



# TULA'S DEHRADUN INSTITUTE

Department of computer science and  
engineering

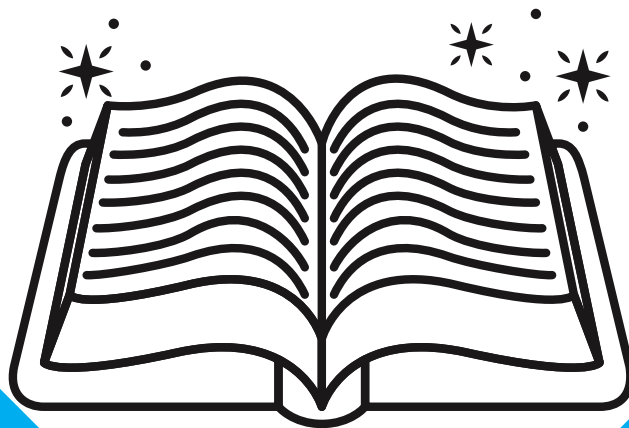
## डिजिटल Drishti



July-Mar

# **OUTLINE**

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## ABOUT THE DEPARTMENT

The Computer Science and Engineering Department of Tula's Institute is leading initiatives to increase the quality of education and professionalism in the field of computer science and information technology. The Department of Computer Science and Engineering is the nerve center of the institution. The department believes that education is the cornerstone of overall development and that it alone can assist in building India into a developed nation. The department emerged as a powerhouse of innovation and progress within the dynamic landscape of technological evolution, with more than 500 latest-configuration computers with high-speed data processing and networking. The beat of research innovation remains strong in our department, and this edition turns the spotlight on the exceptional achievements of our esteemed faculty. Notably, we showcase **Dr. Sunil Semwal, Mrs. Suchi Johri**, whose recent triumphs include research papers. Our commitment to knowledge exchange and collaboration was evident in the success of the Guest Lecture on Soft Skills training & Skills Set for Placements, Add-On Certification on JAVA Training, Webinar on Green Computing & IOT which facilitated valuable insights and fostering connections within our community. We take pride in celebrating the accomplishments of our distinguished students for being placed. Looking forward, an exciting array of events awaits, including a workshop on Power Seminar on Development of Sustainable Start-up, and many more. The department includes various teaching aids like a smart classroom, a department library, and an internet facility. The various programs offered by the Department of Computer Science and Engineering include B.Tech, MCA, and M.Tech. The students are exposed to core courses on computer algorithms, computer systems, artificial intelligence, etc. The department also focuses on the industry-academia relationship, and for this, the department arranges various workshops, industrial visits, and guest lectures.



COMPUTER SCIENCE AND  
ENGINEERING



## FROM THE FACULTY'S DESK



**Mr.Sanjay Tyagi**

I congratulate and convey my best wishes to the Department of Computer Science and Engineering and the entire editorial team on the launch of the current edition of newsletter " डिजिटल-Drishhti". As we stand on the threshold of a new academic year, it is with great enthusiasm that I share some creative thoughts and aspirations for our esteemed department. In the dynamic landscape of technology and academia, our CSE department has consistently strived for excellence, nurturing the brightest minds and pushing the boundaries of innovation. It has been only possible due to the sincere efforts of the energetic and hardworking team. I am confident this newsletter will provide a great platform for the interchange and collaboration of ideas to build a digitalized India. Happy Reading!



**Mrs.Suchi Johri**

I Welcome and greetings to the freshest issue of the CSE's newsletter ' डिजिटल Drishhti'. In the ever-evolving landscape of Computer Science, our journey is marked by innovation, resilience, and a commitment to excellence. As we traverse the corridors of knowledge in our Engineering College, the Department of Computer Science continues to stand at the forefront of transformative education and ground-breaking research. Our commitment to academic excellence remains unwavering. With dedicated faculty and curious minds, we've witnessed commendable achievements in research, publications, and academic pursuits. The quality of education imparted and the intellectual curiosity exhibited by our students continue to be a source of pride. Heartfelt thank you to our dedicated editorial team for their role in launching the departmental newsletter regularly, ensuring our mentorship stories reach a broader audience.



## LIST OF FACULTY MEMBERS



**Dr. Sandip Vijay**



**Dr. Raghav Garg**



**Dr. Sanjeev Kumar**



**Dr. Lokesh Kumar**



**Dr. Sunil Semwal**



**Dr. Sandeep Kumar**



**Dr. Tripuresh Joshi**



**Dr. Suman Pant**



**Ms. Preeti Raturi**



**Ms. Ritu Pal**



**Ms. Rashmi Mishra**



**Ms. Sakshi Koli**



**Mr. Sanjay Kumar**



**Ms. Shivali Pundir**



**Mr. Anurag Kumar**



**Ms. Suchi Johari**



**Mr. B.K. Sharma**



**Ms. Arti Goel**



**Mr. Rakesh Kumar**



**Ms. Monika Belwal**



**Ms. Neha Chauhan**



**Ms. Suchi Jain**



**Ms. Pratibha Dimri**



**Mr. Kumar Yashpak Sinha**



**Ms. Santwana Goel**



# EDITORIAL TEAM



**Mr. Lokesh Kumar**  
(Faculty coordinator)



**Mr. B. K. Sharma**  
(Faculty coordinator)



**Ms. Ritu Pal**  
(Faculty coordinator)



**Ashu Pandey**  
(B. Tech. CSE 3rd Year)



**Amit Shah**  
(B. Tech. CSE 3rd Year)



**Nikhil Mathur**  
(B. Tech. CSE 3rd Year)



**Nikhil Bhardwaj**  
(B. Tech. CSE 3rd Year)

1. Bhatnagar, N., & Johari, S. (2021, November). **Web Crawler based Caching Technique for efficient Downloading**. In 2021 Sixth International Conference on Image Information Processing (ICIIP) (Vol. 6, pp. 499-504). IEEE.

**Abstract:**

With internet availability in almost all types of devices, downloading has become a widespread activity. Data is consumed when any content is downloaded from the web servers. The effectiveness of any internet service provider depends upon the internet connection speed and the time consumed to download a file. The internet connection speed is not always the same. The speed can sometimes be so slow that downloads are not possible. In a typical organizational setup, different types of files and software applications are downloaded regularly. Downloading the same file multiple times by different people is a wastage of resources. The proposed approach aims to decrease the search and download time. The primary purpose of this study is to ensure the availability of the file for download even if there is poor or no internet connectivity. The paper proposes a Web Crawler-based caching technique that helps resolve the issues mentioned above and makes downloading more efficient.

2. Priyanka, Semwal, S., Dhuliya, P., Joshi, V., & Pant, D. (2021). **Slope Instability Detection Using IoT with the Help of Ecological Indicators**. In Sixth International Conference on Intelligent Computing and Applications: Proceedings of ICICA 2020 (pp. 41-51). Springer Singapore.

**Abstract:**

Land sliding is a common problem of hilly areas; the problem is very critical when land sliding occurs at road side which leads serious damages. The slope instability detection is a sort of prediction which tells us the conditions which can make the slope fail resulting in land slide. It involves movement of the entire debris from the slope. Internet of things (IoT) gaining popularity nowadays and detection of slope instability using Internet of things (IoT) have the capability to quickly capture, process and transmit data for effective damage control. This in turn can save precious lives and huge economic losses. In this paper, the detection of slope instability is materialized with the help of Internet of things (IoT) using a combination of pore pressure and moisture sensor. Detection system involves a sensor column consisting of pore pressure & moisture sensor and data logger with an antenna. A data logger (Mote) collects the field data by the sensors. Real-time software (visual basic) represents the quantity of the soil parameters of the slope in the form of an online graph.

3. Bhatnagar, N., & Johari, S. (2021, November). **Correlation Coefficient Model for Analyzing Effect of Temperature on COVID19 cases in India**. In 2021 Sixth International Conference on Image Information Processing (ICIIP) (Vol. 6, pp. 52-57). IEEE.

**Abstract:**

During the year 2020, the world witnessed the terror and threat of a new type of infection. The Corona Virus Disease (COVID19) was first identified in Wuhan, China, and spread worldwide. The infection was categorized as an acute respiratory syndrome and can cause causality amongst humans if timely treatment is not available. India is amongst the countries worst hit by COVID19. A country with a dense population and diversified weather conditions in different states is dealing with a highly contagious infection. Irregular ups and downs in the cases can be due to the changing temperature all around the year. This study aims to identify the relation between the temperature and the number of cases. For this purpose, the paper calculates the correlation coefficient between the temperature and the number of cases for different states of India. The study aims to analyze if the temperature of these states impacts the daily cases detected. A null hypothesis is subjected to the Pearson Product Moment Correlation Coefficient test for analysis, and the results are analyzed.

4. Badar, S. B., Choudhary, S., Ansari, Z., Kumar, S., Sharma, D. K., Ranjan, S., & Singh, S. (2021, November). **Audio-augmentation based Badminton System for Visually Impaired Person**. In 2021 IEEE 8th Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON) (pp. 1-5). IEEE.

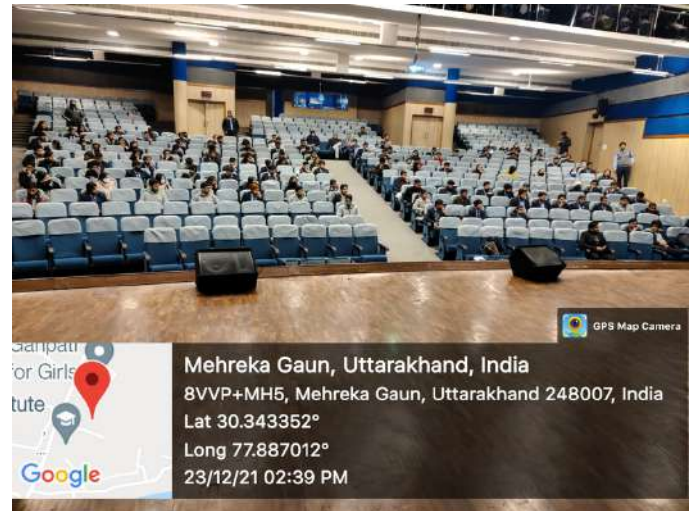
This study aimed to discover how could we enhance the quality of lifestyles for visually impaired people. There were numerous steps taken by researchers and we additionally took a leap forward to enhance the quality of their lifestyle via physical games. Keeping their enjoyment and health issues in mind, so here we introduce an audio-augmented based badminton game that uses Radio Frequency to determine an object's position in space. This entire concept could result in powerful game play for visually-impaired people. This idea can also be implemented to locate items in a dark environment.

# DEPARTMENTAL EVENTS

## Guest Lecture on Soft Skills training & Skills Set for Placements

*Investing in your soft skills is an investment in your future success. Start building these essential skills today*

In today's competitive job market, technical skills alone are no longer enough to guarantee career success. Employers increasingly seek candidates who possess a strong set of soft skills to complement their technical expertise. Recognizing this need, educational institutions and organizations are placing greater emphasis on soft skills training, as evidenced by events like the guest lecture on "Soft Skills Training & Skill Set for Placements" coordinated by Dr. Suman Pant on November 13, 2021.





## 5Days hands on Marico Centre for Women Empowerment

The Marico Centre for Women Empowerment hosted a transformative 5-day hands-on workshop from November 19th to 23rd, 2021, led by Ms. Ritu Pal. This initiative aimed to equip women with essential skills and knowledge, fostering their economic independence and personal growth.



### Workshop Highlights:

**Skill-building:** Training in areas like tailoring, crafts, food processing, beauty services, and computer literacy to enable income generation.

**Entrepreneurship:** Guidance on starting and managing small businesses.

**Financial literacy:** Empowering women to manage their finances effectively.

**Health and wellness:** Promoting awareness of women's health and well-being.

**Leadership and advocacy:** Building leadership skills and encouraging women to become change-makers.



## Add-On Certification on JAVA Training

*Don't miss this opportunity to advance your career in Java programming.*

Recognizing the increasing demand for skilled Java programmers, a comprehensive "Add-On Certification on Java Training" program was conducted from December 6th to 11th, 2021, under the guidance of Mr. Sanjay Tyagi. This intensive training aimed to equip participants with advanced Java skills and prepare them for industry-recognized certifications.



### Impact and Future Prospects:

This Add-On Java Certification Training program served as a stepping stone for participants to advance their careers in the ever-growing field of software development. By equipping themselves with in-demand Java skills and certifications, they are well-positioned for success in the competitive tech industry.

**Comprehensive Curriculum:** Covering basic to advanced Java concepts.

**Hands-on Learning:** Immersive coding exercises and real-world projects.

**Industry-Recognized Certification:** Enhance your credibility in the job market.

**Networking Opportunities:** Connect with professionals worldwide.



## Life Skill Training for 4th Year

On December 6th, 2021, Ms. Rashmi coordinated a crucial "Life Skills Training" session for 4th-year students, aiming to equip them with essential skills for navigating life beyond academics. As students prepare to transition into the professional world and adulthood, developing these skills becomes paramount for success and well-being.



### Key Skills Covered:

- Communication
- Problem-solving
- Time management
- Financial management
- Interpersonal skills
- Stress management
- Goal setting and career planning

### Benefits:

- Enhanced Employability
- Improved Well-being
- Successful Transition to Adulthood
- Greater Goal Achievement

### Impact and Significance:

This Life Skills Training session served as a valuable investment in the future success and well-being of the 4th-year students. By equipping them with essential life skills, the training empowered them to thrive in their personal and professional lives beyond university.





## A Talk on Heritage & Culture to Dehradun

On December 14th, 2021, Ms. Sakshi delivered an insightful talk on "Heritage & Culture" in Dehradun, captivating the audience with her knowledge and passion for the subject. The event aimed to foster an appreciation for the rich cultural tapestry of the region and its historical significance.



### Talk Highlights:

- Dehradun's history and evolution
- Architectural diversity and landmarks
- Vibrant cultural traditions and festivals
- Local legends and folklore
- Importance of preserving natural heritage





## Webinar on Green Computing & IOT

On December 19, 2021, Mr. Sandeep hosted an insightful webinar exploring the intersection of two transformative technologies: Green Computing and the Internet of Things (IoT). This virtual event likely delved into the potential of these technologies to create a more sustainable and interconnected future.



- Key Takeaways:
- Reduced environmental impact through energy efficiency and resource conservation.
- IoT applications for smart energy management, precision agriculture, and environmental monitoring.
- Benefits include cost savings, increased efficiency, and data-driven insights.
- Embrace these technologies for a greener and more connected future.



## Workshop on "Drone the New Bird in the sIE

On March 3, 2022, Mr. Sanjay Tyagi hosted a fascinating workshop titled "Drone: The New Bird in the Sky," delving into the exciting world of unmanned aerial vehicles (UAVs) and their ever-expanding applications.



**Diverse Applications:** The workshop showcased drones' versatile uses in industries such as aerial photography, agriculture, infrastructure inspection, delivery, and search & rescue.

**Drone Basics:** Participants learned about different drone types, components, and flight principles, emphasizing the importance of understanding the basics for effective operation.

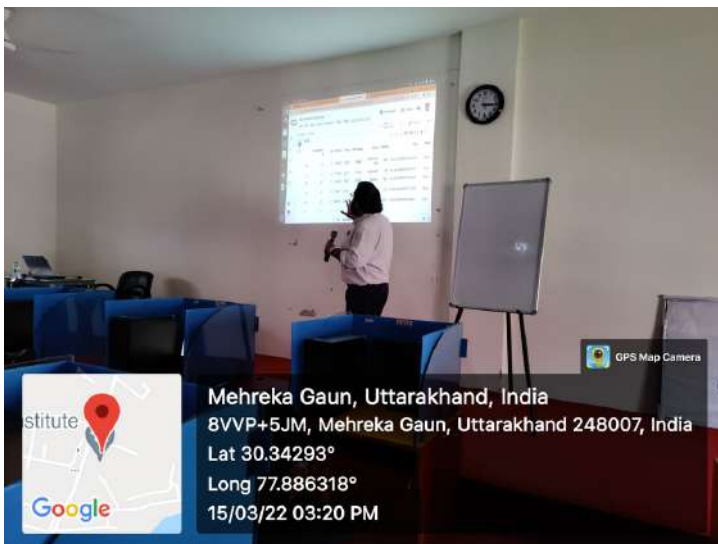
**Safety and Regulations:** The workshop stressed the significance of responsible drone usage, including adherence to safety guidelines and regulations to ensure safe operation.

**Hands-on Experience:** Demonstrations or simulations provided participants with hands-on experience, allowing them to gain practical insights into drone flight and operation.

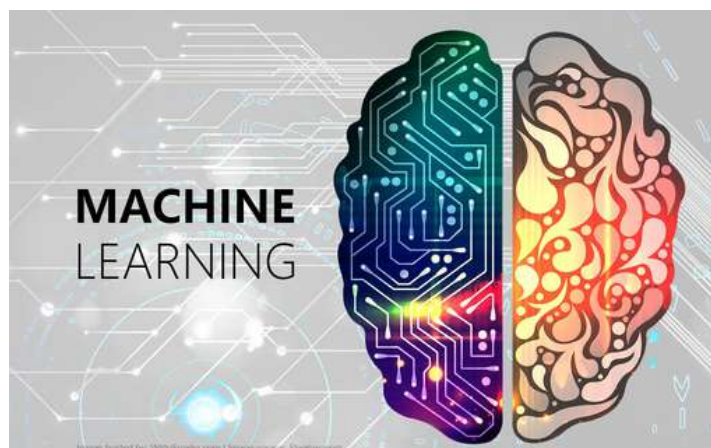


## Workshop on Machine learning Techniques

On March 15, 2022, Dr. Suman Pant led a workshop delving into the fascinating realm of Machine Learning (ML) techniques. The session aimed to provide participants with a foundational understanding of ML concepts and explore various techniques used to build intelligent systems.



- Understanding core ML techniques: Exploration of supervised learning (e.g., regression, classification), unsupervised learning (e.g., clustering), and potentially reinforcement learning.
- Practical applications of ML: Discovering how ML solves problems and drives innovation across various industries.
- Career opportunities in ML: Highlighting the growing demand for ML skills and potential career paths.
- Building a foundation for the future: Equipping participants with essential knowledge to navigate the evolving world of AI and machine learning.







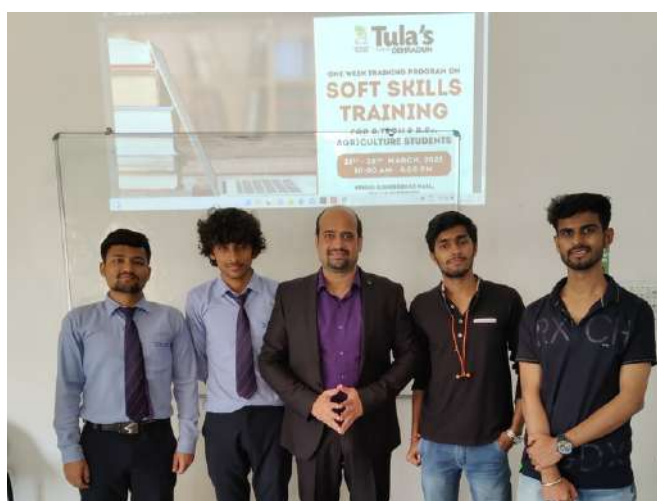


## One Week Training program on Soft Skill Program

Unlock your full potential and elevate your professional edge with a comprehensive one-week Soft Skills Training Program coordinated by Ms. Monika Belwal. Taking place from March 21st to 26th, 2022, this intensive program offers a transformative learning experience designed to equip you with the essential soft skills needed to thrive in today's competitive workplace.



- **Communication Skills:** Developing effective verbal and non-verbal communication, active listening, and clear and concise expression.
- **Teamwork and Collaboration:** Building skills for working effectively in teams, collaborating with diverse individuals, and resolving conflicts constructively.
- **Leadership Skills:** Exploring leadership styles, motivating others, and fostering a positive and productive team environment.
- **Problem-solving and Critical Thinking:** Developing analytical and critical thinking skills to approach challenges effectively and find solutions.
- **Time Management and Organization:** Mastering techniques for prioritizing tasks, managing time efficiently, and staying organized.
- **Interpersonal Skills:** Building strong relationships, demonstrating empathy, and navigating social interactions with confidence.



# EMERGING TALENT

## Student's Research Paper

Our students Rinki Panwar, Aayushi Agarwal published research paper under the guidance of **Ms. Monika Belwal** topic “AI Virtual Mouse: A Novel Approach for Real-Time Fingertip Tracking”

### **Abstract:**

Addressing the persistent challenges of real-time fingertip-gesture-based interfaces for human-computer interactions, our study delves into a novel approach utilizing RGB-D images and fingertip detection. In the realm of AI Virtual Mouse, this innovative method seeks to overcome issues such as sensor noise, changing light levels, and the complexity of tracking fingertips across diverse subjects. To implement this virtual mouse technique, the system extracts the hand's region of interest and the center of the palm from in-depth skeleton-joint information images obtained from a Microsoft Kinect Sensor version 2. This information is then transformed into a binary image. Subsequent steps involve the extraction of hand contours using a border-tracing algorithm and the utilization of the Kcosine algorithm to detect fingertip locations based on hand contour coordinates. In the final stage, the identified fingertip location is mapped to RGB images to effectively control the mouse cursor on a virtual screen. Remarkably, this AI Virtual Mouse system achieves real-time fingertip tracking at 30 frames per second (FPS) on a desktop computer, utilizing only a single CPU and the Kinect V2. Experimental results showcase a high level of accuracy, affirming the system's proficiency in real-world environments with just a single CPU. The introduced fingertip-gesture-based interface not only meets the challenges of human-computer interactions but also provides a seamless and user-friendly means for individuals to interact with computers effortlessly using their hands.



# EMERGING TALENT

## Student's Articles



### The Evolution of Intellectual Property Rights

Intellectual Property Rights (IPRs) have a rich history that can be traced back to ancient civilizations. The concept of IPRs has evolved significantly over the centuries, with various legal frameworks and institutions established to protect creators and their intellectual labor. The first known instance of something resembling IP was the exclusive right granted to chefs in the Greek colony of Sybaris over their culinary inventions in 500 BCE. However, it was not until the Florentine Republic that a prominent case of IP surfaced, with Filippo Brunelleschi receiving a statute that recognized the rights of authors and creators to their intellectual labor.

The next significant development in the history of IPRs was the Statute of Monopolies in 1623 in medieval England, which disbarred erstwhile royal monopolies except for the granting of "letter patents" to manufacturers of new inventions. The Statute of Ann, considered the first ever statute of modern copyright, offered authors protection over their work for a period of 14 years and the prospect of renewal for another fourteen upon the expiry of the term. The Paris Convention (1883) and the Berne Convention (1886) were the first international steps taken to protect creators and their inventions internationally. The World Intellectual Property Organization (WIPO), established in 1967, serves as a global forum for IP and aids in the development of an effective international IP system that fosters innovation.

In conclusion, the evolution of IPRs has been a long and complex process, with various legal frameworks and institutions established to protect creators and their intellectual labor. From the exclusive right granted to chefs in ancient Greece to the modern-day patent and copyright laws, the concept of IPRs has evolved significantly over the centuries. Today, IPRs play a critical role in fostering innovation and creativity, and it is essential to understand their historical context to appreciate their significance fully.



### भारत में गरीबी

भारत में गरीबी एक समस्या है जो देश के एक महत्वपूर्ण हिस्से को प्रभावित करती है। भारत में गरीबी के कारण सामाजिक अन्याय, स्वास्थ्य समस्याएं, अनाथपानon आदि कई समस्याएं होती हैं। भारत में गरीबी के कारण सामाजिक अन्याय होते हैं क्योंकि गरीबी के कारण लोगों की शैक्षणिक सम्पन्नता कम होती है और वे अधिकारों से वंचित रहते हैं। स्वास्थ्य समस्याएं भी गरीबी के कारण होती हैं क्योंकि गरीबों के लिए स्वास्थ्य सेवाएं उपलब्ध नहीं होती हैं और वे स्वास्थ्य के लिए पैसे नहीं हैं। अनाथपानon भी गरीबी के कारण होती हैं क्योंकि गरीबों के लिए रोजगार की कमी होती है और वे अपने परिवार के लिए कुछ नहीं दे सकते।

भारत में गरीबी के कारण भी अन्य समस्याएं होती हैं। एक ऐसी समस्या विकास का असमान वितरण है। विकास के फल का असमान वितरण विकास के क्षेत्रों के बीच अंतर होता है। कुछ क्षेत्र विकास के फल को अधिक प्राप्त करते हैं जबकि दूसरे क्षेत्र उन्हें कम प्राप्त करते हैं। यह असमानता गरीबी की स्थिति को बहुत बढ़ाता है। अन्य समस्या भी गरीबी के कारण होती हैं, जैसे कि अन्याय का विरोध, सामाजिक अन्याय आदि। भारत में गरीबी को दूर करने के लिए कुछ कदम उठाए



### Importance of Intellectual Property Rights in the Digital Age

Intellectual Property Rights (IPRs) play a crucial role in the digital age, where the creation, distribution, and use of creative works and inventions are prevalent. IPRs protect the rights of creators and inventors, allowing them to control the use and distribution of their works and inventions, and to reap the benefits of their creations. This protection is essential in the digital age, where the ease of copying and distributing creative works and inventions has increased significantly. IPRs provide a legal framework for creators and inventors to protect their works and inventions, ensuring that they are fairly compensated for their efforts.

In the digital age, IPRs foster innovation and creativity by providing a legal framework for creators and inventors to protect their works and inventions. This protection encourages the creation of new works and inventions, as creators and inventors are assured that their efforts will be protected and that they will be fairly compensated for their creations. IPRs also help to ensure that the market for creative works and inventions is fair and competitive, as they prevent the unauthorized use and distribution of creative works and inventions. By protecting the rights of creators and inventors, IPRs play a vital role in promoting innovation and creativity in the digital age.



### भारत: महान व्यक्तित्वों की भूमि

भारत एक देश है जो समृद्धि के साथ साथ महान व्यक्तित्वों का जन्मदल भी देता है। यहां जन्मे हुए व्यक्तित्वों की सूची में शामिल हैं श्री राम, श्री कृष्ण, गौतम बुद्ध, महावीर, गोविन्द, चाणक्य, राजा राम चंद्र, राणी लक्ष्मीबाई, राव राणा प्रताप, स्वामी विवेकानंद, राष्ट्रपिता महात्मा गांधी, राष्ट्रपिता डॉ. राजेंद्र प्रसाद नेता जी और अन्य सेनानी, राजनीतिज्ञ, विज्ञानी, कलाकार, संगीतकार, लेखक आदि जैसे कई श्रेष्ठ व्यक्तित्वों का जन्म हुआ है। यहां जन्मे हुए व्यक्तित्वों ने सभी की जीवन की दिशा निर्धारित की है।

भारत एक देश है जहां सभी व्यक्तिगत और सामाजिक अवस्थाओं में समानता और अधिकार का अधिकार है। यहां सभी व्यक्तित्वों को समान माना जाता है और उनकी सभी समृद्धियों का उपयोग उनके विकास में किया जाता है। भारत में व्यक्तिगत स्वतन्त्रता का महत्व पहचाना जाता है और सभी व्यक्तित्वों को अपनी स्वतन्त्रता का उपयोग करके अपनी जीवन-कल्याण के लिए काम करने का अधिकार है। भारत एक देश है जहां सभी व्यक्तित्वों को समान माना जाता है और उनकी सभी समृद्धियों



# Placement Opportunities

**OUR ACHIEVERS**  
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**ANURAG CHHETRI**  
B.TECH CSE

**ARYA NANDA**  
B.TECH CSE

We Congratulate them for Being Placed at 

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**6 LACS PER ANNUM**

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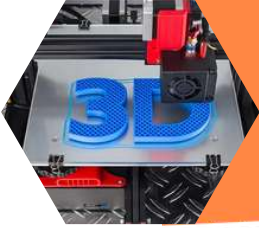
To Our **4 Achievers** From B.Tech CSE Placed In

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# Announcement



**Workshop on 3D printing and applications**  
**13, April 2022**  
**Dr Sunil**



**Workshop on IPR by national intellectual Property**  
**Awareness Mission**  
**26, April 2022**  
**Ms. Sakshi Koli**



**Seminar on Menstrual Hygiene**  
**20, May 2022**  
**Dr. Bharti**



**Uttarakhand startUp Aspirant Meet**  
**30, May 2022**  
**Mr. Rakesh**



WELCOME

TULAS



2022