



**CHANDIGARH
ENGINEERING COLLEGE
CGC, LANDRAN, MOHALI**
Building Careers. Transforming Lives.

The Communiqué

News Magazine | Volume-28

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An Institution of Excellence

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Vision of the Chandigarh Engineering College- CGC, Landran, Mohali

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

Mission of the Chandigarh Engineering College- CGC, Landran, Mohali

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





Dr. P.N. Hrisheekesha
Campus Director
CGC Landran, Mohali

I am delighted to extend my warmest greetings to all of you and feel proud to witness another compelling phase of our achievements and endeavours. It is with immense pleasure that I address you through the pages of our college magazine.

In the pages of this magazine, you will find a kaleidoscope of events, experiences, and achievements that capture the essence of our college life. From a multitude of academic achievements to a diverse array of cultural celebrations, from notable accomplishments in sports to impactful endeavours in community outreach, each individual's contribution serves as a testament to their exceptional talents and pursuits.

We must continue to foster an environment of inclusivity, respect, and empathy. Let us continue to strive, to create a campus that encourages diversity of thought, where every voice is heard, and every idea is valued. Through collaborative efforts, it is possible to uphold the integrity of our educational institution as a nurturing environment where intellectual growth thrives and empathy reigns.

I extend my heartfelt gratitude to the editorial team and all those who have contributed to the creation of this magazine. Your dedication and hard work have made this publication a reality, and I commend your efforts in preserving the memories of our college for generations to come.

In closing, I extend my best wishes to each and every one of you. May this magazine serve as a source of inspiration and a reminder of the incredible potential that resides within our college community. Let us always move forward with purpose, compassion, and a commitment to excellence.



(Prof.)Dr. Rajdeep Singh
Director Principal
Chandigarh Engineering College-CGC, Landran, Mohali

Dear Students, Faculty, and Staff

It gives me great pleasure to address you all through the pages of our college's quarterly magazine. As we come together to commemorate the achievements and progress of the past few months, I am filled with immense pride and gratitude for the remarkable contributions made by each member of our college community.

Our college is not merely a place of learning but a canvas on which dreams are nurtured, talents are honed, and futures are shaped. Through these pages, we celebrate the spirit of inquiry, creativity, and dedication that has come to define our institution.

I must commend our exceptional faculty members for their tireless efforts in imparting knowledge and wisdom. Their commitment to academic excellence and passion for teaching has been instrumental in shaping the minds of our students. To our students, I extend my admiration for your thirst for knowledge and the relentless pursuit of your aspirations. Your achievements in academics, arts, sports, and various other fields are a testament to your hard work and determination. Lastly, I would like to express my gratitude to the editorial team and all individuals involved in the creation of this magazine for their diligent efforts and unwavering commitment. This magazine serves as evidence of our ingenuity, foresight, and dedication to achieving high standards.

My good wishes to all. Have a happy reading!



From the Editor's Desk....

Dear Readers,

As the world continues to evolve, so does the spirit of our college community. It is with immense pleasure and pride that I present to you the 28th edition of our quarterly college magazine. Within these pages, the editorial team strives to capture the essence of our vibrant campus life and the intellectual brilliance that thrives within its walls. Creativity is the lifeblood that flows through our college's veins. As the editor of this magazine, I am delighted to present a diverse range of activities and achievements that reflect the vibrancy and richness of our college community.

Every successive edition of our college magazine reflects a significant achievement in our growth, granting unrestricted expression to our boldest creative instincts, and materializing our most ambitious goals. The Communiqué platform embodies a seamless integration of expert analysis, creative expression, technical proficiency, and critical thinking.

Once again, through this magazine I would like to convey my thanks to all for their cooperation. Wishing you all a Happy Reading!

Inderjot Kaur
Editor

RANKING & AWARDS 2023

1 CSR-CHRDC Ranking 2023

- 12th Position in Top Emerging Colleges of Super Excellence
- 4th Position in Top Engineering Colleges in State of Punjab

2 Outlook I-Care Rankings 2023-India's Best Colleges

- 59th among top 100 private institutes in India
- 4th private institute among Punjab including (University's Institutes)
- 1st private college in Punjab (excluding university's Institutes)

3 NIRF Innovation 2023

- CEC Positioned in the band of 51-100 in the Innovation Category

4 Times of India Engineering Survey 2023

- 3rd in Research Capabilities
- 91st in Top 170 Private Institutes
- 88th in Top 125 private Engineering Institutes

5 THE WEEK-Hansa Research Survey 2023

- 8th in private colleges North Zone
- 39th Rank in private Engineering colleges across the country
- 65th Rank in Engineering Colleges all over India

6 NIRF Ranking 2023

- CEC-CGC landran has been ranked in 100-150 Band in Engineering Category

7 India Today Ranking 2023

- 2nd Rank in Private Colleges in Punjab
- 4th Rank in Private Colleges and Universities in Punjab
- 61th Rank across country among Private Colleges
- 1st in Top Five Gainers among First 100 (Govt+Private)

8 Dataquest Tech School survey, 2023

- 1st in Punjab in Top 100 T-Schools (Overall) – Government and Private
- 1st in Punjab in Top T-Schools (Private)
- 15th rank in Top T-Schools (Private)
- 5th rank in North India (Zone Wise)
- 22nd rank in Top 100 T-Schools (Overall) – Government and Private

9 Patent Filing Rank

CGC Landran bestowed with 4th position Pan India among the Top 10 Patent filing Institutes and 3rd among the Top 5 in the field of Information Technology along with the IITs, other premium Institutions and IT Corporates in the country.

10 MoE-AICTE

CEC-CGC, Landran, Mohali has received the highest 3.5-star rating by Institution Innovation Council of the Ministry of Education (MoE) and All India Council of Technical Education (AICTE) for demonstrating excellence in activities related to Innovations, Entrepreneurship, Startups, and Research & Development.

CEC-CGC, Landran, Mohali jumped to an enviable position in NIRF

Innovation Ranking-2023 (ARIIA)



Chandigarh Engineering College-CGC, Landran, Mohali takes glory in securing respectable position in the ranking by National Institutional Ranking Framework (NIRF)-2023 (ARIIA), Ministry of Education, Government of India. The prestigious annual NIRF innovation Ranking includes the Private/Self-Financed institutes/colleges/Universities, IITs, NITs, and other government institutes/Universities across the country. The NIRF-Innovation Ranking Framework captures data by using 22 Key Performance Indicators under seven broad parameters with weightage to Teaching Learning & Innovation, Research and Professional Practice, Graduation Outcome, Policy, and Institutionalization of I&E Activities etc. in higher education institutes. The institute is proud to be ranked in the band 51-100.

CEC-CGC, Landran, Mohali saw an astounding rise Pan India in overall

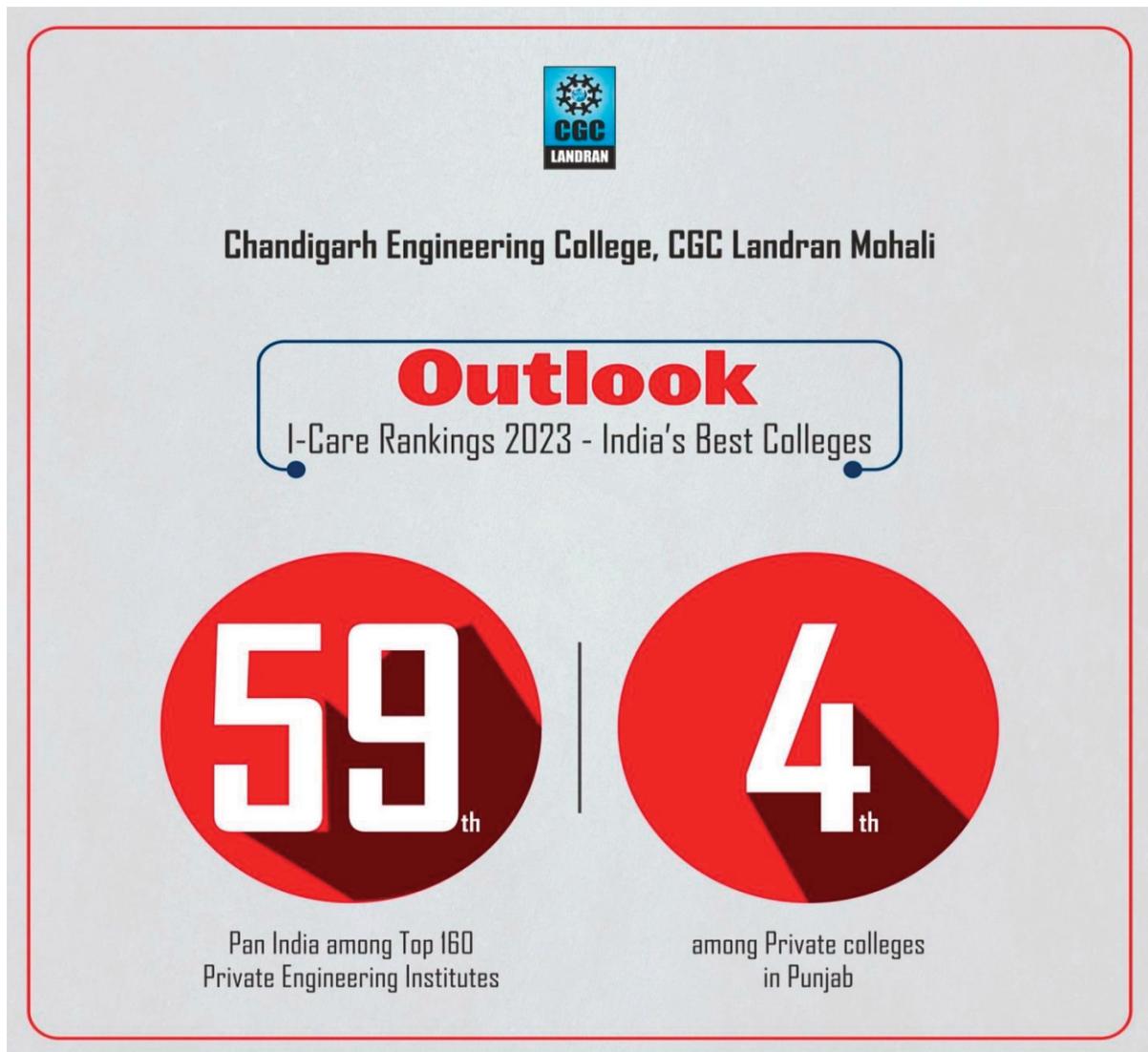
NIRF Rankings 2023



Chandigarh Engineering College-CGC, Landran, Mohali takes pride in being ranked in the National Institutional Ranking Framework (NIRF)-2023, Ministry of Education, Government of India. The annual NIRF Ranking is a highly regarded ranking that encompasses the IITs, NITs, and other esteemed institutes and universities throughout the country. CEC-CGC, Landran, Mohali boasts for ascending and making a place in the ranking band 101-150 Pan India.

CEC-CGC, Landran, Mohali attained significant position in Outlook I-Care Rankings 2023

To aspire for heights of success and be able to sustain it requires utmost dedication and hard work and once this commitment gets acknowledged, there is an immense sense of accomplishment. Chandigarh Engineering College-CGC, Landran, Mohali has once again attained significant position (Except Universities) in Outlook I-Care Rankings 2023. This ranking was based on various parameters including Academic & Research Excellence, Industry Interface and Placements, Infrastructure & Facilities, Faculty Quality, Inclusiveness, Diversity & Outreach.



The graphic features the CGC Landran logo at the top center, which consists of a blue square with a gear icon and the text 'CGC LANDRAN'. Below the logo, the college name 'Chandigarh Engineering College, CGC Landran Mohali' is written in a bold, black font. The central focus is a red-bordered box containing the word 'Outlook' in large, bold, red letters, with 'I-Care Rankings 2023 - India's Best Colleges' in a smaller, black font below it. At the bottom, two large red circles with white numbers and 'th' superscripts are displayed. The first circle shows '59' and is labeled 'Pan India among Top 160 Private Engineering Institutes'. The second circle shows '4' and is labeled 'among Private colleges in Punjab'. A vertical line separates the two circles.

CGC
LANDRAN

Chandigarh Engineering College, CGC Landran Mohali

Outlook
I-Care Rankings 2023 - India's Best Colleges

59th
Pan India among Top 160
Private Engineering Institutes

4th
among Private colleges
in Punjab

Another feather in CEC-CGC's Cap in India Today Rankings 2023

Chandigarh Engineering College- CGC, Landran, Mohali has made it to the top spot among the Top 5 Gainers in the first 100 including both government and private institutions. The institute has grabbed 92nd rank among top 5 Gainers. This ranking was released by India Today under the category MDRA best colleges ranking 2023. In addition to this, CEC-CGC, Landran, Mohali has been bestowed 2nd rank in the Best Private Colleges of Punjab and 4th rank in Private Colleges and Universities of Punjab. It has also earned the 61th rank across country private colleges.

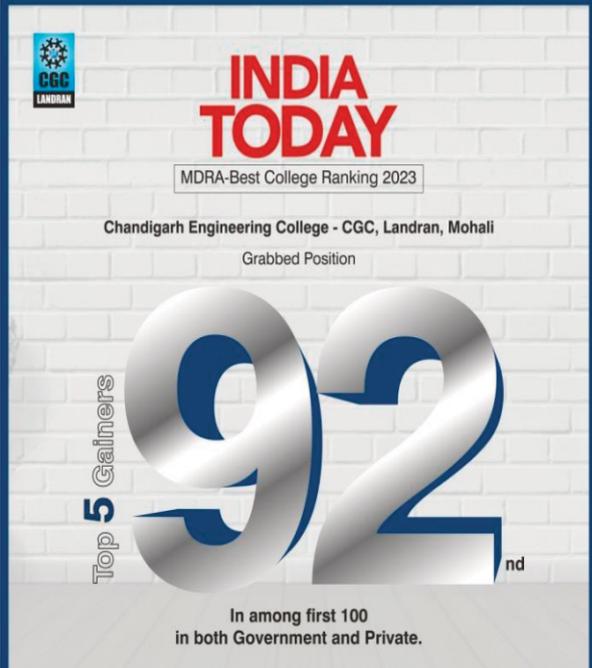
The banner features the CGC Landran logo on the left. The central text reads 'INDIA TODAY MDRA Best Colleges Ranking 2023'. Below this, it says 'BREAKING All Records' and 'CEC-CGC, Landran, Mohali claims the 1st Spot among the TOP 5 GAINERS Pan India'. A silver medal icon with '1st Spot' is also present.

TOP 5 GAINERS AMONG FIRST 100 (OVERALL)

Colleges that have made the biggest leap since last year

COLLEGE	CITY	RANK IN 2023	RANK IN 2022
CHANDIGARH ENGINEERING COLLEGE	Mohali	92	100
MKSS'S CUMMINS COLLEGE OF ENGINEERING FOR WOMEN	Pune	69	76
AJAY KUMAR GARG ENGINEERING COLLEGE	Ghaziabad	81	87
INSTITUTE OF ENGINEERING & MANAGEMENT	Kolkata	83	89
AMITY SCHOOL OF ENGINEERING & TECHNOLOGY	Gurugram	95	101

CEC-CGC's India Today Rankings 2023

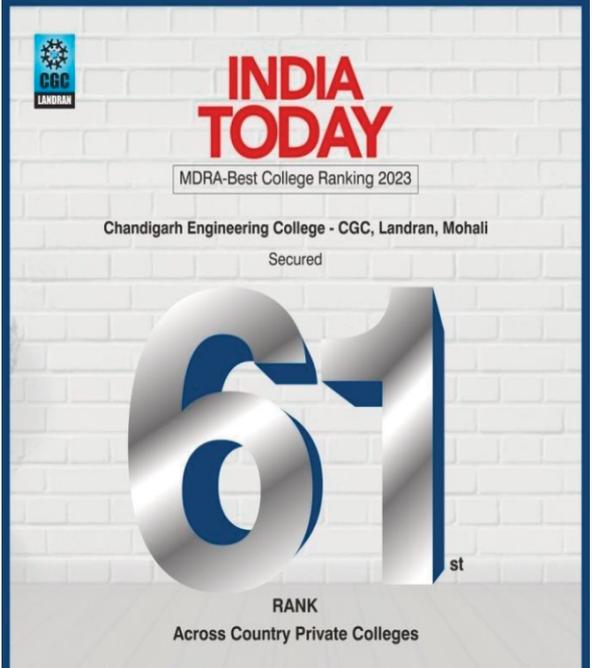


INDIA TODAY
MDRA-Best College Ranking 2023
Chandigarh Engineering College - CGC, Landran, Mohali
Grabbed Position

Top 5 Gainers
92nd

In among first 100
in both Government and Private.

The image shows a ranking card for Chandigarh Engineering College - CGC, Landran, Mohali. It features the 'INDIA TODAY' logo and 'MDRA-Best College Ranking 2023'. The college is listed as having 'Grabbed Position'. The ranking is '92nd', with 'Top 5 Gainers' written vertically on the left. A note at the bottom states 'In among first 100 in both Government and Private.'



INDIA TODAY
MDRA-Best College Ranking 2023
Chandigarh Engineering College - CGC, Landran, Mohali
Secured

61st

RANK
Across Country Private Colleges

The image shows a ranking card for Chandigarh Engineering College - CGC, Landran, Mohali. It features the 'INDIA TODAY' logo and 'MDRA-Best College Ranking 2023'. The college is listed as having 'Secured' its position. The ranking is '61st'. Below the ranking, it says 'RANK Across Country Private Colleges'.



INDIA TODAY
MDRA-Best College Ranking 2023
Chandigarh Engineering College - CGC, Landran, Mohali
Secured

4th

RANK
In Private Colleges and Universities of Punjab

The image shows a ranking card for Chandigarh Engineering College - CGC, Landran, Mohali. It features the 'INDIA TODAY' logo and 'MDRA-Best College Ranking 2023'. The college is listed as having 'Secured' its position. The ranking is '4th'. Below the ranking, it says 'RANK In Private Colleges and Universities of Punjab'.



INDIA TODAY
MDRA-Best College Ranking 2023
Chandigarh Engineering College - CGC, Landran, Mohali
Secured

2nd

RANK
In the Best Private Colleges of Punjab

The image shows a ranking card for Chandigarh Engineering College - CGC, Landran, Mohali. It features the 'INDIA TODAY' logo and 'MDRA-Best College Ranking 2023'. The college is listed as having 'Secured' its position. The ranking is '2nd'. Below the ranking, it says 'RANK In the Best Private Colleges of Punjab'.

CEC-CGC, Landran outshines in CSR-GHRDC Rankings 2023

Chandigarh Engineering College-CGC, Landran, Mohali has also made its remarkable place in CSR-GHRDC Engineering College Survey 2023. Chandigarh Engineering College-CGC, Landran, Mohali has been bestowed with 12th position among top emerging engineering colleges of excellence and bestowed with 4th position among the Best Engineering Colleges of Punjab.



CSR-GHRDC Rankings

INDIA'S TOP ENGINEERING COLLEGES 2023

Chandigarh Engineering College-CGC,
Landran, Mohali

Ranks at the

12th

Slot in

Top Emerging Engineering Colleges
of Super Excellence



Rank

4th

in

Top Engineering Colleges
in State of Punjab

CEC-CGC stands tall in Times of India Engineering Survey 2023

Chandigarh Engineering College-CGC Landran, Mohali is gratified for its achievement in research and placement. In Times of India Engineering Survey 2023, CEC-CGC, Landran, Mohali has secured 3rd rank in Research Capability category and 37th rank in Placement category. The institute offers an exceptional platform to students for showcasing their research, knowledge and skills. CEC-CGC is committed to provide students with the best of placement opportunities and academic excellence in their respective fields which has truly paid off.



CEC-CGC captured prestigious ranks in THE WEEK Hansa Survey 2023

In THE WEEK Hansa Survey 2023, CEC-CGC, Landran, Mohali has secured the prestigious ranking, solidifying its position as a leading institution in the region. This remarkable achievement is a testament to the institute's unwavering commitment. This survey takes into account various parameters including Research, Faculty, Course Curriculum, Industry interaction, Placements, and so on.



CEC-CGC IT student interacts with PM Narendra Modi

It is a matter of immense pride for all of us at CEC-CGC as our student Ravinder Bishnoi pursuing IT engineering, 3rd year, got an opportunity to interact with Prime Minister Shri Narendra Modi. He showcased his patented inventions as well as the startup cofounded by him during the National Technology Week-2023 at New Delhi. He also exhibited his startup and inventions at the Atal Innovation Mission's pavilion on the theme 'From school to startup: Igniting young minds to innovate'. His startup provides solutions for the automobile sector and users.



Expert Talk on Research Oriented Numerical Solutions of Ordinary Differential Equation

Department of Applied Sciences (CEC-CGC, Landran, Mohali) organized an expert talk on the topic “Research oriented Numerical Solutions of Ordinary Differential Equation on 4th May, 2023. The expert was Dr. Vinay Kanwar, from University Institute of Engineering and Technology, Chandigarh. A total of 128 students attended the expert talk. Dr. Vinay Kanwar wisely enlightened our students about practical applications/ real applications of Numerical Analysis.



ECE Department organized seminar on “Work based learning”

Electronics and Communication Engineering department organized an awareness seminar for the students on the topic “Work based learning” in association with CDAC Mohali, MeitY, Govt. of India on 2nd May 2023. Mr Gaganpreet Singh, Project Officer, CDAC Mohali, counseled the students about the program. Work based learning program gives students an opportunity to do their internship on the ongoing projects of CDAC where eligible students are paid stipend during their internship period. The program focuses on providing opportunity to enhance professional skills by acquiring hands on practical experience, technical knowledge, analytical thinking, real time working, problem solving, reasoning, ideation skills, etc. by working on real world cutting edge national projects centered around niche technologies in premier organizations of MeitY, Government of India.



Hands-on Workshop on “Machine Learning with Python”

Techcomm Professional Society of ECE Department and III Cell organized Hands-on Workshop on “Machine Learning with Python” in association with Solitaire Infosys, Mohali on 2nd May 2023. Mr. Praduman Kumar, Software Developer, Solitaire Infosys, interacted with students on Basics of Python, GUI Programming, Backend execution, Web designing and Real time applications. Students gained hands-on practical knowledge on python and its implementation.



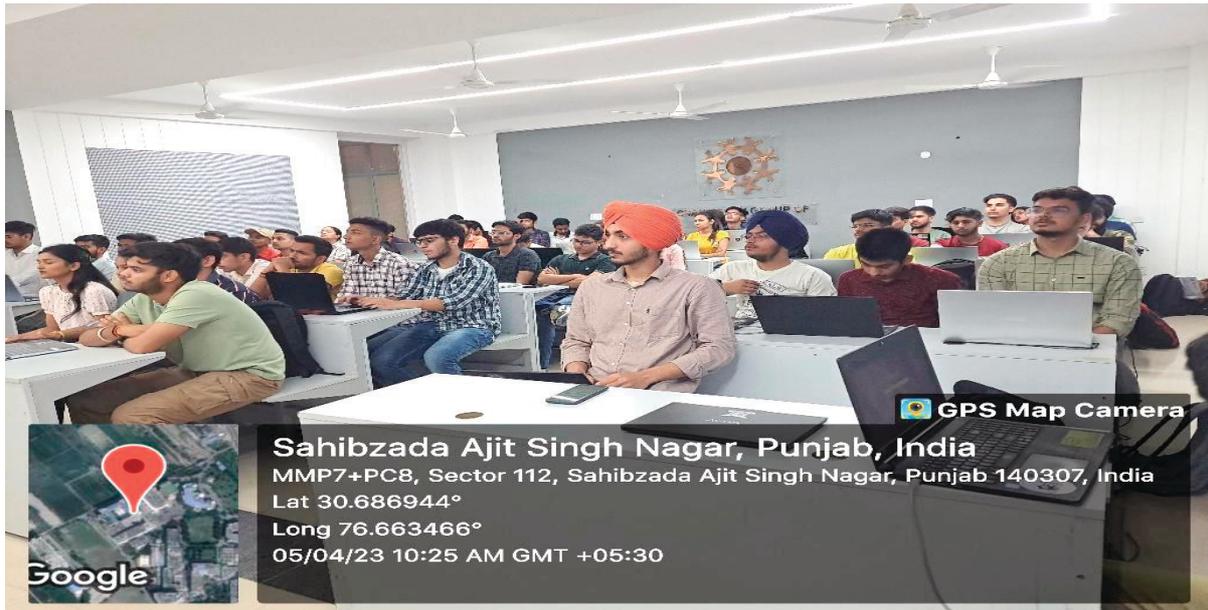
Industrial Visit at Virtual Soft Pvt. Ltd.

IT department organized an Industrial Visit to Virtual Soft Pvt. Ltd. on 7th April 2023. The visit was planned to educate the students about working on the UI/UX approach in development. A detailed explanation of UI/UX, mobile gaming, and animation was given to the students by the experts.



Workshop on “ML Study Jams with Tensor Flow”

CSE Department of CEC-CGC, Landran, Mohali organized two-days workshop on “ML Study Jams with Tensor Flow” on April 5th and 6th, 2023 to educate and to provide hands-on experience or training to attendees. The workshop increased knowledge and skills of the participants in the field of machine learning and Tensor Flow.



Expert lecture on “Overseas Education”

The CSE Department organized an expert lecture on “Overseas Education” for third-year students on 17th April, 2023. It was a two-hour interactive session delivered by Mr. Rajiv Tandon. Mr. Rajiv Tandon is an admissions service provider at RTC Knowledge Services Private Limited. RTC has built a strong admissions services team in the past 4 years to provide assistance to foreign universities by processing applications of students from south-east countries. Mr. Rajiv Tandon provides knowledge about availing scholarship in the foreign universities and analyzes the profile of students before sending it to the universities.



Expert Lecture on Cyber Security

The Department of Electronics and Communication Engineering and III Cell organized expert lecture on “Cyber Security” on 03rd May 2023. The speaker was Mr. Abhishek Thakur and Mr. Shivam Chaturvedi, CEO & Co-Founder of Ascella Infosec Opc. Pvt. Ltd., Mohali. They both interacted with students and discussed about various cyber security protocols, issues and optimum security.



CSE Department organized “Alumni Talk”

The CSE department of CEC-CGC, Landran, Mohali organized an “Alumni Talk” on April 12, 2023, for B.Tech 3rd Year students to enlighten them about cracking a job interview as well as to inform them about the challenges one can face while joining MNCs. The alumni talk was delivered by our alumni Karan Syal of 2012–2016 batch. He is currently working in Deloitte India Touche Tohmatsu LLP. The session proved to be very beneficial for the students as he shared his personal experiences.



Phoenix Club organized technical event “Hacker’s Arena”

The Phoenix club of CSE department organized a technical event "Hacker’s Arena” on April 17, 2023. This technical event was organized on well-known platforms “Unstop by Dare 2 Complete” and “Hacker Rank”. The event was a great success with the participation of around 100 students. There were three technical events in this event including: Hackathon, Quiz Competition and Coding Competition. Winners were given cash prizes for all the three mentioned categories.



Centre of Excellence- Virtual Instrumentation organized FDP on “Hands-On Practices on LabVIEW”

The ECE Department of CEC-CGC, Landran, Mohali is equipped with Center of Excellence (CoE)- Virtual Instrumentation. The CoE is equipped with various National Instruments (NI) Hardware and LabVIEW (Laboratory Virtual Instruments Engineering Workbench) software that provides the platform for training, interdisciplinary research, projects and industrial solutions. One of the events that were conducted through Centre of Excellence was 5-days Faculty Development Program in collaboration with NITTTR, Chandigarh and VVDN Technologies, Gurugram from 1st May to 5th May 2023. Dr. Lini Mathew from NITTTR Chandigarh and Er. Nitesh Pradhan from VVDN Technologies focused on the Introduction of LabVIEW Software and its applications in various fields of Electronics and Communication Engineering. The FDP marked its beginning with the inauguration on 1st May followed by sessions on LabVIEW Programming– Editing, Debugging, Charts and Graphs, Use of strings and File I/Os and introduction to Real Time Data Acquisition. The participants also enhanced their knowledge on use of NImyDAQ and NImyRIO, Hands on Circuit Design and Implementation using NImyDAQ and Hands on Application Development using NImyDAQ and NImyRIO. The FDP was attended by faculty members from CEC-CGC Landran, CGC Jhanjeri, Amity University and Chitkara University. The FDP was concluded on 5th May, 2023 with the vote of thanks and felicitation of experts by Dr. Vinay Bhatia, Professor & Head, ECE Department. The participants also shared their valuable feedback regarding FDP and learnt the applications of LabVIEW in key areas of Electronics and Communication Engineering such as Signal and System, Image Processing, Digital Signal Processing, Control System and Instrumentation.



Industrial Visit to Virtual Soft

The Department of Computer Science and Engineering, Chandigarh Engineering College- CGC, Landran, Mohali, organized an industrial visit to Virtual Soft, Chandigarh for B.Tech 2nd year students. During the visit the company's personnel briefed about the company to the students and informed them about upcoming trends in IT like UX design, 3D Animation, 3D game Art, Motion Graphics, Film making, Graphics Design, etc. along with the various IT projects they are currently dealing with.



Industrial Visit to Solitaire Infosys

IT department organized an Industrial Visit to Solitaire Infosys on 7th April 2023. This visit was organized to give knowledge to students about Company ethics, programming languages, and projects. In this visit, students learned about technologies that will be in high demand in the coming times in the IT industry. Detailed information about projects and programming languages was also given.



Industrial Visit to Kaizen Systems

IT department organized an Industrial Visit to Kaizen Systems on 6th April, 2023. This visit was planned to educate students about the working culture of a start-up company in Digital Marketing. A detailed explanation of sending bulk messages and bidding according to the most recent TRAI regulations was also imparted.



Industrial Visit to Infosys Systems

The Department of IT & CSE jointly organized an Industrial Visit to Infosys DC Chandigarh for the students of 4th semester on 2nd May, 2023. During the visit Mrs. Dimple Bhasin, Senior Analyst at Infosys delivered an introductory session. She explained about the Infosys working culture. She laid emphasis on three basic things i.e. PTC (Percentage, Technical skills, and Communication skills). She also informed about their online training platform Infosys Springboard and addressed its importance and its working procedures. Furthermore, she also told students about the free online courses with certification and about online internship opportunities.



Exploring Threads Meta's First Impressions and the Plagiarism Debate

By: Dr. Arvinder Kaur & Ms. Anupam Bonkra

Since Meta's unveiling of their Threads feature, social media enthusiasts and critics alike have been debating its similarities to existing platforms. Some have questioned whether Threads is a groundbreaking innovation or an act of plagiarism. This article delves into the initial impressions of Threads, assesses its similarities to other platforms, and examines the plagiarism debate surrounding Meta's latest offering.



Understanding Threads: Meta's Vision for Social Interaction: This section provides an overview of Threads, Meta's new feature aimed at enhancing social interactions on their platform. It explains the core functionalities and unique aspects of Threads, highlighting Meta's vision of fostering meaningful conversations and connections among users.

Examining Threads' Similarities to Existing Platforms: Here, the article analyzes Threads' similarities to other social media platforms, particularly focusing on features that bear resemblance to those found in rival platforms such as Twitter, Facebook, and Instagram. It discusses the implications of these similarities and the potential impact on user experience and engagement.

The Plagiarism Debate: Legitimate Innovation or Copycat Strategy?: This section delves into the plagiarism debate surrounding Threads and Meta's approach to innovation. It presents arguments from both sides of the discussion, including supporters who view Threads as a natural evolution of social media and critics who believe Meta has crossed the line into plagiarism. The article explores the legal and ethical aspects of plagiarism in the context of technological innovation.

Intellectual Property and Fair Competition: Examining the legal framework, this section explores the boundaries of intellectual property and fair competition in the tech industry. It discusses the challenges of defining originality and novelty in an ever-evolving digital landscape and the role of intellectual property rights in protecting innovation.

Meta's Response and Industry Perspectives: The article highlights Meta's response to the plagiarism allegations and their stance on innovation. It also includes insights from industry experts and commentators who provide diverse perspectives on the issue. These viewpoints offer a deeper understanding of the ethical implications and the potential impact on the future of social media.

Balancing Innovation and Ethical Boundaries: This section explores the importance of striking a balance between innovation and ethical boundaries in the tech industry. It discusses the need for clear guidelines and industry standards to prevent potential plagiarism and foster healthy competition. The article also emphasizes the significance of user feedback and input in shaping the direction of social media platforms.

Conclusion: The debate surrounding Threads and Meta's alleged plagiarism raises important questions about the nature of innovation in the digital age. While some argue that Threads is a legitimate evolution of social media, others believe it crosses ethical boundaries. Ultimately, it is crucial for Meta and other tech companies to tread carefully, ensuring they maintain a delicate balance between innovation, fair competition, and respect for intellectual property rights.

Revolutionizing Recycling-The AI Trained to Recognize Waste for Efficient Recycling

By: Dr. Shanky Goyal & Dr. Sushil Kamboj

In the age of sustainability, recycling plays a pivotal role in mitigating environmental impact. However, the recycling process often faces significant challenges, particularly in the sorting and classification of different types of waste. To address this issue, researchers have developed an innovative solution: an Artificial Intelligence (AI) system trained to recognize waste for recycling. This groundbreaking technology holds the potential to revolutionize recycling processes, enhancing efficiency and promoting a circular economy.



The Need for Advanced Waste Sorting Techniques: This section explores the current challenges in waste sorting and the limitations of traditional methods. It highlights the rising demand for advanced technologies that can accurately identify and categorize various waste materials. Additionally, it emphasizes the importance of efficient waste sorting for maximizing recycling rates and reducing contamination.

The Role of Artificial Intelligence in Waste Recognition: Here, the focus shifts to the application of AI in waste recognition. The article delves into the underlying principles of machine learning and computer vision algorithms used to train AI models. It explains how these models are trained

on vast datasets of waste images, enabling them to recognize and classify different materials with high accuracy.

Developing an AI Waste Recognition System: This section explores the process of developing an AI waste recognition system, covering the steps involved in data collection, image annotation, and model training. It highlights the significance of diverse and representative datasets for training robust AI models capable of handling real-world scenarios.

Advantages and Benefits of AI-Powered Waste Recognition: The article highlights the numerous advantages and benefits of implementing AI-powered waste recognition systems in recycling facilities. It discusses the potential for increased recycling rates, reduced contamination, improved resource efficiency, and cost savings. It also emphasizes the positive environmental impact of streamlining waste sorting processes.

Overcoming Challenges and Ensuring Ethical Implementation: Addressing concerns related to privacy, data security, and bias is crucial when deploying AI systems in waste recognition. This section discusses the importance of developing transparent and accountable AI solutions while adhering to ethical guidelines. It explores strategies for mitigating bias and ensuring fair and unbiased waste classification.

Real-World Applications and Future Potential: The article concludes by showcasing real-world applications of AI waste recognition systems and their impact on recycling operations. It highlights success stories and ongoing projects in various industries and discusses the future potential of this technology. The article also explores the possibilities of integrating AI waste recognition with other emerging technologies such as robotics and automation.

Conclusion: The AI-trained waste recognition technology offers a promising solution to the challenges faced by recycling facilities. By leveraging the power of AI, the recycling industry can improve waste sorting efficiency, enhance recycling rates, and promote sustainable practices. However, it is essential to address ethical considerations and ensure responsible implementation for maximizing the benefits of this innovative technology.

Electronics and Semiconductor Manufacturing Industry In India

The Indian electronics industry saw growth in the early years of the 21st century, encouraged both by government policies, incentives and by international investment. It's key and most resource-intensive segment, the semiconductor industry, was benefitted from domestic demand growing briskly. Semiconductors were required by a large number of industries, including telecommunications, information technology, industrial machinery and automation, medical electronics, automobile, engineering, power and solar photovoltaic, defense and aerospace, consumer electronics, and appliances.

India is a net importer of electronics goods, with the majority of India's imported electronics coming from China. In 2015, electronics overtook gold and is placed immediately after crude oil as the second most valued category of imports to the country. In 2019, Prof Vikram Kumar, Emeritus Professor in physics at IIT Delhi revealed that India is spending more money on the import of semiconductors than on oil.

The government has fostered an environment conducive to foreign direct investment (FDI) inflow in following ways, as outlined in the National Electronics Policy and the National Telecom Policy.

- Increased liberalization of Foreign Direct Investment (FDI): 100% FDI through an automatic route.
- Relaxation of tariffs.
- Establishment of Electronic Hardware Technology Parks (EHTPs) and Special Economic Zones (SEZs).
- Implementation of Preferential Market Access (PMA).
- Imposing basic customs duties on certain items falling outside the framework of the IT free trade agreement.
- Exempting import-dependent inputs/components for PC manufacturing from a Special Additional Duty (SAD).
- Funding 3000 PhD students in electronics and IT across the Indian universities.
- Imposing an education cess on imported electronic products for parity.

As of June 2023, Indian US Semiconductor Deals generate 80,000 new jobs in India. By December 2024, the first Made in India semiconductor chips are expected to be rolled out.

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Electronic waste in India

Electronic waste is emerging as a serious public health and environmental issue in India. India is the Third largest electronic waste producer in the world. Approximately 2 million tons of e-waste is generated annually and an undisclosed amount of e-waste is imported from other countries around the world. Computer devices account for nearly 70% of e-waste, 12% comes from the telecom sector, 8% from medical equipment and 7% from electric equipment. The government, public sector companies, and private sector companies generate nearly 75% of electronic waste, with the contribution of individual household being only 16%.

Computers, televisions, VCRs, stereos, copiers, and fax machines are common electronic products. Many of these products can be reused, refurbished, or recycled. There has been an upgrade to this E-waste garbage list to include gadgets like smart phones, tablets, laptops, video game consoles, cameras and many more. The number of mobile devices is expected to reach 18.22 billion by 2025. Every year, this number is growing exponentially.

According to ASSOCHAM, an industrial body in India, the Compound Annual Growth Rate of electronic waste is 30%. With changing consumer behavior and rapid economic growth, ASSOCHAM estimates that India will generate 7.8 million tonnes of e-waste by 2024. The three states that produce the most e-waste are as follows: Maharashtra, Tamil Nadu and Andhra Pradesh. Other states that produce significant e-waste are Uttar Pradesh, West Bengal, Delhi, Karnataka, Gujarat, Madhya Pradesh and Punjab.

The Ministry of Environment, Forests, and Climate Change (MoEFCC) is primarily responsible for regulations regarding electronic waste. Additionally, the Central Pollution Control Board (CPCB) and State Pollution Control Board (SPCB) produce implementation procedures to ensure proper management of rules set forth by the MoEFCC.

Well planned e-waste rules need to be followed to limit the use of Electronic devices. The Ministry of Environment, Forest and Climate Change (MoEFCC), has issued the E-Waste Amendment Rules issued on 30th January, 2023. For now the new rules aim to reduce the use of hazardous substances such as lead, mercury and cadmium in the manufacturing of electrical equipment and set specific targets for the collection and disposal of e-waste.

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Faculty Achievements

- Dr. Tarun Singhal, Dr. Ankur Singhal and Dr. Vinay Bhatia, published research paper on “Si dot Single Electron Transistor for Internet of Nano Things” in Elsevier-Materials Today: Proceedings, May 2023.
- Ms. Nidhi Chahal, Dr. Pooja and Dr. Sukhdeep were awarded for their contribution in Patent filing and granting on World IPR Day 2023 celebrated at CGC Landran, Mohali.

Students Achievements

- Sidhi Sinha of ECE department got 2nd position in Campus Ambassador internship during ZEITGEIST 23 held at IIT Ropar.
- Balram Kumar of ECE department participated in Poster presentation on EE-RSF Research Day held at IIT Ropar in April 2023.
- Mohd Usama of CSE Department achieved 1st position in HTML event held on 3rd May, 2023.
- Anshu Kumar of CSE Department achieved 2nd position in AI games held on 7th April, 2023.
- Gautam Kumar of CSE Department achieved 9th position in Hacker’s Arena held on 17th April, 2023.
- Anish Dhatwalia of CSE Department achieved 3rd position in Code Frenzy held on 18th April, 2023.

Patents Filed

- Patent filed on “Food wastage monitoring and management device for hostels” by Dr. Abhishek Sharma with CBR no. 25527.
- Patent filed on “Automated Sapling Plantation Device” by Dr. Abhishek Sharma with CBR no. 25526.
- Patent filed on “Feeding assistive device for Toddlers” by Dr. Ramanpreet Kaur with CBR no. 25527.
- Patent filed on “Sleep paralysis detection and prevention system” by Dr. Ramanpreet Kaur , Dr. Simarpreet, Ms. Preeti, Dr. Pooja with CBR no. 25525.

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