamic and interactive experiences. Together, they are revolutionizing industries, from education and healthcare to smart cities and entertainment.

As a tech enthusiast, I have personally explored the potential of AR by creating a book on Augmented Reality, designed to help students grasp complex topics in a simple, engaging manner. I believe AR is not just an emerging trend but a powerful tool to bridge the knowledge gap, making learning immersive and enjoyable.

Beyond education, AR and AI are revolutionizing healthcare, retail, and urban planning. Imagine a future where AI-powered AR glasses guide the visually impaired, or AI-driven smart assistants enhance decision-making in real-time. The fusion of these technologies is not just about convenience—it's about redefining human experiences.

We are not just witnessing the future; we are building it. The question is—how will you shape it?

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Student Article

THE FUTURE OF ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) has already transformed various sectors, from healthcare and finance to transportation and entertainment. As we look ahead to 2025 and beyond, several key trends are poised to shape the next era of AI development.One of the most significant advancements will be AI-driven automation across industries. By 2025, AI is expected to automate not just repetitive tasks, but also complex decision-making processes, enhancing productivity and reducing human error. Businesses will increasingly rely on AI for data analysis, customer service, and even strategy formulation, ushering in a new age of intelligent business operations.

The ethical and regulatory landscape of AI will also evolve dramatically. As AI becomes more pervasive, governments and organizations will need to establish comprehensive guidelines to ensure fairness, transparency, and privacy. This may include AI auditing systems, bias reduction protocols, and clearer accountability measures.

Finally, AI's role in addressing global challenges will grow. From climate change to healthcare disparities, AI will play a critical role in developing innovative solutions, such as predictive models for environmental sustainability and precision medicine tailored to individual genetic profiles.

The future of AI holds immense potential, with transformative possibilities that will continue to redefine our world. As we move into 2025 and beyond, its integration into society will be more profound, complex, and beneficial than ever.

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Student Article

AI AND CREATIVITY

Artificial intelligence is no longer just about logic and automation—it is now entering the world of creativity. From generating paintings and composing music to writing poetry and designing fashion, AI is challenging the notion that artistic expression is uniquely human.

AI-powered tools like OpenAI's DALL·E, Google's DeepDream, and Sony's Flow Machines can analyze vast datasets of artistic works and generate new pieces in a similar style. These models learn patterns, styles, and techniques, allowing them to create original compositions that can rival human- made art. Musicians, for example, are using AI to assist in songwriting, blending human creativity with machine-generated melodies.

One of the biggest debates surrounding AI in the arts is whether machine-generated works can truly be considered creative. Creativity has long been linked to human emotions, intuition, and personal experiences—qualities that AI lacks. However, AI can recognize patterns and combine elements in unexpected ways, often producing art that surprises even its human creators.

AI is not replacing artists but rather becoming a tool that expands creative possibilities. Many designers, writers, and musicians use AI as a collaborator rather than a competitor. AI-generated art is also making waves in the commercial world, with digital artists selling AI-created works as NFTs and fashion brands using AI to develop innovative designs.

As AI continues to evolve, its role in art will grow. While it may not have human imagination, AI is proving that creativity is not exclusive to people. Instead, it is a process that can be enhanced, redefined, and even reinvented with the help of machines.

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Student Article

CONSTRUCTING SMARTER CITIES

Traffic can be unbearable, especially when stuck at a stoplight with no vehicles around. Or how often do the streetlights remain illuminated for no apparent reason? Now, imagine if cities had the capability to think, adapt and respond in real-time. Thanks to AI, the future is bright.

AI seemingly works behind the scenes, however, its impact on the operations of cities is exquisitely prominent. One of the major implementations of AI within infrastructure is traffic control. Rather than relying on pre-determined timers, smart traffic lights utilize AI to calculate the optimal time for their function. Fewer locks result in more freedom; the result has been a 20-30% descend on traffic delays AI provided to some cities.

Moreover, lights and air conditioning in buildings also contribute to power efficiency. AI assists buildings "learn" when power should be utilized. Additionally, cuts in waste have resulted from improvements to power grids. In essence, AI provides cities with the knowledge for better energy efficiency.

Another marker of AI improvement is waste management. Rather than waiting to be collected and overflowing, AI sensors can notify services when a bin has reached maximum capacity. This leads to a more rapid and efficient collection of waste which keeps streets cleaner.

Other than AI improving infrastructure, public safety is also being enhanced. AI technologies like smart surveillance, air quality monitoring, as well as advanced emergency response systems.

Student Article

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EXPLORING THE BLACK BOX

Artificial Intelligence (AI) has become an integral part of modern society, influencing industries like healthcare, finance, and law enforcement. However, many AI systems operate as "black boxes," meaning their decision-making processes are not easily understood by humans. This lack of transparency raises concerns about bias, fairness, and accountability.

AI Transparency refers to the ability to understand how an AI system arrives at its decisions. Transparent AI systems provide insights into their algorithms, data sources, and reasoning processes. Methods like explainable AI (XAI), open-source models, and interpretable machine learning help improve transparency. When users and stakeholders can scrutinize AI decisions, they are more likely to trust and adopt the technology responsibly.

AI Accountability ensures that individuals or organizations are responsible for the actions and consequences of AI systems. If an AI system makes an incorrect or harmful decision, there should be a way to trace the error, determine responsibility, and implement corrective measures. Regulations like the EU's AI Act and ethical guidelines from organizations such as the IEEE and OECD emphasize accountability in AI deployment.

A lack of transparency and accountability can lead to serious issues, including biased hiring decisions, wrongful arrests due to flawed facial recognition, or unfair credit scoring. Addressing these concerns requires a combination of technical solutions, ethical frameworks, and legal regulations. Developers should prioritize fairness, policymakers should enforce ethical AI usage, and organizations should conduct audits to ensure compliance.

Student Article

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AI IN GAMING

Advancing machine learning (ML) technology has made possible the creation of video games that adapt to players, replacing once monotonous and unchanging experiences with rich, immersive worlds. Scripted NPCs are a relic of the past; AI now provides NPCs with the tools needed to learn from and adapt to player's actions on the fly. With its application of ML, Red Dead Redemption 2 features wildlife and secondary characters that interact within an ecosystem responsive to player actions, while AI Dungeon employs NLP to provide limitless stories that respond to player input. Even narrative structure is no longer set in stone; Detroit: Become Human forgoes traditional scripts for decision trees and predictive algorithms that ensure players experience unique, tailored narratives in every playthrough.

ML has not only automated the randomization of level design; it now enables the creation of entire worlds that cater to individual preferences. While previously viewed as a novelty, the potential for competition has made traditional sports a paradigm of AI research. Algorithms that populate galaxies with distinct planets, creatures, and ecosystems have allowed No Man's Sky to become a near-limitless exploration game.

DeepMind's AlphaStar, as well as OpenAI's Dota 2 bots, have expanded the boundaries of what is possible in competitive video gaming by integrating advanced deep learning techniques.

Student Article

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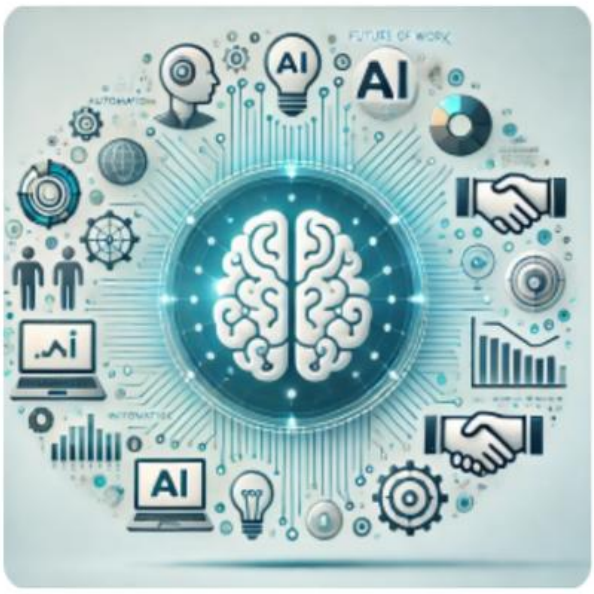
THE IMPACT OF AI ON EMPLOYMENT

Artificial Intelligence (AI) is rapidly transforming the workforce, reshaping industries, and influencing the nature of employment. As automation and machine learning technologies advance, AI is poised to take over repetitive tasks, making certain jobs obsolete, but also creating new opportunities for skilled workers.

In the future, jobs that require creativity, emotional intelligence, and complex problem-solving will be in higher demand. Professions in fields like healthcare, engineering, and tech development are expected to grow. For instance, AI will require human oversight, enhancing roles in AI training, ethics, and cybersecurity. Similarly, industries like autonomous transportation, green energy, and digital marketing will create jobs that didn't exist a few decades ago.

At the same time, routine and manual jobs in manufacturing, retail, and customer service are vulnerable to automation. This shift will likely lead to job displacement for workers in these sectors. However, many experts argue that AI will not result in a net loss of employment but rather a transformation of job functions. To remain relevant, workers will need to adapt by acquiring new skills.

The most critical skills for the future workforce include proficiency in AI, data analysis, programming, and digital literacy. Additionally, human skills such as creativity, emotional intelligence, adaptability, and critical thinking will be indispensable. Lifelong learning and reskilling will become essential to ensure that workers can transition into emerging fields.



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AI IN GAMING

As artificial intelligence (AI) and machine learning (ML) technologies become more integrated into daily life, concerns about data privacy grow. AI systems rely on vast amounts of personal data to function, raising questions about how this information is used, stored, and protected. Striking the right balance between innovation and privacy is essential for ensuring trust in AI.

AI's power lies in its ability to process large datasets and identify patterns, which drives many advancements across industries like healthcare, finance, and e-commerce. However, these systems often require sensitive information, such as health record or financial transactions, which can put individuals' privacy at risk. The challenge is to make sure AI systems are transparent in how they collect and use data while safeguarding personal information.

To address this, several strategies are crucial. First, data anonymization and encryption are essential to protect privacy. Anonymizing data ensures personal identifiers are removed, while encryption safeguards data from unauthorized access. Second, ethical AI frameworks should guide the development of AI, ensuring fairness, transparency, and accountability in decision-making processes. Third, user consent is critical—individuals must be fully informed about data collection practices and have control over their personal information.

Student Article

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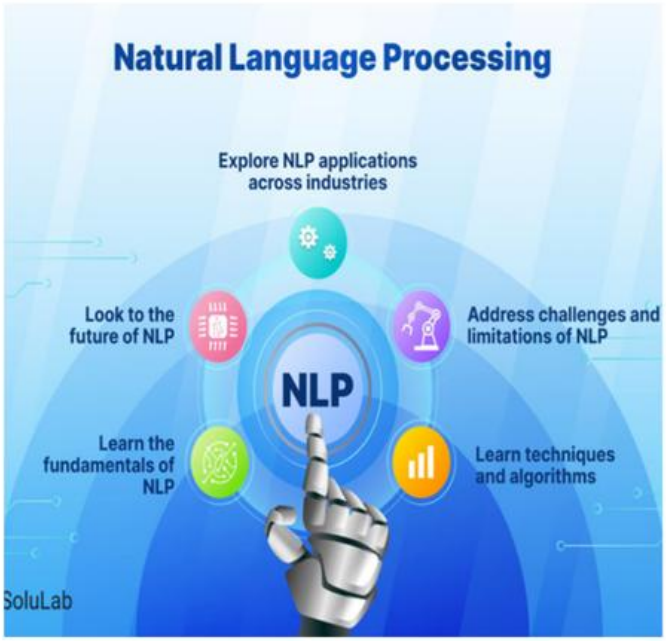
EXPLORING NATURAL LANGUAGE PROCESSING

Natural Language Processing (NLP) is a field of artificial intelligence (AI) that focuses on enabling machines to understand, interpret, and generate human language. It blends computer science, linguistics, and machine learning to process and analyze large amounts of natural language data.

At the core of NLP, computers aim to convert human language into a form that machines can understand. Human language is inherently complex, with its nuances, idioms, slang, and context. NLP tackles this complexity by breaking down text into smaller components, such as words, phrases, and sentences, using various techniques like tokenization and syntactic parsing.



One key component of NLP is semantic analysis, which involves determining the meaning of words and phrases in a given context. This goes beyond just recognizing words and involves understanding how they relate to each other. For example, the word "bank" can refer to a financial institution or the side of a river, depending on the context. Algorithms that handle this ambiguity are crucial to making accurate predictions or responses.

Machine learning plays a pivotal role in NLP, especially deep learning models like transformers, which are used in popular language models like GPT-4. These models are trained on vast amounts of text data, learning patterns, sentence structures, and even cultural nuances. Over time, they become proficient at tasks like machine translation, speech recognition, sentiment analysis, and text summarization.

Another aspect of NLP is text generation and conversational AI, where machines generate responses or dialogue that mimic human conversation. Virtual assistants like Siri or chatbots are powered by NLP algorithms, enabling them to interpret spoken or typed language and respond in a coherent, contextually relevant manner.

In summary, NLP allows AI to bridge the gap between human communication and machine understanding, enabling smarter interactions with technology.

Student Article

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DEEP LEARNING DEMYSTIFIED

Deep learning, a subset of machine learning, is the driving force behind much of the artificial intelligence (AI) innovation we see today. It refers to the use of neural networks with many layers (hence the term "deep") to analyze large amounts of data and make predictions or decisions without human intervention.

At its core, deep learning mimics the structure and function of the human brain, using layers of interconnected nodes called neurons. These networks are designed to learn from data in a way that allows them to make increasingly accurate predictions. As data is fed through the network, each layer identifies patterns and features at various levels of abstraction. For example, in image recognition, early layers might identify edges, while deeper layers could recognize more complex shapes or objects.

One of the reasons deep learning has become so popular is its ability to handle vast amounts of unstructured data, such as images, audio, and text. This has led to breakthroughs in areas like speech recognition, self-driving cars, and even natural language processing (NLP). Deep learning models, particularly convolutional neural networks (CNNs) and recurrent neural networks (RNNs), are crucial in processing this complex data.

Another key factor is the availability of large datasets and powerful computing resources. The rise of cloud computing and specialized hardware like GPUs has accelerated deep learning research, enabling faster training of complex models.

Despite its remarkable capabilities, deep learning still faces challenges, such as the need for large labeled datasets and interpretability of models. However, its potential to revolutionize industries, from healthcare to finance, makes it an exciting frontier in AI innovation. As research continues, the possibilities for deep learning are virtually limitless, reshaping the future of technology.

Student Article

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THE CONVERGENCE OF AI AND ROBOTICS

The intersection of Artificial Intelligence (AI) and robotics is ushering in a new age of technological revolution. As AI algorithms continue to evolve, they equip robots with better decision-making capabilities, autonomy, and flexibility. This convergence is revolutionizing industries, expanding the limits of what machines can do, and redefining how humans engage with technology.

AI is key to making it possible for robots to execute tasks previously deemed to be too complex or risky for a machine. Machine learning and deep learning, which are a subset of AI, enable robots to learn from experience, become accustomed to new environments, and take decisions in real-time based on sensor data. Autonomous robots in warehouses, for instance, are able to drive through changing environments, steer around obstacles, and route-optimize without any human input. In healthcare, AI-powered robotic systems assist in surgeries with precision, reducing human error and improving patient outcomes.

The combination of AI and robotics also has great promise in daily life. Service robots and personal assistants are becoming more intuitive, accepting natural language instructions and interacting with people in more advanced ways. Additionally, robots used in agriculture, construction, and logistics are making processes more efficient and less expensive, as well as helping to solve labor shortages in these industries.

But the convergence of robotics and AI also brings vital ethical and social issues to the fore. As robots become more autonomous, the issue of job displacement, security, and what it means when AI makes key decisions in crucial domains must be tackled. Policymakers and technologists will need to collaborate to make certain that the fruits of these technologies are shared widely and responsibly.

The future of robotics and AI holds a world where machines enhance human abilities, creating a smooth interface between the physical and digital worlds. With continuous innovation, this convergence will keep breaking boundaries of innovation and reshaping the future of work, society, and human-machine interaction.

Student Article

Shyam Ranjan
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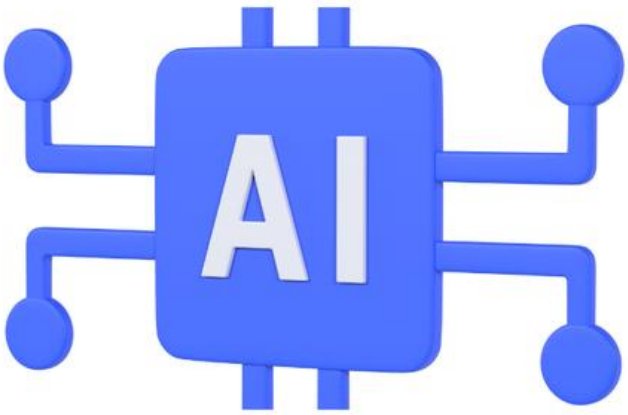
THE ROAD TO ARTIFICIAL GENERAL INTELLIGENCE



The pursuit of Artificial General Intelligence (AGI) — a form of artificial intelligence that can perform any intellectual task that a human being can — has been a long-standing goal in the field of AI research. While impressive advancements have been made in narrow AI, which excels at specific tasks like language translation, image recognition, or playing strategic games like chess, the road to AGI remains complex and uncertain.

At present, AI systems are designed to excel at particular functions within a predefined context, but they lack the flexibility, adaptability, and generalization skills that characterize human intelligence. These AI systems are known as *narrow AI* or *weak AI*, meaning they can handle only specific tasks, such as analyzing large datasets, recognizing patterns, or making predictions based on structured inputs. However, they are unable to apply this knowledge in other contexts. For example, an AI trained to detect diseases from medical images cannot automatically learn how to navigate a self-driving car or compose music without extensive retraining and adjustment. This highlights the gap between narrow AI and the much more sophisticated AGI.

AGI, in contrast, would require a system capable of transferring knowledge and adapting skills across various domains, akin to human cognitive abilities. This includes reasoning, learning from a few examples, understanding emotions, solving novel problems, and making decisions with incomplete information. AGI would not be limited to a set of tasks but would be able to generalize across diverse situations, making decisions and learning without being explicitly programmed for each new challenge.

Despite significant progress in deep learning, neural networks, and natural language processing, the path to AGI is still fraught with challenges. Current AI models, though powerful, are still limited by their reliance on vast amounts of labeled data and are often unable to reason or understand common sense in the way humans do. Additionally, they lack true creativity, emotional intelligence, and social reasoning, which are fundamental aspects of human cognition.

Student Article

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About Our Department

PIET-CSE aims to encourage research and innovation in Computer Science and allied areas. The objective of the B.Tech. program in Computer Science and Engineering (CSE) is to prepare students to undertake careers involving innovation and problem solving using computational techniques and technologies to undertake computational techniques and technologies, or advanced studies for research careers to take up entrepreneurship. In order to give due importance to applied as well as theoretical aspects of computing, the curriculum for the B.Tech. (CSE) program covers most of the foundational aspects of computing sciences and also develops in students the engineering skills for problem solving using computing sciences. Most engineering programs start with general courses in Sciences and then migrate to specialized courses for the disciplines. While these courses are indeed foundational for many engineering disciplines, they can be treated as application domains (as is evidenced from the fact that most sciences and Engineering disciplines heavily use computing now) Hence, the B.Tech. (CSE) program at PIET starts with computing-oriented courses first and allows the possibility of doing science courses later. Besides being better suited for a CSE program, it also enables the possibility of students seeing newer applications and 29 possibilities of using computing in these subjects.

Know our newly joined faculty

Prof (Dr) Suman Mann

Professor,

Department of CSE,

PIET

Dr Rashmi

Assistant Professor,

Department of CSE,

PIET

Mr Vikas Raman

Assistant Professor,

Department of CSE,

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Ms Anjali Garg

Assistant Professor,

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,

Know our newly joined faculty

Ms Geeta Verma

Assistant Professor,

Department of CSE,

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Ms Preeti Nehra

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