Computer Science and Engineering

Technomantra -2023-24

INDEX   Page No.

HON'BLE CHAIRMAN MESSAGE

Bhai Gurdas Institute of Engineering and Technology (BGIET), shines as a symbol of educational excellence in North India, devoted to catalyzing societal, scientific, and economic progress globally. Committed to academic brilliance and holistic growth, BGIET earns acclaim from both students and society. The institution prioritizes individual excellence, offering diverse scholastic, cultural, and professional activities to mold students into versatile achievers ready for the global stage. Faculty members impart rigorous training in placement, personality development, and communication skills, guiding students towards prosperous careers and futures.

As part of the BGGI community, students thrive in an environment where aspirations are nurtured under exceptional leadership and inspiring faculty. The institution's steadfast commitment to international-quality education ensures students access top-notch opportunities for personal and professional development. With a notable placement record and emphasis on practical skill-building, BGGI remains dedicated to excellence, ensuring students not only excel academically but also flourish in their chosen fields, armed with the tools and knowledge to navigate today's dynamic world.

Dr. Guninderjit Singh Jawandha

Chairman

Bhai Gurdas Group of Institutions, Sangrur

DIRECTOR MESSAGE

Bhai Gurdas Institute of Engineering and Technology (BGIET) stands as a prestigious engineering institution in Punjab and North India, renowned for its dedication to technical education excellence. With a rich history spanning over 22 years, BGIET has groomed skilled professionals who have made significant impacts across global industries, governmental sectors, and academic institutions. Rooted in its commitment to humanity, BGIET focuses on molding students into proficient professionals, managers, and responsible citizens, prioritizing research, industry collaborations, and streamlined access to quality education through an ERP system. The institute promotes holistic student development through sports, cultural, and extracurricular activities, fostering qualities like leadership, teamwork, and social responsibility to cultivate a technologically advanced workforce aligned with societal demands.

The institute's emphasis on nurturing socially responsible individuals underscores its commitment to providing a conducive environment for academic and personal growth, instilling values of integrity and leadership. Through its comprehensive educational approach, BGIET strives to achieve its broader goal of producing graduates who are not only technically proficient but also equipped with the skills and mindset to address the evolving challenges of the contemporary world.

Dr. Tanuja Srivastava

Director

Bhai Gurdas Institute of Engineering & Technology

HOD MESSAGE

The Department of Computer Science and Engineering welcomes you to be a part of the thriving computer science community and become visionaries and change makers of the future. Our distinguished faculty members ensure a wide range of diverse learning experiences ranging from the fundamentals of Computer Science, Core Courses, Programming, Emerging Technologies like Big Data Analytics, Data Mining, IoT, AI, Machine Learning, Cyber Security, Block-chain, Professional Ethics, Research Methodologies and Open-Source Technologies—to name just a few. Our faculty and students are constantly striving to excel and to advance the state of the art in Computer Science and Engineering. Our understanding is that persons who are clear and thorough about the fundamentals can adapt to rapid changes in technology relatively easily. We want the education imparted to our students to be the basis of a life time of learning. Learning is a continuous process and does not end with the acquisition of a degree, especially because steady and rapid advances in computing technologies shorten the life of tools and techniques prevalent today. Therefore, we do not aim to make our students walking manuals of any language or package. Instead, they are given a strong foundation in computer science and problem-solving techniques, and are made adaptable to changes with a strong emphasis on Context & project based learning through mini projects, industry visits, guest lectures, student activities & Leadership events, professional societies like Computer Society of India and incubation centre.

The placement record of eligible students from last many years is very goodand are working in reputed IT companies. Students along with the teachers constantly involved in exciting and interesting problems/projects to explore and innovate new methods and finding sustainable solutions, published in various national and international journals. We as a team sincerely welcome the young talent who aspire to pursue studies, to educate, or to innovate in the area of Computer Science. So Come and Join us.
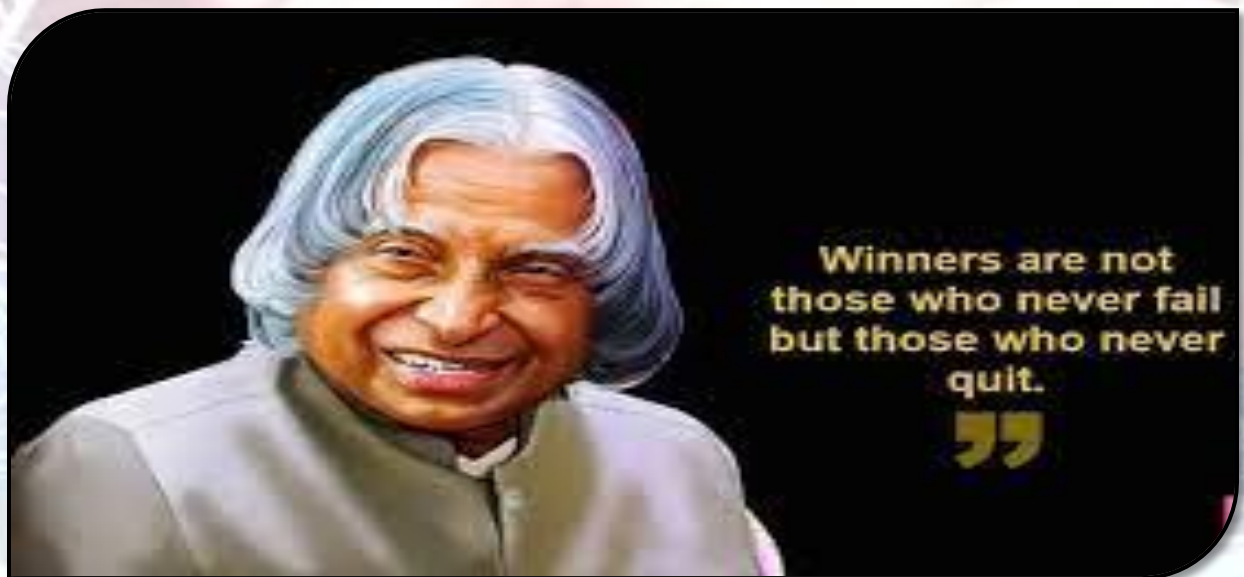
Dr Manuraj moudgil

HOD

Bhai Gurdas Institute of Engineering & Technology

VISION AND MISSION OF THE DEPARTMENT

Vision of the Department	To be a center of excellence in technical education, research and support services to produce comprehensively trained, innovative Computer Science Engineers of highest quality to contribute to the Nation's development.	
Mission of the Department	**Mission No.**	**Mission Statements**
	M1	Create an environment of skill learning through faculty training, online learning, sound academic practices and research endeavors
	M2	Provide opportunities to promote organizational and leadership skills in students through various extra- curricular and co-curricular events
	M3	To uplift innovative research in Computer Science and Engineering to serve the needs of industry, Government and society
	M4	Providing social awareness and responsibility in students to serve the Nation and to protect environment

Winners are not those who never fail but those who never quit.

PROGRAM OUTCOME (PO)

PO Number	PO Statement
PO1	**Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
PO2	**Problem Analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
PO3	**Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	**Conduct Investigations of Complex Problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern Tool Usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	**The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	**Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	**Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	**Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life-long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

DEPARTMENTAL EVENT'S

CELEBRATION FOR APPROVAL OF BHAI GURDAS PHARMACY COLLEGE & NEW YEAR AT BGIET Bhai Gurdas Group of Institutions (BGIET), Sangrur organized a programme on 1st January 2023 at the campus to kickstart 2023 alotogether with and bang & high energy and to celebrate the great achievement of the New Year as BGIET is feeling very proud to announcing the beginning of it's New Programme i.e. B.Pharmacy as BGIET got the Approval of Bhai Gurdas Pharmacy College to run the B.Pharmacy Programme Approved by Pharmacy Council of India(PCI) & Affiliated to MRSPTU, Bathinda in the college from this year. BGIET welcome this year with renewed hopeand high spirit! Wishing everyone a Happy New Year 2023.

TREE PLANTATION WITH NBA EXPERTS AT BGIET

It was a BIG day for BGIET as we had the chance to welcome the NBA(National Board Accreditation) Expert Team in our institute. Hon'ble Chairman, Dr. Guninderjit Singh Jawandha & (Prof.) Dr. Tanuja Srivastava welcomed the NBA team and performed a tree plantation ceremony along with the officials and faculty members by spreading a message to plant a tree and do your part in saving the future generations and ensuring a greener India.

"Equipped with his five senses, man explores the universe around him and calls the adventure Science."

- Edwin Powell Hubble

SHAM-E-RUKHSAT 2023

The Sham-E-Rukhsat 2023 vibes all over the BGIET campus

BGIET has hosted a Farewell Party "Sham-E-Rukhsat 2023" at BGIET campus on 9th May,2023 for all our last year students with greatest hope of meeting them again. On this occasion Our Hon'ble Chief Guests and our Respected dignitaries Mrs. Baljinder Kaur Jawandha Secretary BGIET, Dr. Guninderjit Singh Jawandha Chairman BGIET and (Prof.) Dr.Tanuja Srivastava Campus Director BGIET started the event with the Deep Jagran Ceremony.

"A man who does not have thousands of enemies, I don't consider him a man. A man whose name does not make some people squirm at night, his life has no meaning. His coming into this world is purposeless."

– O.P. Chautala

Campus Placement Drive

Have a look at the sevibrant glimpses of the Pool Campus Placement Drive 2023 held at BGIET.

12 meritorious students of BGIET placed in top 3 renowned companies. Industry trends may come and go, but record- breaking #placements at BGIET are constant. The renowned companies Anviam Solutions, RN Gupta, Education Culture pvt ltd conducted recruitment drives at Bhai Gurdas Group of

Our students are set to embark upon the most promising professional journey at world-leading comapnies like Yokohama Tyres, Ceat Tyres, Swaraj Automotive Ltd., Fiem Group, Motherson Sumi Group with lucrative packages. This Pool Placement Drive was held at BGIET campus on 11th May,2023 and 54 students were selected. Bhai Gurdas Group of Institutions, Sangrur is transforming the lives of its students into a successful future with continuous placement drives in the campus. The campus placements were opened for the students of ITI/Diploma (CSE/ME/EE).

Institutions and 12 students were selected and earned success with a package of 5 Lacs per annum. Bhai Gurdas Group is transforming the lives of its students into a successful future with continuous placement drives in the campus. The campus placement drives were open for students of B.Tech (CSE/IT/EE/ME) & MBA. The selections were done through various parameters. In the first round, a written aptitude test was conducted followed by group discussion on general and technical topics. The confirmation from the companies has opened new gates of success for the selected students. The company officials were impressed by the overall knowledge of the students, commented that the institute is contributing impressively to promote technical education at the national level.

ARMAGEDDON 23.0

Bhai Gurdas Group of Institutions (BGIET) hosted an extraordinary celebration of technological innovation and creativity at 'Armageddon 23.0.' This Tech Fest featured an impressive array of both technical and non-technical events, spotlighting the diverse talents of our exceptional students. The students' participation was nothing short of remarkable, their unwavering enthusiasm and exceptional skills ensuring the resounding success of every event. The event received the honour of esteemed dignitaries' presence, including our Chief Guest, whose inspiring speech left the audience motivated. Dr. (Prof.) Tanuja Srivastava, Campus Director, shared her insights, underscoring the significance of education and innovation. The event also witnessed remarkable performances by renowned singers and artists. Ayush Talniya and Mohini Sikarwar left the audience spellbound with their mesmerizing acts. The excitement soared as popular singer Ninja took the stage by storm, delivering an electrifying performance that had the crowd on their feet, infusing a new dimension of entertainment into the fest.

Mrs. Baljinder Kaur, Secretary of BGIET, extended warm greetings and heartfelt prayers for happiness, prosperity, and personal growth. Chairman Dr. Guninderjit Singh Jawandha and Dr. Suvreet Kaur Jawandha (MD and Executive Member BGIET) blessed everyone, wishing them happiness, good health, and success.

'Armageddon 23.0' served as a remarkable platform for students to showcase their talents, reiterating BGIET's unwavering commitment to fostering excellence in education and innovation. This tech fest will be remembered as a beacon of talent and innovation, making it an unforgettable experience for all involved."

CULTURAL EVENTS

BGIET's Tech Fest was a cultural extravaganza! Students showcased their diverse talents with vibrant performances, including Giddha, Nepali dance, Bhangra, a fabulous fashion show, and energetic Haryanvi dance. The cultural mosaic continued as African students joined the celebration, thoroughly enjoying the lively performances. A true fusion of global cultures, the event highlighted the richness of diversity within our campus.

11th INTERNATIONAL CONFERENCE

 The ISTE Section Faculty Convention-2023for Engineering Colleges and 11thInternational Conference on Advancements in Engineering and Technology (ICAET-2023) was hosted by BGIET Sangruron November 23rd and 24th 2023.

The event was inaugurated by Prof Buta Singh Sidhu, EC Member, ISTE, New Delhi &Former Vice-Chancellor, MRSPTU, Bathinda on 23rd November in the presence Prof. R. P. S. Suker-Chakia, Section Chairman, ISTE, Dr. S K Gandhi Secretary ISTE SMC, Prof. Gurinder Pal Singh, Registrar MRSPTU Bathinda, Dr. Guninderjit Singh Jawandha Chairman BGGI, Sangrur, Dr. Tanuja Srivastava, Director BGIET and Dr. Sushil Kakkar Convener of 11th International Conference on Advancements in Engineering and Technology (ICAET-2023).

The ISTE Faculty Convention-2023 and ICAET-2023 dignitaries, participants and delegates were welcomed by Prof. (Dr.) Tanuja Srivastava, Director, BGIET, Sangrur. She mentioned that BGIET, Sangrur feel privileged in hosting such an event and thanked the ISTE for giving an opportunity to organise such a mega event in the campus. She also narrated a detailed note on ISTE convention and International Conference, which includes; number of paper registered, different category of awards to be presented, schedule for the upcoming 2 days.

On the second valedictory day of the 11th International Conference on Advancements in Engineering and Technology (ICAET-2023), the esteemed gathering was graced by the presence of two distinguished personalities in the field of academia: Dr. Manjeet Singh Patterh, Dean Research at Punjabi University, Patiala, and Dr. Vikas Chawla, Dean Academics at I.K. Gujral Punjab Technical University, Jalandhar.

The day commenced with the Six Technical Sessions of ICAET-2023, a platform that showcased a myriad of cutting-edge research and technological advancements. Scholars and experts from across the

country converged to present their oral presentations, fostering an environment of intellectual exchange and collaborative learning.

Dr. Manjeet Singh Patterh, Dean Research at Punjabi University, patiala, with his experience and scholarly achievements, emphasized the pivotal role of research in shaping the future of engineering and technology.

Dr. Vikas Chawla, Dean Academics at I.K. Gujral Punjab Technical University, Jalandhar, shared his perspective on the evolving landscape of academic excellence in engineering and technology.

The highlight of the event was the recognition of outstanding contributions through the Best Paper Award for the technical Sessions. Dr. Manjeet Singh Patterh and Dr. Vikas Chawla jointly presented this prestigious accolade to deserving participants, acknowledging their exceptional research and impactful presentations. The conference not only celebrated the achievements of the present but also paved the way for a future where engineering and technology continue to push the boundaries of innovation.

"Setting goals is the first step in turning the invisible into the visible."

Tony Robbins

ARTICLES

Artificial Intelligence

Artificial Intelligence (AI) has emerged as a transformative force, revolutionizing industries and reshaping the way we live and work. This cutting-edge technology, fueled by advancements in machine learning and deep learning, has permeated various facets of our daily lives, ranging from healthcare and finance to education and entertainment. AI has significantly impacted the healthcare industry, enhancing diagnostics, treatment plans, and patient care. Machine learning algorithms analyze vast amounts of medical data to identify patterns, aiding in early disease detection.

AI is transforming education by enabling personalized learning experiences. Adaptive learning platforms use AI algorithms to tailor educational content based on individual student needs, optimizing comprehension and retention. Virtual tutors and educational chat bots provide additional support, fostering a more inclusive and accessible learning environment. AI is also contributing to the development of new skills, preparing individuals for the demands of the future workforce.

In the business and industrial sectors, AI is streamlining operations through automation and optimization. Robotics and AI-powered machinery are revolutionizing manufacturing processes, increasing efficiency, and reducing errors. The integration of AI technologies is propelling businesses toward greater competitiveness and sustainability. As technology continues to advance, ethical considerations and responsible use of AI become increasingly important. The potential for positive impact is vast, but it is crucial to address challenges related to privacy, bias, and job displacement.

The future promises continued innovation and integration of AI into various aspects of our lives, holding the potential to solve complex problems and propel humanity toward new heights of progress.

Name: Divya
Branch: BTech CSE
Roll no: 2300715

Cyber Security

In an era where digital connectivity is ubiquitous, the importance of cyber security cannot be overstated. As our dependence on technology grows, so do the threats that seek to exploit vulnerabilities in the digital real. It explores the dynamic landscape of cyber security, the evolving nature of cyber threats, and the critical role played by cyber security measures in safeguarding individuals, organizations, and nations. Cybercriminals employ increasingly sophisticated techniques, ranging from phishing to sophisticated nation-state-sponsored cyber espionage. Data has become one of the most valuable commodities in the digital age, and its compromise poses significant risks. Cyber attacks often target personal information, financial data, and intellectual property. Data breaches not only result in financial losses but can also erode trust among individuals and organizations. Robust cyber security measures are essential to protect sensitive information and preserve the privacy of individuals. While technological solutions play a crucial role in cyber security, the human element remains a key factor. Many cyber threats exploit human vulnerabilities, such as social engineering attacks that manipulate individuals into divulging sensitive information. Cyber security awareness and training programs are vital for educating users about potential risks, fostering a culture of vigilance, and promoting responsible online behavior.

Cyber security is a global concern that transcends borders. Governments and international organizations play a crucial role in establishing regulatory frameworks, sharing threat intelligence, and coordinating responses to cyber incidents. As we navigate the intricate web of the digital realm, the importance of cyber security cannot be overstated. It is a shared responsibility that requires constant adaptability, and collaboration. Cyber security professionals are the unsung heroes working tirelessly to protect the integrity of our digital infrastructure. As technology continues to advance, the evolution of cyber security measures must keep pace, ensuring a secure and resilient digital future for individuals, businesses, and nations alike.
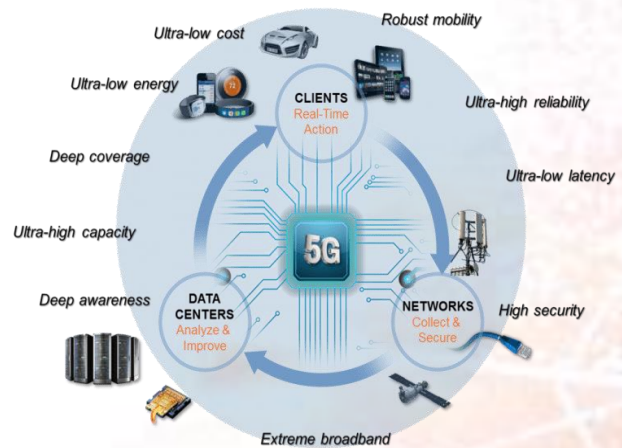

Manpreet Kaur

Name: Manpreet Kaur
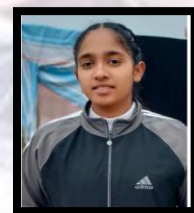
Branch: BTech CSE

Roll no: 2300744

Revolution of 5G Technology

As we stand on the brink of a new technological era, 5G technology emerges as a beacon of connectivity, promising to redefine the way we communicate, interact, and innovate. At the heart of the 5G revolution is speed—blazing fast speeds that transcend the limitations of previous generations. With data rates expected to reach up to 10 gigabits per second, 5G catapults us into a world of instantaneous downloads, seamless streaming, and a level of responsiveness that was once unimaginable. This acceleration not only enhances user experience but also serves as the backbone for the data-hungry applications of the future. 5G is not just about connecting people; it's about connecting things. The Internet of Things takes a giant leap forward with 5G, as the network's capacity to handle a massive number of devices simultaneously enables a seamless web of interconnected devices. From smart homes and cities to industrial processes, 5G empowers a new era of automation, efficiency, and data-driven decision-making. The healthcare sector undergoes a paradigm shift with 5G, ushering in a new era of telemedicine and remote patient care. The high-speed, low-latency capabilities enable real-time consultations, remote monitoring of patients, and the exchange of large medical datasets. This not only improves healthcare accessibility but also empowers medical professionals to deliver timely and efficient care, especially in critical situations.

This revolutionary technology is not just about faster internet; it's a catalyst for innovation. From transforming industries and redefining healthcare to creating smarter cities and immersive experiences, 5G stands as a testament to human ingenuity, connecting us in ways that were once only imaginable in the realms of science fiction. As we embrace this new era, the journey of 5G unfolds, promising a future where connectivity knows no bounds.

Name: Randeep Kaur
Branch: BTech CSE
Roll no: 2300691

Crafting the future with Web Technology

Web technology, the backbone of the digital age, has evolved at an unprecedented pace, transforming the way we access information, connect with others, and conduct business. This delves into the multifaceted world of web technology, exploring its key components, trends, and the profound impact it has on our daily lives. The journey of web technology began with static web pages, offering basic text and images. Over time, the landscape evolved into dynamic, interactive platforms driven by advancements in HTML, CSS, and JavaScript. Today, the web is a dynamic ecosystem where users can engage with immersive content, participate in real-time interactions, and contribute to a vast digital tapestry.

As the variety of devices used to access the internet expanded, responsive design emerged as a crucial element of web technology. Websites and applications now adapt seamlessly to various screen sizes, ensuring a consistent and user-friendly experience across desktops, tablets, and smart phones. This adaptability has become essential in an era where digital interactions occur on a multitude of devices. Web development frameworks provide developers with powerful tools and pre-built components to streamline the creation of robust and feature-rich applications.

Application Programming Interfaces and micro services have become integral components of modern web architecture. APIs enable seamless communication between different software applications, while micro services break down large, monolithic applications into smaller, independent components. This modular approach enhances scalability, facilitates easier maintenance, and accelerates the development and deployment of web services. As we navigate the role of web technology in connecting people, facilitating innovation, and powering businesses cannot be overstated. Looking forward, the trajectory of web technology promises further advancements, shaping the way we experience and interact with the vast expanse of the online world.
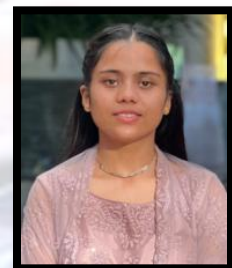
Name: Jaskaran Singh
Branch: BTech IT
Roll no: 2300796

Exploring the Modern Robotics Advancements

The world of robotics has transitioned from the realms of science fiction to a dynamic and integral part of our reality. As technology advances at an unprecedented pace, so too does the sophistication of robots and their applications. This takes a deep dive into the captivating realm of robotics, exploring their evolution, diverse functionalities, and the profound impact they have on industries and daily life. The roots of robotics trace back to ancient times when mechanical automatons captured the imagination of civilizations. Fast forward to the 20th century, and we witnessed the birth of true robotics with the advent of programmable machines. One of the earliest and most impactful applications of robotics is in the realm of industry. Robotic arms and automation systems have revolutionized manufacturing processes, increasing efficiency, precision, and productivity. These industrial robots perform tasks ranging from assembly and welding to packaging and quality control, reshaping the landscape of modern production facilities.

In the field of healthcare, robotics has emerged as a game-changer. Surgical robots, for instance, enable precision procedures with minimally invasive techniques, reducing patient recovery times. The integration of robots into daily life is becoming increasingly prevalent. Service robots, such as cleaning robots, delivery drones, and robotic assistants, are transforming the way we perform routine tasks. These robots are designed to enhance convenience, efficiency, and safety in various settings, from homes and offices to public spaces.

Name: Dilpreet Kaur
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QUIZ

Questions

1. What country has the most islands in the world?

2. What's the capital of Canada?

3. Name the longest river in the world?

4. What's the smallest country in the world?

5. Name the largest (not highest) mountain range in the world?

6. Name the best-selling book series of the 21st century?

7. Which language has the most words (according to dictionary entries)?

8. Who invented the World Wide Web, and when?

9. What happened on July 20th, 1969?

10. Which football team is known as 'The Red Devils'?

Answers

1. Sweden, over 220,000

2. Ottawa

3. The Nile, 6650km

4. The Vatican

5. The Andes – 7000km long; 6962m high)

6. Harry Potter, J. K. Rowling

7. English, 200,000 words

8. Tim Berners-Lee, 1990

9. Apollo 11 landed on the Moon

10. Manchester United

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