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BITS n BYTES

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DIGITAL TRUST

QUANTUM COMPUTING

ROBOTIC PROCESS AUTOMATION

KNOW YOUR CLUBS

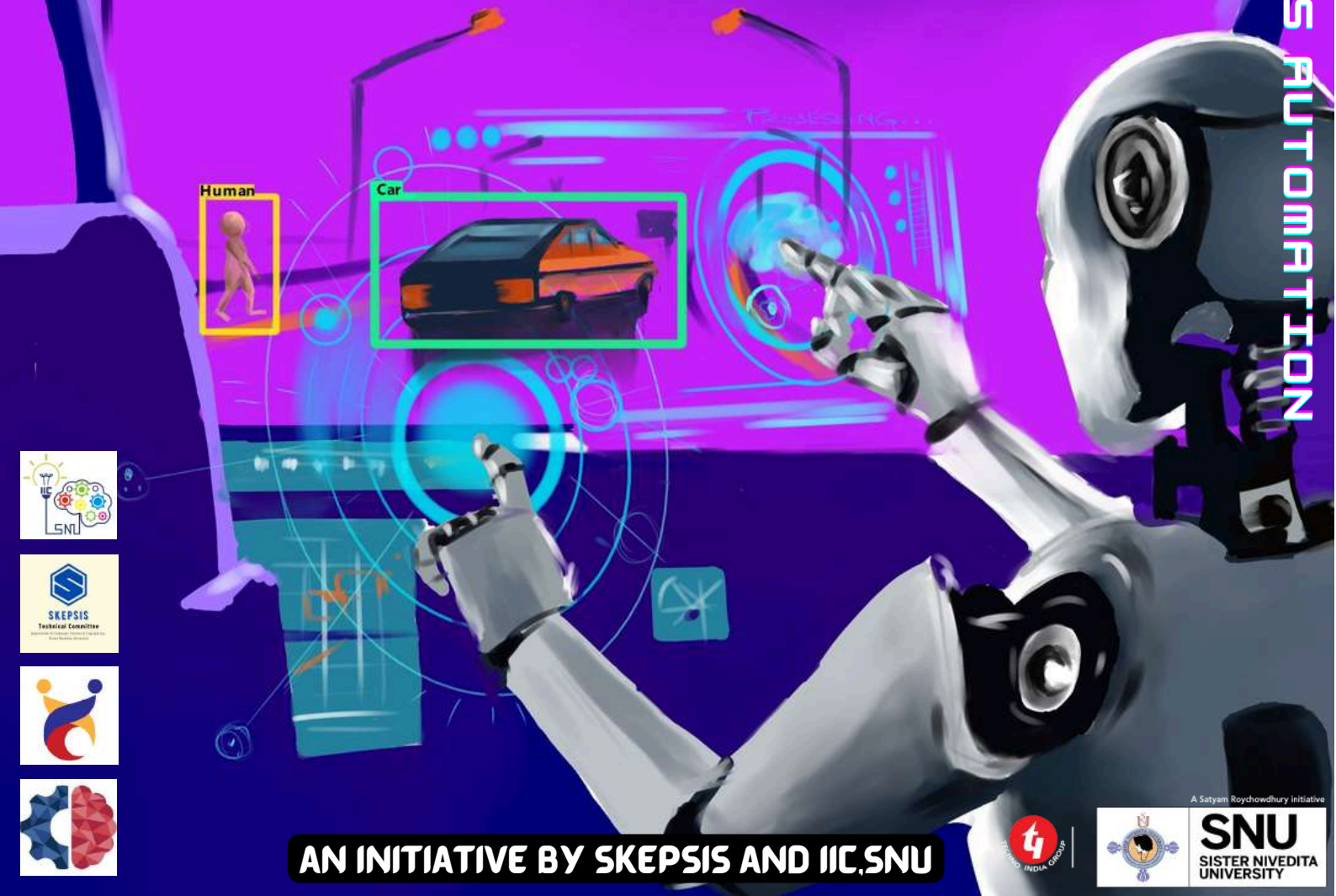
SKEPSIS

GOOGLE DEVELOPER STUDENT CLUB

GEEKS FOR GEEKS SNU CHAPTER

NEWTON SCHOOL CODING CLUB

THE ROYAL PROGRAMMING CLUB



AN INITIATIVE BY SKEPSIS AND IIC,SNU

A Satyam Roychowdhury initiative

SNU
SISTER NIVEDITA UNIVERSITY

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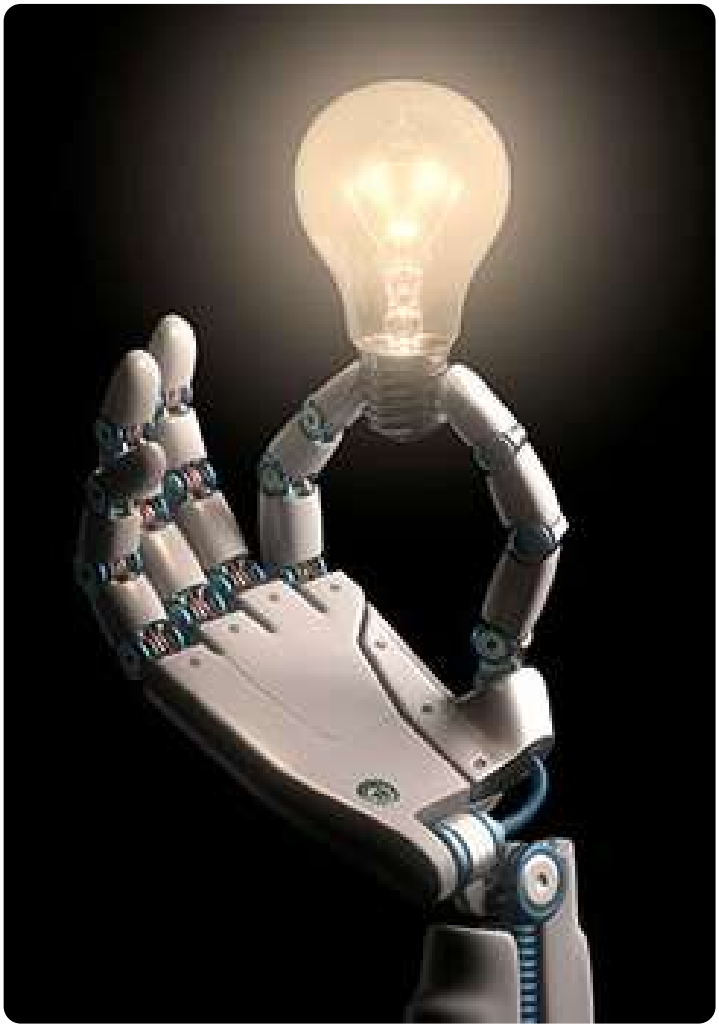
About Department of Computer Science, Sister Nivedita University

Sister Nivedita University (SNU) at New Town, Kolkata has been established through enactment of The Sister Nivedita University Act, 2017 (West Bengal XLIX of 2017). SNU, being unique of its own kind is built on the path of Sister Nivedita, blessed under the shadow of Swami Vivekananda. The University was established with a vision in 2017 and it reached greater height with every passing year. This has ensured that the dynamic image of the University is kept intact by the ever evolving students, faculty members and management. The motive of the University is to keep an eye on all-round development of an individual and shaping of young in a way that is useful to the social circle.

The Department of Computer Science started imparting instructions with the most modern curriculum and syllabus to the students for undergraduate and postgraduate courses in 2018. The Department maintains an excellent teaching/learning and research environment with dedicated, qualified and dynamic faculties and well equipped laboratories. The Department of Computer Science (CS) embodies the university's tradition of excellence in computer science engineering and computer application education. Our department graduates capture leading academic appointments as well as opportunities in renowned computer industries, data analytics, and business analytics. The Department aims to create a promising environment for producing skilful professionals by making students aware of the modern industrial need. The Department also encourages fundamental and innovative research in the field of Computer Science & Engineering.



Skepsis is the Technical Committee of Sister Nivedita University.

It was formed in the year 2020 by the students of Computer Science and Engineering Department.

The main objective of the Committee is to help the students to enhance their skills in the Tech Domain and help them grow along with their peers.

There are 4 technical chapters under the umbrella of Skepsis, Google Developer's Students Club SNU, GeeksforGeeks SNU Chapter, Newton School Coding Club SNU, and The Royal Programming Club. Several technical events like Tech Sessions and Coding Contests are conducted by Skepsis as a parent body and by these clubs for the benefit of our students.

The Technical Committee is currently headed by Dr. Sadip Midya, Mr. Sahitya Mondal, Mr. MD. Tausif Mallick, Mr. Ayan Dey and Dr. Debbrota Paul Chowdhury as the Faculty Coordinators.

The Committee is currently led by President Arunima Chatterjee and two Vice President Jishnu Baruah and Sk. Wasim Rajjak.

Dr. Sadip Midya
(Faculty Coordinator of Skepsis)

Mr. Sahitya Mondal
(Faculty Coordinator of Skepsis)

Mr. MD. Tausif Mallick
(Faculty Coordinator of Skepsis)

Mr. Ayan Dey
(Faculty Coordinator of Skepsis)

Dr. Debbrota Paul Chowdhury
(Faculty Coordinator of Skepsis)

Arunima Chatterjee
(President Of Skepsis)

Jishnu Baruah
(Vice President of Skepsis)

Sk Wasim Rajjak.
(Vice President of Skepsis)

FROM THE REGISTRAR'S DESK

Sister Nivedita University was established with a pursuit of providing students with an institution that is acknowledged as the highest exemplar of education and a philosophy deeply ingrained in excellence backing that dream. Thus blending historic values with cutting-edge thinking, the university harbored a trajectory of persistent, continuous, and sustained progress since its inception in 2017.

Our dedicated faculty members, state-of-the-art infrastructure, and eclectic student community have contributed mightily to the evolution and distinction of our university over the years. Our dedication to community service and social responsibility is profoundly embedded in the ethos of the Institute. Through diverse outreach programs, we strive to make an optimistic influence on society and foster the betterment of the underprivileged.

It is our collaborative endeavor to uphold the importance and legacy of Sister Nivedita University and provide an enriching academic experience to all our stakeholders.

As we move forward, let us hold fast to the core significances that define us - integrity, compassion, and excellence. Let us persevere for transcendence not only in academics but also in our interactions with one another, in our pledge to sustainability, and in creating a campus civilization that is inclusive and supportive.

I encourage each of you to scour new possibilities, push the limitations of your knowledge, and immerse in interdisciplinary collaborations. Embrace the diversity of perspectives present in our university, as it is through these interactions that we truly dilate our horizons and gain a deeper understanding of the world.

Prof. Suman Chatterjee, Registrar, Sister Nivedita University and Senior Group Director, Techno India Group

Remember, your journey at SNU is not just about grades and certificates; it is about individual growth, forging lifelong friendships, and developing the skills essential to become global citizens and leaders in your respective fields. You are the architects of our collaborative future, and I do not doubt that you will rise to the occasion and make SNU proud.

Wishing you all a successful and fulfilling academic year ahead!

FROM THE VICE CHANCELLOR'S DESK

Role of Quantum Computing in 6G communications

Quantum computing is still in a developing phase but is growing at a very high speed. The ability to handle complex problems and the property of quantum of superposition of qubits in infinite yet contained number of states in 0,1 or combination of the two creates an edge over traditional computing. Apart from the fact that quantum computers are faster and energy efficient, it can create some phenomenal quantum cryptography which are hundred times more efficient than the cryptography generated by traditional computers. Various organisations are working on Post- Quantum Cryptography Standardisation program which can find usage in various sectors including telecom sector. This technology will be used in building next generation Artificial Intelligence.

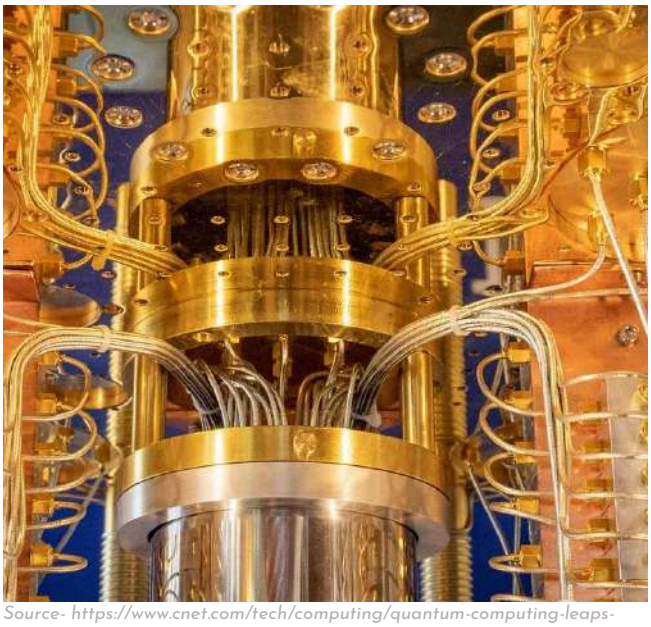
Research is already on for 6G and although its expected to provide the facility by 2026 the telecom community is looking for some novel initiatives and intelligent network systems through technologies like Reconfigurable Intelligent Surfaces (RIS), Visible Light Communications (VLC), Electromagnetic Orbital Angular Momentum, (EOAM), Cell Free Communications and Quantum Computing. The platform of 6G architecture will use Heterogenous Cloud Infrastructure to gain
Optimum Network Function.

The quantum computing will perform a key role in developing cryptography for the IoT networks including IoT devices. The 6G telecom architecture will employ Extended Reality (ER) which will be a combination of Augmented Reality, Virtually Reality and Mixed Reality. The best part of Quantum computing based encryptions is smaller key length which will fit into the 32 bit architecture. Research is going on for post quantum based cryptography like Lattice based, Code Based, Multivariate based or Hash based.

Prof. (Dr.) Dhrubajyoti Chattopadhyay,
Vice Chancellor, Sister Nivedita University

In quantum based computing the cryptography will be manged by Quantum Based Random Oracle Model wherein the person can query the random Oracle with Quantum state. The quantum nature provides absolute randomness and security to improve the transmission quality. The quantum computing employs discrete logarithmic problems which will be the base of current asymmetric cryptography which can be solved in polynomial time with advanced algorithms. 6G applications like Ocean Communication, Satellite Communication, TeraHertz Communication systems have the potential of using Quantum Key Distribution which is quite efficient in developing quantum mechanics in establishing secret key between two legitimate parties.

Quantum Machine Learning has a promising approach in 6G architecture which allows Real time Optimisation. Quantum Information Processing has some of the brilliant features like Entanglement & Parallelism which are phenomenal in terms of data management, data storage and computational speed.

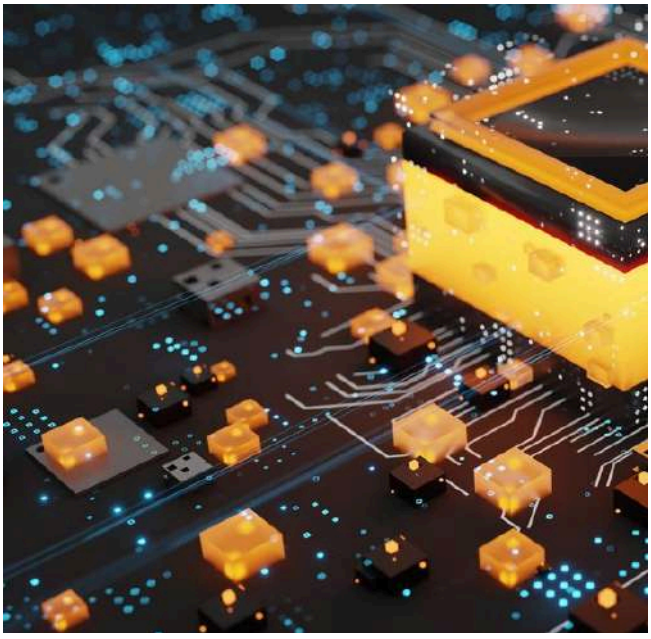


Source- https://www.cnet.com/tech/computing/quantum-computing-leaps-ahead-in-2019-with-new-power-and-speed/

Source- https://lot.dhl.com/quantum-computing-could-transform-the-logistics-industry-within-the-next-decade/

Hence it is quite obvious that 6G communication will see a lot of growth and has the potential to change the world in terms of connectivity, speed and content. The real time data sharing will also see a huge surge in IoT and cloud storages. Quantum computing will play a pivotal role in developing enhanced security systems for 6G communications.

The 6G communication model will be changing the telecom sector with all the technology it is bringing in. Now quantum computing is going to revolutionise the telecom sector with all the features it has. Quantum Computing has a feature of no cloning property which allows to copy a quantum state with maximum accuracy. However, research is still on to develop a better quantum state.



Source- https://news.abplive.com/technology/quantum-computing-what-is-it-how-it-works-why-does-the-world-need-it-difference-classical-computing-working-principle-meaning-applications-1554318

FROM THE DEAN'S DESK

Artificial Intelligence: A Journey from Dartmouth to ChatGPT4

In the world of technology, few innovations have captured our imagination and shaped our lives as profoundly as Artificial Intelligence (AI). From its humble beginnings to the marvels of today's ChatGPT4--the journey of AI is the result and culmination of the evolution of multiple transformative technologies over the decades. Let us take a small peek into this incredible evolutionary journey.

Early Foundations (1950s - 1970s) :

Visualisation begins before even lifting the camera. It involves mentally envisioning the final image before pressing the shutter button. Pre-visualization allows photographers to see beyond the physical elements and anticipate how various compositional choices, lighting conditions, and subject interactions will translate into a photograph. This process helps create a roadmap for capturing the desired mood, narrative, or emotional impact.

Knowledge-Based Systems and Expert Systems (1980s) :

Visualization begins before even lifting the camera. It involves mentally envisioning the final image before pressing the shutter button. Pre-visualization allows photographers to see beyond the physical elements and anticipate how various compositional choices, lighting conditions, and subject interactions will translate into a photograph. This process helps create a roadmap for capturing the desired mood, narrative, or emotional impact.

Machine Learning and Neural Networks (1990s - Early 2000s):

The 1990s brought a paradigm shift in AI with the rise of machine learning algorithms. Researchers realized that instead of programming explicit rules, AI could learn from data and improve performance iteratively. Machine learning techniques---such as decision trees, support vector machines, and Bayesian networks---gained traction in various applications.

Prof. (Dr.) Sanku Bose
Dean, School of Engineering, Sister Nivedita University,
Group CEO, Techno India Group

One of the most significant breakthroughs during this period was the resurgence of artificial neural networks, inspired by the human brain's structure. Neural networks demonstrated their potential in solving complex problems, and the backpropagation algorithm allowed them to efficiently learn from data.

Deep Learning and Big Data (Mid-2000s - 2010s) :

Deep learning, a subfield of machine learning based on neural networks with multiple layers, became a game-changer in the mid-2000s. This advancement was enabled by the availability of vast amounts of data and the computational power needed to train complex models. With deep learning, AI systems demonstrated exceptional performance in tasks such as image recognition, natural language processing, and speech recognition. Breakthroughs like AlexNet, a deep convolutional neural network, in 2012, revolutionized computer vision and opened new possibilities for AI applications.

Natural Language Processing and Conversational AI (2010s)

The latter half of the 2010s witnessed significant advancements in natural language processing (NLP). AI systems started to comprehend and generate human language more effectively. Technologies like word embeddings and transformer models, such as BERT (Bidirectional Encoder Representations from Transformers) from Google., brought groundbreaking improvements to NLP tasks.

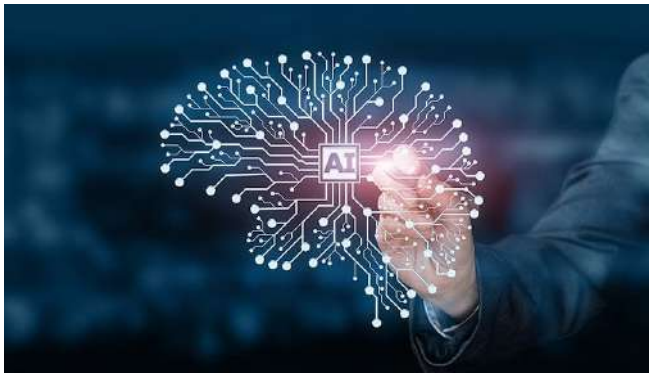
Hence developments led to the rise of conversational AI, where AI systems could engage in human-like conversations, answer questions, and provide contextually relevant responses.

ChatGPT Series and Advanced Language Models :

The ChatGPT (Chat Generative Pre-Trained Transformer) series represents the culmination of progress in language models and conversational AI. ChatGPT4, the latest iteration, is characterized by its remarkable contextual understanding and ability to generate human-like responses. These advanced language models are based on transformer architectures and leverage massive amounts of data to learn from diverse contexts.

Source- https://pmmodiyojana.in/chat-gpt-kya-hai/

I am ure that many amongst you have experienced ChatGPT firsthand. But ChatGPT is not the only contender out there. Google's BERT(Bidirectional Encoder Representations from Transformers) and Meta's LLaMA((Large Language Model Meta AI) are making incredible strides as well. In fact, Meta has shaken up this industry recently by making the LLaMA 2 open source -- free for research and commercial use!



and-disadvantages-of-artificial-intelligence-article

In fact, if we look back at how AI has started shaping our lives, we cannot but note the uncanny resemblance to the evolution of the ubiquitous telephone. From desk phones and home landlines, that were pretty much the norm since Alexander Graham Bell made this invention till the 1990's, the phone has metamorphosised to an entirely different technology. The landlines gave way to mobile feature phones that ruled the world in the 1990s and early 2000s—till Apple and HTC launched the iPhone and android phones in quick succession in 2007 and 2008. Since then, smartphones have taken over. They are no longer luxury items---but essential necessities that drive our lives—defining entire ecosystems and every aspect of our lives, from shopping to exercising! With the rapid advances in AI, we shall soon see wearable communication devices that are screenless ---but shall let us do much more than smartphones ever could!

AI applications are diverse and ever-expanding, shaping both current and future landscapes across various domains. In the present, AI has revolutionized industries like healthcare, where it aids in diagnostics, drug discovery, and personalized treatment plans. It enhances customer experiences through conversational AI in virtual assistants and chatbots. AI is also instrumental in autonomous vehicles, optimizing logistics and transportation. In the future, AI is expected to play a pivotal role in climate change mitigation, precision agriculture, and sustainability efforts. It will further revolutionize education with personalized learning experiences and will be a driving force behind smart cities, optimizing urban infrastructure. From revolutionizing industries to addressing global challenges, AI holds immense potential to transform societies and redefine how we interact with technology in the coming years.

The evolution of artificial intelligence has been a journey of remarkable breakthroughs. As AI continues to evolve, it holds the promise of transforming industries, solving complex problems, and enriching human lives in unimaginable ways. However, it is essential to approach AI development responsibly, ensuring that it aligns with ethical principles and benefits society as a whole. With each iteration, AI becomes more human-like, fostering ever more exciting possibilities for the future!

Faculty Columns

Photograph by- Prof.(Dr.) Saikat Maity

Power of Visualization

Author :

Prof.(Dr.).Saikat Maity
Professor, Department of CS

Visualization is a powerful tool that harnesses the innate ability of the human mind to create mental images and simulate experiences. From athletes and performers to successful entrepreneurs and artists, individuals across various fields have harnessed the power of visualization to achieve their goals and dreams. This article explores the profound impact of visualization on our thoughts, actions, and overall success, highlighting its significance as a transformative tool in personal and professional development. Visualization is the process of creating vivid mental images or representations of desired outcomes or experiences. By engaging multiple senses, such as sight, sound, and touch, visualization helps us tap into the power of imagination to manifest our aspirations. It involves picturing ourselves in specific situations, vividly experiencing the desired outcomes, and engaging our emotions to enhance the impact. Neuroscience research has provided valuable insights into the effectiveness of visualization. When we imagine ourselves performing an action or achieving a goal, our brain activates the same neural pathways as if we were actually doing it. The brain cannot differentiate between real and imagined experiences, allowing us to leverage this phenomenon to our advantage.Through consistent visualization, we can rewire our brains, strengthening neural connections associated with desired outcomes and boosting our belief in achieving them. Visualization serves as a powerful tool for enhancing performance in various domains. Athletes, for instance, employ visualization techniques to mentally rehearse their movements and optimize their performance. By visualizing success and imagining the steps required to reach their goals, individuals can build confidence, enhance focus, and maintain motivation, ultimately increasing their chances of success.Visualization can also be a valuable tool for overcoming obstacles and developing resilience.

By visualizing ourselves successfully navigating difficult situations or overcoming challenges, we create a mental blueprint for success. This process allows us to build a positive mindset, develop problem-solving skills, and cultivate the belief that we have the resources to overcome adversity. It plays a crucial role in fostering creativity and innovation. By visualizing new ideas, concepts, and possibilities, we stimulate our imagination and expand our thinking beyond conventional boundaries. Visualization enables us to explore multiple perspectives, make connections between seemingly unrelated concepts, and generate fresh insights. Through this process, we can unlock our creative potential and bring novel ideas to life. To harness the power of visualization, it is essential to practice specific techniques consistently. These may include creating detailed mental images, incorporating sensory details, engaging emotions, and employing guided visualization exercises or vision boards. By integrating visualization into daily routines and incorporating it into goal-setting processes, individuals can amplify their results and accelerate personal growth. Whether used for enhancing performance, overcoming challenges, fostering creativity, or achieving goals, visualization offers a pathway to transform aspirations into reality. By harnessing the power of visualization, individuals can shape their thoughts, beliefs, and actions to create a future aligned with their deepest desires.

Photography is an art form that requires technical skill and artistic vision. While understanding the technical aspects of composition and exposure is essential, the ability to visualize the final image is equally important. In this article, we explore how visualization plays a crucial role in applying and interpreting photographic rules, enabling photographers to capture captivating and impactful images that go beyond mere technical correctness.

Pre-Visualization:

Visualization begins before even lifting the camera. It involves mentally envisioning the final image before pressing the shutter button. Pre-visualization allows photographers to see beyond the physical elements and anticipate how various compositional choices, lighting conditions, and subject interactions will translate into a photograph. This process helps create a roadmap for capturing the desired mood, narrative, or emotional impact.

Rule of Thirds:

The rule of thirds is a fundamental principle of composition in photography. Rather than centering the subject, the frame is divided into a 3x3 grid, and important elements are placed along the gridlines or at their intersections. Visualization aids photographers in mentally dividing the scene and placing key elements within the grid, thereby creating balanced and visually appealing compositions.

Leading Lines:

Leading lines are powerful compositional tools that guide the viewer's eye through the image. They can be roads, fences, rivers, or any other linear element within the frame. By visualizing the lines and their trajectory, photographers can strategically position themselves and adjust their perspective to incorporate these lines effectively. Visualization helps photographers see how leading lines can enhance depth, create a sense of movement, or draw attention to a specific subject.

Golden Ratio and Fibonacci Spiral:

The golden ratio and Fibonacci spiral are mathematical principles that often result in aesthetically pleasing compositions. By visualizing these geometric patterns, photographers can incorporate them consciously into their images. Whether it's the positioning of the main subject or the arrangement of supporting elements, visualization aids in understanding how these ratios and spirals can enhance visual harmony and draw the viewer's attention.

Visualizing Light and Shadows:

Visualization is instrumental in understanding how light and shadows interact within a scene. By visualizing how different lighting conditions, such as soft light, golden hour, or dramatic shadows, will affect the image, photographers can make informed decisions about exposure, composition, and the overall mood they want to convey. This visualization process helps create images that evoke specific emotions or highlight particular details.

Emphasizing Depth and Perspective:

Visualizing depth and perspective is essential for creating a sense of three-dimensionality within a two-dimensional photograph. By mentally visualizing the relationship between foreground, middle ground, and background elements, photographers can compose images that have a greater sense of depth and draw the viewer into the scene. Visualization helps determine the placement of subjects and objects to create a compelling visual narrative.

Visualization is an indispensable tool in the world of photography. It goes beyond technical considerations and allows photographers to explore their artistic vision. By visualizing the final image, photographers can apply and interpret various compositional rules effectively, resulting in photographs that are not only technically proficient but also visually captivating. Embracing visualization as an integral part of the photographic process enables photographers to create images that resonate with their audience and convey their intended message with clarity and impact.

Interplanetary Internet: The Future of Space Communication and Exploration

Author :

Dr. Sadip Midya,
Assistant Professor,
Department of CS

The advancement of science has enabled humans to look beyond the boundaries of the Earth, across planetary bodies, galaxies, and celestial bodies. The dream of human colonization on another planet does not seem implausible in today's world. However, a major hindrance towards human colonization on another planet is establishing interplanetary communication. Let's put into perspective, communicating with our friends and family staying in another part of the world, a few decades ago. It seemed like a challenge back then. But now, it is possible at a click of a button with a device which fits right into our pockets. Now, imagine making that communication with a colony on a distant planet like Mars. Scientists all over the world are researching the possibility of bringing into reality, the concept of Interplanetary Internet (IPN). The major issue in establishing interplanetary communication is the enormous distance between Earth and other celestial bodies. Take Mars for instance. The closest distance between Mars and our planet is 54.6 million kilometres, while the farthest is 401 million kilometres. To communicate a signal from Earth to Mars, it takes around 3 minutes and 7 seconds when Mars is closest and 20 minutes and 57 seconds when Mars is farthest.

Currently, the communication is carried through Deep Space Network (DSN) sites located in Goldstone, Madrid, and Canberra. These DSN sites transmit information in the form of very high-frequency electromagnetic waves in the bands of 8 GHz -12 GHz (X-band) and 26.5 GHz-40 GHz (Ka-Band), which are intercepted by planet orbiter satellites such as Mars reconnaissance orbiter (MRO). These planet orbiter satellites then relay the signal to Mars spacecraft such as Mars landers and Mars rovers. These signals have data transmission speeds up to 0.5 megabits to 4 megabits per second.

However, communication with a spacecraft on a distant planet faces numerous challenges, such as the Mars rover falling into a crater or driving off a cliff. To address this, NASA relies on AI programming to control the rover autonomously without the need for constant instructions from Earth.

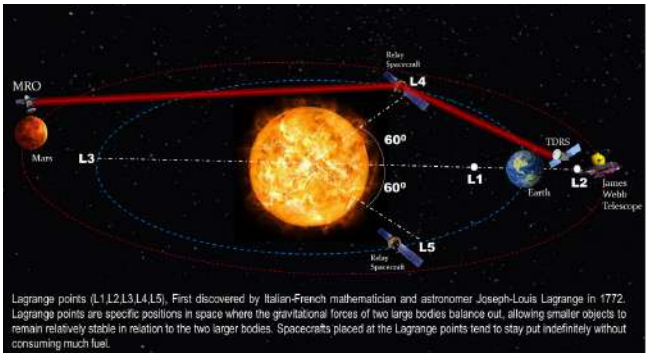
Establishing a similar communication setup for a colony on Mars is a daunting task to achieve due to various factors affecting interplanetary communication. This includes free space loss, a condition where there is a loss of signal power occurring as an electromagnetic wave propagates through free space or vacuum, and attenuation, which is the weakening of a signal's intensity, power, or amplitude as it travels through a medium or propagates over a particular distance. High-frequency signals, experience distortion over long distances. Thus, it requires amplification. The earth's atmosphere is a major factor causing attenuation due to the presence of water vapour and oxygen. Other planets having different atmospheric composition, affects communication differently. Most of the electromagnetic waves like gamma rays, infrared or X-rays, which are emitted from outer space do not reach the earth's surface due to its atmospheric shield. Only radio frequencies in the range of 3kHz-300GHz and Free space optic (FSO) can penetrate the atmospheric layer of the earth.

Free Space Optic or Laser communications is the recent research trend for establishing inter-planetary communication. The possibility to transmit signal from another celestial body to earth via. Laser communication has been proven by the Lunar Reconnaissance Orbiter (LRO). SpaceX primarily relies on laser technology to connect all its satellites in its Star Link network. Low power consumption, higher range and higher bandwidth of Laser communication (FSO) compared to RF make Laser communication the promising technology to serve as a communication medium in inter planetary communication. Thus, the future of inter-planetary Internet lies in Laser communication networks.

Currently, the majority of Laser communications from the earth's surface are carried out from optical ground stations (OGS). One such ground station is built by NASA's Laser Communications Relay Demonstration (LCRD) in Haleakala, Hawaii for carrying out interplanetary communications. In future, these OGS will emit high-frequency lasers, which will be intercepted by Tracking and Data relay satellites (TDRS) orbiting the earth, which will then relay the signal to other celestial body orbiters like LROs and MROs. However, there is a catch when setting up interplanetary laser relay networks between Earth and Mars. Optical Laser communications only allow line-of-sight(LOS), communication. Imagine a situation when the two planetary bodies are placed on either side of the sun. what happens then? The line of sight is interrupted by the position of the only star in our solar system. This is where Lagrange Points comes to the rescue. What are Lagrange points? Well in layman's terms, Lagrange points, named after Italian-French mathematician and astronomer, Joseph-Louis Lagrange, are special locations in space where the gravitational forces of two large bodies, like a planet and its moon, or a planet and the Sun, balance out in a way that allows smaller objects to "hover" or remain relatively stable with respect to the two larger bodies. Space agencies take advantage of these Lagrange points to position their spacecraft, and satellites to serve various purposes, like observing distant stars and galaxies. A very well-known example of the use of the Lagrange point is the positioning of the James Webb telescope, which captured the deepest and sharpest image of the observable Universe. There are a total of 5 Lagrange points (L1, L2, L3, L4 and L5) across any two planetary bodies as shown in the figure (Lagrange points of the Sun-Earth System). The James Webb Space Telescope is placed at position L2, in the Sun-Earth system.

Source- Communication Satellite Orbiting Earth Stock Photo - Download Image Now - Satellite, Outer Space, Orbiting - iStock (istockphoto.com)

Now, coming to our problem at hand, how will these Lagrange points help us in establishing the line-of-sight optical laser communication with Mars when it is placed at the opposite side of the sun, then the earth? Space scientists are envisioning to place optical relay satellites on Lagrange points L4 and L5 in future, to help establish the LOS communication between Earth and Mars. The closest any man-made object reached the Lagrange points L4 and L5 in the Sun-Earth system is the STEREO mission satellites of NASA. Two satellites with the name STEREO-A and STEREO-B were meant to orbit and capture stereoscopic images of the sun. STEREO-A was meant to pull farther ahead of the earth and STEREO-B was meant to fall gradually behind the earth. Both the satellites reached the designated positions at Lagrange points L4 and L5 in 2009, where they encountered a stable environment to capture the first-ever 3D image of the sun. Objects placed at these points orbit the Sun in sync with the Earth, allowing them to be effective relay points to communicate with orbiter satellites placed near Mars or any other planetary body, that would otherwise fall behind the sun.



While significant progress has been made in interplanetary communication, the development and implementation of a full-fledged interplanetary internet will be a complex and ongoing effort. Advancements in space technology, communication protocols, and international collaboration will be critical in shaping the future of the interplanetary internet and its role in advancing space exploration.

Student Columns

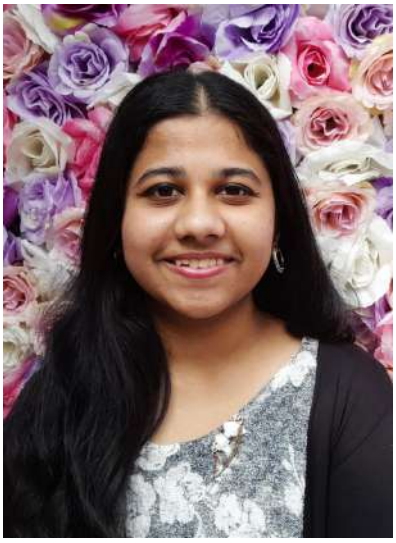
Photograph by- Roop Kumar Chatterjee

Source-https://www.nagarro.com/en/blog/robotic-process-automation-rpa-banking

ROBOTIC PROCESS AUTOMATION

-A CAREER PROSPECT

ARTICLE BY :-



Bijaya Roy | Semester 5 | B.Tech CSE

Robotic process automation refers to the software robots or specifically bots running on a physical or virtual machine.

RPA is all about automating some of the most mundane and reiterative computer-based tasks and processes in the workplace. Just like copying- pasting tasks and moving files from one location to another, for an instance.

RPA automates everyday processes that once needed human action – frequently a great deal of it performed in a rote, time-consuming fashion. That's also how RPA promises to boost effectiveness for organizations.

Three primary reasons why should we consider RPA as a career prospect - Rapid acceptance of RPA across varied industries, the demand-supply gap in experienced manpower, and ease of knowledge and implementation.

Source- canva.com

Driven by the benefits of the technology, numerous MNCs such as Accenture, IBM, Infosys, Deloitte, TCS, Capgemini, and others are using RPA to assure speed and accuracy. As per NASSCOM, most global companies presently have a huge demand for RPA professionals in India. In RPA, there are numerous technical as well as non-technical job tasks such as Process Designer, Automation Architect, Project Manager, Business Analyst, Process SME, and RPA Developer among others to choose from. RPA technology is known for low code/ no code technology. However, there is limited foundational expertise such as problem-working and analytical expertise, knowledge of application development, API integration, and data analytics that you need to learn to launch a career in RPA.

RPA is used by a variety of industries, such as banking, healthcare, and supply chain management. Also, IT companies such as Microsoft have been using it. The trend shows that RPA will be extensively adopted widely in the next five years, creating numerous openings for skilled RPA personnel.

It's estimated that the global RPA market is anticipated to reach USD 10.7 billion by 2027. Talking about the future, it's predicted that over 20,000 RPA jobs will be generated in India from various sources. A part of this can be the result of the initiatives taken in the field of RPA. For example, the “Tech Startup Program”, one of The All- India Council for Robotics and Automation (AICRA) projects, was introduced in 2014. It serves as an incubation terrain for start-ups and other early adopters working in India on robotics and robotic process automation (RPA).

Source- https://www.analyticsinsight.net/automation-vs-robotics-which-is-good-for-your-company/

Source- https://bernardmarr.com/10-amazing-examples-of-robotic-process-automation-in-practice/

According to Harvard Business Review, top operations groups adopting RPA have promised their employees that robotization would not affect layoffs. rather, workers have been redeployed to do more intriguing work. One academic study emphasized that knowledge workers didn't feel hovered by automation they embraced it and viewed the robots as teammates. The same study stressed that rather than performing in a lower headcount, the technology was stationed in such a way as to achieve further work and higher productivity with the same number of people.

Source- https://www.insurancejournal.com/news/national/2022/11/16/695318.htm

DIGITAL TRUST IN THE ERA OF METAVERSE

ARTICLE BY :-

Arpan Mondal| Semester 5 | B.Tech CSE

The Metaverse has been around for decades, but it has gained significant attention recently due to advances in virtual and augmented reality technologies. This is in addition to the integration of the internet into our daily lives. Metaverses are virtual worlds that exist alongside the real world. Users can interact with each other and with digital content in an immersive manner.

"Trust is the foundation of any successful relationship. In the digital world, trust is even more important." - Satya Nadella, CEO of Microsoft

As the metaverse becomes more prevalent, the issue of digital trust becomes increasingly important. In this virtual world, users may be interacting with each other, sharing personal information, and conducting financial transactions, all of which require a high level of trust.

"Digital trust is the foundation for a thriving society." - Eric Schmidt, former CEO of Google

One of the key challenges in establishing digital trust in the metaverse is the lack of a centralized authority. In the physical world, we rely on institutions like governments, banks, and courts to enforce rules and regulations and to mediate disputes. In the virtual world, there is no equivalent authority, and it is up to individual users and organizations to establish trust and resolve conflicts.

"Digital trust is the foundation of the digital economy. It's what enables people to have confidence in the technology they use, and it's what allows businesses to thrive in the digital age." - Jeff Bezos, CEO of Amazon

Source-https://www.ispo.com/en/news-trends/metaverse-revolution-sports-world

One solution to this problem is the use of decentralized technologies like blockchain, which allow for the creation of decentralized autonomous organizations (DAOs) that can serve as a trusted third party for conducting transactions and resolving disputes. These DAOs are run on adecentralized network of computers, and decisions are made by a consensus of participating nodes, rather than a central authority.

Another solution is the use of virtual identity systems, which allow users to create a unique digital identity that can be used to authenticate their identity and establish trust in the metaverse. These systems may use biometric data, such as fingerprints or facial recognition, to verify a user's identity, or they may rely on other forms of authentication, such as passwords or two- factor authentication.

Digital trust can also be established in the metaverse through non-technical measures. Reviews and ratings can build trust between users by allowing others to see what others have experienced. As a result, they can make informed decisions about who they interact with. The availability of clear policies and procedures can also help to build trust by ensuring that users know what to expect.

Source- https://www.expresscomputer.in/guest-blogs/is-metaverse-the-digital-revolution-2-0/96805/

Source- https://www.information-age.com/considering-digital-trust-why-zero-trust-needs-rethink-19939/

"Digital trust is the cornerstone of the digital economy. It is what allows people to share information, transact business, and collaborate with one another." - John Donahoe, CEO of EBay

Ultimately, the key to establishing digital trust in the metaverse is a combination of technical and non-technical measures that work together to create a secure and trustworthy virtual environment. By leveraging decentralized technologies and virtual identity systems, and by implementing clear policies and procedures, we can build a metaverse that is as trustworthy as the physical world.

Source : https://pin.it/7Bifzke

IONIC VS FLUTTER

WHICH IS GAME CHANGING FOR APP DEVELOPMENT?

ARTICLE BY :-

Supratim Sen Sarma | Semester 3 | B.Tech CSE

We know that both Ionic and Flutter is being used for developing apps. We can explore many things from Ionic and flutter before we build an app.

Now coming to the difference between Ionic and Flutter. Ionic framework is basically an open source UI toolkit which is used building high quality apps. We can also create hybrid apps for web, native iOS using this. Now coming to Flutter it is a UI toolkit which is being used for creating beautiful, fast app for websites, mobile & computer with the help of a single programming language DART which was developed by Google.

For programming languages part Ionic mainly uses HTML, CSS, JavaScript and TYPESCRIPT for building applications and Flutter as mentioned above uses DART language developed by Google.

Now discussing the performance for Ionic we can say it gives us excellent performance, but flutter does not give the performance like Ionic.

Now let's talk about the Pros and Con's of using Ionic. Its first Pros includes that it offers the developers a

well-structured documentation, secondly it supports the feature cross-platform deploying the apps on different types of platforms with a single codebase, and thirdly it's very flexible because it can be built on standardized web technologies. This means that it creates an awesome app with the help of just HTML & CSS. The con's of Ionic framework include Security precautions building an app with Ionic framework we will have to consider the Security of both web and native app.

Let us discuss the Pro's and Con's of Flutter Framework. The Pros include firstly it is very time reducing and effort reducing for testing due to the cross-platform feature. This feature allows the testers to not run the same tests on various platforms for the same application, secondly developing in Flutter is very much efficient and fast and thirdly it includes with a single codebase testing and quality assurance takes very less time. The Con's of Flutter framework includes firstly the app size of a flutter app is very much high, secondly it's very new its community support is still growing.

Now it's the time to give a conclusion which is really a game changer for app development and I want to go with Ionic because it is developed with a developer's friendly language while Flutter is limited to DART only. It is also used to develop hybrid apps. That's the reason I chose Ionic Framework over Flutter Framework.

Source : Canva

*Source : https://pin.it/6dugE1g_*

Source : https://pin.it/7lMubL6

AI : BOON TO MEDICAL SCIENCE

ARTICLE BY :-

Kaninika Sen Choudhuri| Semester 7 | B.Tech CSE

The use of artificial intelligence is expanding dramatically across a wide range of businesses, and the medical sector is no exception. It is revolutionizing medical science and bringing about a number of advantages that could greatly enhance patient outcomes and the standard of care they receive.

AI's capacity to enable more precise and rapid diagnosis is a huge benefit in the field of medical science. In just a few seconds, doctors can examine huge amounts of patient data, including medical histories, test results, and imaging scans, using AI-powered tools. Decisions can then be made with greater knowledge, leading to quicker diagnosis and more effective treatment strategies. AI can also

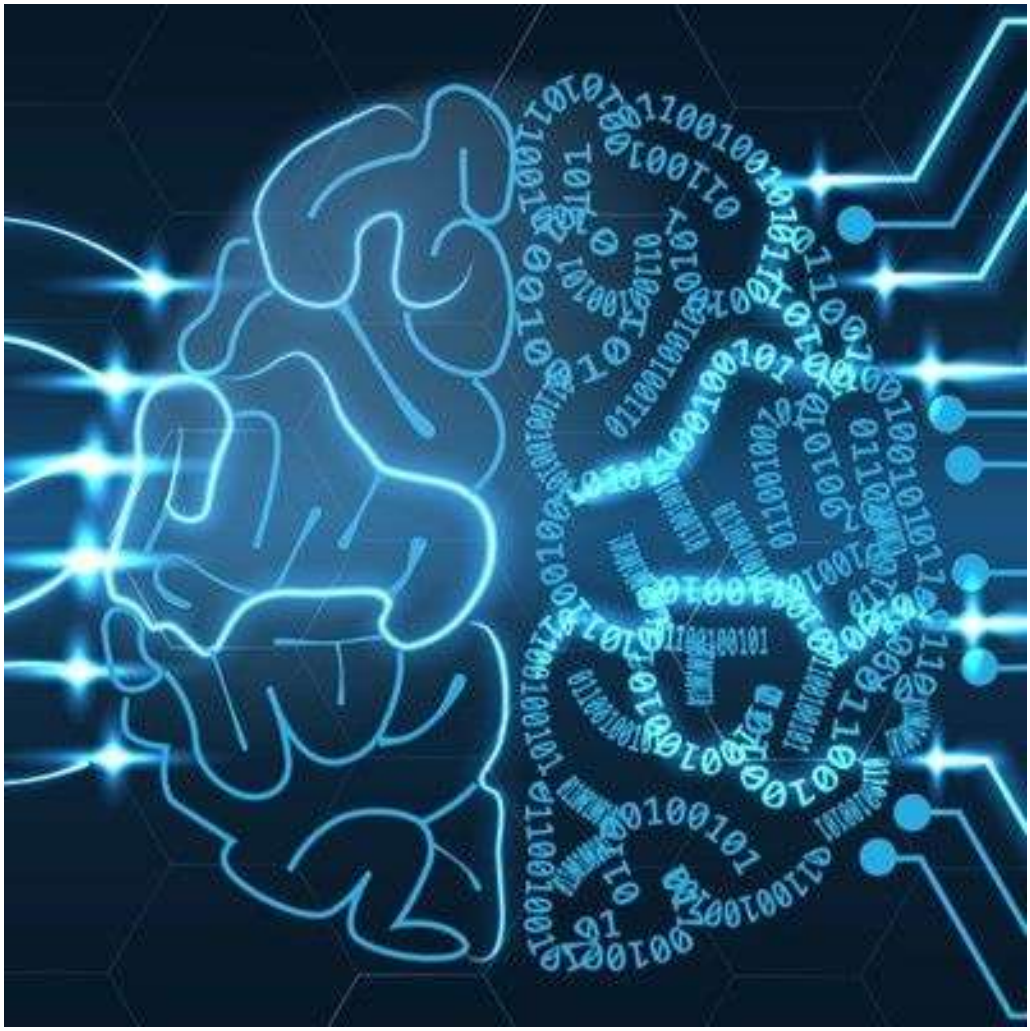
assist in identifying possible health risks before they materialize, giving doctors the opportunity to act quickly and improve patient outcomes.

AI's ability to increase the effectiveness of medical procedures is a significant advantage for the field of medical science. AI-driven chatbots can speed up communication between patients and healthcare professionals, enabling physicians and nurses to address questions and concerns more swiftly. AI can also be used to automate administrative duties like keeping patient data and arranging appointments, giving healthcare personnel more time to focus on patient care.

Also, AI is revolutionizing the field of medical research. AI is hastening the development of new treatments and therapies by enabling the study of enormous amounts of medical data. AI can assist in spotting patterns and correlations in data that people would not notice right away, resulting in more focused research and better therapies.

Notwithstanding these advantages, there are certain worries about the use of AI in medicine. The possibility of bias in AI systems, which could unintentionally support discriminatory practices, is one of the key worries. Although AI mainly relies on data collecting and processing, privacy and security issues with patient data also exist.

In conclusion, artificial intelligence is proving to be a huge boon to medical science, providing a variety of advantages that have the potential to enhance patient outcomes and the caliber of care they get. Although privacy and bias are issues, they can be resolved with careful planning and execution. AI is projected to become more prevalent in the medical industry as it develops, improving patient outcomes and casting a brighter future for healthcare.



Source : https://pin.it/2YBah5q

Source- https://www.shutterstock.com/image-vector/smart-car-hud-concept-empty-cockpit-1033958827

AI DRIVEN CARS

A ROAD TO VEHICULAR AUTOMATION

ARTICLE BY :-

Saswata Deb| Semester 5 | B.Tech CSE

The two elite founders of today's generation of social media, network and research space and satellite communications, Elon Musk, founder of SpaceX has said, "Self-driving cars are the natural extension of active safety and obviously we should do something about it," is genuinely wise and true to describe it. Founder of Facebook, Mark Zuckerberg has said, "If you recognize that self-driving cars are going to prevent car accidents, AI will be responsible for reducing one of the leading causes of deaths in the world." Self-driving cars, also known as autonomous cars or AI-driven cars, provide little or no input operations required from any human driver to take control of the vehicle.

AI-driven cars can combine sensors and various software applications to control, navigate, monitor, and drive the vehicle. The major advantage of using AI-driven cars is to avoid vehicular emissions to increase the temperatures of the earth, resulting in global warming. It avoids using non-renewable sources of energy like carbon materials, fuel consumption from coal, petroleum, diesel, other sources of oil, and so on. In this way, non-renewable sources of energy will be protected from human usage and there will not be much depletion as it is difficult to restore these sources of energy which form back after a very prolonged period of time.

Source- http://surl.li/jaxiw

Soon, AI-driven cars will provide a better algorithm for faster, optimal, and smoother access to traveling to places and choices of destinations in no sooner time. By processing an even faster connection between transport systems, the 5G network will offer new application options advancing the development of autonomous cars. Not only will they be able to make autonomous decisions in the future, but they will also communicate and cooperate. Automated driving is the term used to describe a scenario where a fully interconnected and intelligent road transport system is created as a result of these capabilities known as advanced driver assistance systems (ADAS)

Source- Canva

Source- https://depositphotos.com/243779680/stock-illustration-autonomous-self-driving-automobile-sensors.html

Automated systems reach their limits when unexpected or unknown situations occur. In such a case an "autopilot" will decide to deactivate the system for safety reasons, if in doubt. An the automated car would then return the task and responsibility of driving to the human driver.

However, if the vehicle is not taken over by the driver, or not as quickly as required, then the the car will be moved to the roadside in a secure driving mode. AI-driven cars can provide for Feedback to be taken from customers and human users to help improve customer satisfactions and areas where AI-driven cars can bring better algorithm solutions to driving.

AI-driven cars can help improve vehicular performance by optimizing engine output. It can help reduce the cost of manufacturing and repairing vehicles. In the overall sense, Autonomous vehicles will benefit the economy through fuel efficiency, and the environment through reduced carbon emissions, society through more togetherness, and the legal system through a simpler system of liability

Know Your Clubs

Skepsis Events

SKEPSIS ORIENTATION CEREMONY 2022
Date: 22/10/2022
Number of Attendees: Around 300

The online event was organised by SKEPSIS, the Technical Committee of The Department of Computer Science Engineering at Sister Nivedita University. The event aimed to introduce the students to the Tech communities and announce the upcoming events and opportunities lined up for 2022-23.

SNU GAMING IDEATHON 2022
Date: 9/11/2022
Number of Attendees: 50

The SKEPSIS Technical Committee and the Institutes Innovation Council (IIC) of Sister Nivedita University organized the "SNU Gaming Ideathon 2022" on November 9th. Students presented innovative game development ideas in categories such as learning platforms, Indian culture showcase, and collaborative game labs. The event took place both offline and online at the SNU campus, and the winning teams were 'Shiftux' and 'Scale Up'.

HACK ML 2023: IN COLLABORATION WITH INTEL ONE API
Date: 21/03/2023
Number of Attendees: 50

SKEPSIS and Intel organized a Machine Learning Hackathon, Hack-ML, on March 21st, mentored by Kazi Haque. The hackathon was based on oneAPI SciKit Learn extension and focused on healthcare, finance, computer vision, and open innovation. Participants attended a preparatory workshop at the SNU Seminar Hall. The event offered several prizes, and the winners were TEAM NOOB, DNA - R4, and IFuzzy.exe.

Google Developer Student Club Events

Google Developer Student Clubs
Sister Nivedita University

About the club

GDSC SNU is a Sister Nivedita university based community group for students interested in Google developer technologies. Students from all undergraduate or graduate programs with an interest in growing as a developer are welcome. By joining a GDSC, students grow their knowledge in a peer-to-peer learning environment and build solutions for local businesses and their community.

Students get to Learn about a range of technical topics and gain new skills through hands-on workshops, events, talks, and project-building activities online and in-person.

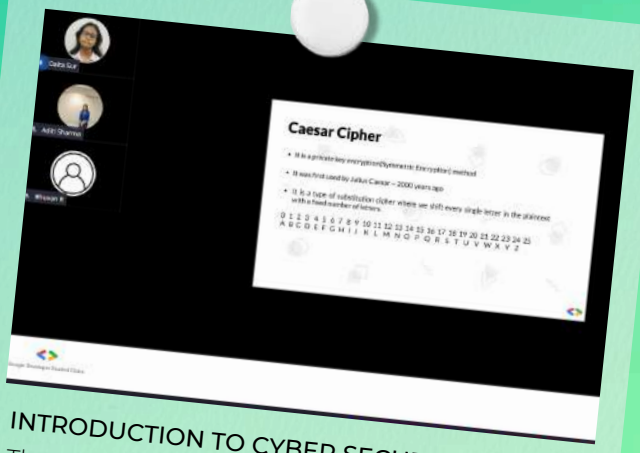
Using the above mentioned skills to Apply new learnings to build great solutions for local problems. Advance your skills, career, and network. Give back to your community by helping others learn.

-From Ankana Chakraborty (GDSC Lead)
& Chimmon Ghosh Pakma (Ex- GDSC lead)

INTRODUCTION TO GDSC SNU:

The aim of the event was to unveil the 2022-2023 roadmap of GDSC SNU, along with the introduction of the GDSC SNU Team Lead for 2022-23, Chimmon Ghosh Pakma by Former GDSC SNU Lead, Soumyadip Mondol. GDSC BWU Lead, Rahul Roy was invited as a special speaker for the event.

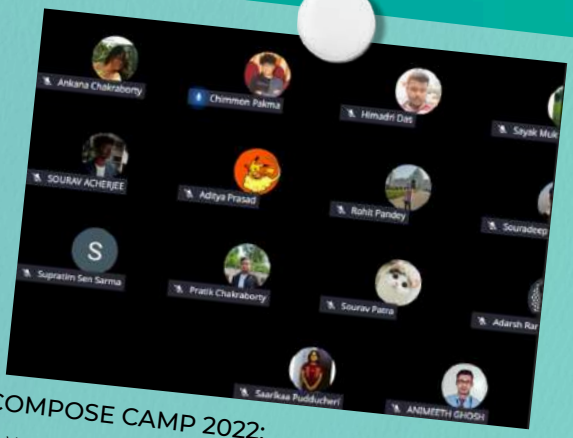
Event Type: Introductory
Date of the Event: 29.08.2022
Number of Attendees: Around 100



INTRODUCTION TO CYBER SECURITY

The event was organized by GDSC SNU in collaboration with GDSC SVCE. It was conducted to help participants explore various cryptographic algorithms, Google Docking and Web Server Hacking along with discussion on the future prospects in the field. The event was conducted by the Cybersecurity Team Lead of GDSC SNU and GDSC SVCE, Daita Sur and Bhuvan respectively.

Event Type: Workshop
Date of the Event: 13.09.2022 |
Number of Attendees: Around 90



COMPOSE CAMP 2022:

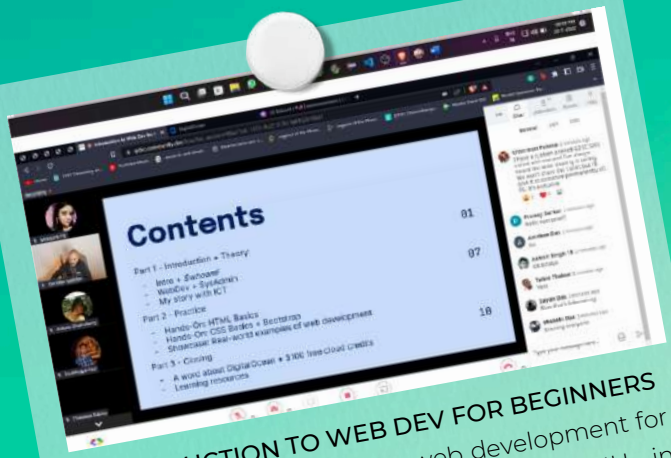
It was conducted by Pratik Chakraborty, the App Development team lead of GDSC SNU, to help enthusiastic participants explore the basics of app development using JetPack Compose. The basics of Kotlin and Android Studio were also discussed. The event took place in 3 sessions. On the final day of the session, Abadi Suryo Setiyo, GDSC Lead at Universitas Gunadarma was invited as a special speaker for the event.

Event Type: Workshop
Date of the Event: 17.09.2022 - 30.09.2022
Number of Attendees: Around 120

SKEPSIS ORIENTATION :

TThe event was organised by SKEPSIS, the Technical Committee of The Department of Computer Science Engineering at Sister Nivedita University, which aimed at introducing the students to the Technical communities of SNU and announce the upcoming events and opportunities lined up for 2022-23. GDSC SNU was presented by Chimmon Ghosh Pakma, Lead of GDSC SNU for the year 2022-23, where the GDSC SNU core team and the upcoming events the chapter has planned for the year 2022-23 were announced.

Event Type: Introductory
Date of the Event: 22.10.2022
Number of Attendees: Around 300



INTRODUCTION TO WEB DEV FOR BEGINNERS

The event "Introduction to web development for beginners" was organised by GDSC SNU, in collaboration with Digital Ocean. The event was conducted by Anik Dutta, The Web Development team Lead of GDSC SNU and Roop Kumar Chatterjee, The Web Development team Mentor of GDSC SNU. Denislav Gavrilov, Senior System Engineer at Luxoff and Contracter of Digital Ocean,was invited as the special speaker for the event. A quiz was held in the end, where the top 3 participants received exclusive digital ocean swags.

Event Type: Workshop
Date of the Event: 20.11.2022
Number of Attendees: Around 300

FLUTTER FESTIVAL:

The "Flutter Festival" event was organised by GDSC SNU. The event was conducted by Kushal Savit Choudhary, The Flutter lead of GDSC SNU. The session aimed at introducing the fundamentals of Google Technologies like Flutter, Dart and Firebase.

Event Type: Workshop
Date of the Event: 19.02.2023
Number of Attendees: Around 100

Newton School Coding Club Events

Sister Nivedita University Chapter

ABOUT THE CLUB

Newton School Coding Club, Sister Nivedita University, or NSCC SNU, est. 2022 is a one-stop destination to code, collaborate and conquer technical domains like web development, app development, competitive coding, UI/UX designing, and many more.

We organize online coding competitions on the amazing NSCC platform, hands-on workshops, seminars with industry veterans and so much more. You can build eye-grabbing projects to build your dream resume with the guidance of amazing mentors and win exclusive NSCC swags through participation and astounding performances in our events and competitions.

The NSCC community strives on spreading knowledge to foster a coding and development culture at Sister Nivedita University and build a peer network that collectively develops themselves to solve real-world problems and build technical progress.

SKEPSIS ORIENTATION

Event Type : Introductory

Date of the Event : 22.10.2022

Number of Attendees : Around 100

The event was organized by SKEPSIS, the Technical Committee of The Department of Computer Science Engineering at Sister Nivedita University. The event aimed to introduce the students to the Tech communities and announce the upcoming events and opportunities lined up for 2022-23. NSCC SNU was presented by Adarsha Haldar, Lead of NSCC SNU 2022-23, where the NSCC SNU core team and the upcoming events the chapter has planned for the year 2022-23 were announced.

NSCC Orientation

Event Type : Introductory

Date of the Event : 24.09.2022

Number of Attendees : Around 100

The event was organized by NSCC SNU. The event was aimed at introducing the leads, team members, and NSCC platform to the audience. A quiz was conducted at the end of the event, where the top 5 participants received exclusive NSCC swags.

Event Type : Introductory

Date of the Event : 24.11.2022

Number of Attendees : Around 100

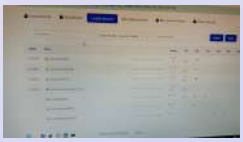
The event involved introducing 1st-year B. Tech CSE students to the NSCC SNU community. It consisted of the team introduction, the various domains, and the introduction to platforms like LinkedIn and Discord. A quiz contest was conducted where the top 3 participants received exclusive NSCC swags.

Monthly Coding Contests

These events are conducted by Newton School for all students across all the chapters of NSCC.
This is based on competitive coding. You can use any programming language to solve problems like C, C++, Python, Java, etc.
You can win exciting cash prizes & exclusive swags from there.

These events were organized every month from September 2022 to May 2023.

Every time around 50 attendees participated and made these events a success.



Workshops

Introduction to Web Dev

This NSCC SNU event (22.12.22, attendees - around 50) was the first one in introducing students of the NSCC SNU community to the details of the web development domain. Technologies such as HTML, CSS and JS were introduced to the attendees by mentors Adarsha Halder and Web team lead Ayush Mondal.

Introduction to UI/UX

This NSCC SNU event (22.12.22, attendees - around 70) was aimed at introducing students of the NSCC SNU community to the details of the UI/UX domain. Basicframeworks and technologies used in UI/UX were introduced to the attendees by Design lead, Swarna Jha.

Thinking Grey Bootcamp

This NSCC SNU event(05.04.23, attendees - around 50) was the first one in introducing students of the NSCC SNU community to the details of Design Thinking: a key aspect in any technological domain. The various participating teams showcased the projects that they have worked on and the top performers were adjudged as winners.

Geeks For Geeks Club Events

About the club

GeeksforGeeks SNU Chapter is a Technical Club in Sister Nivedita University, under the umbrella of SKEPSIS focussing on the Coding aspect of an individual.
Our core team is currently led by Sanmoy Dam and Kajal Jaiswal.

We focus on developing a knack for coding among the students of our department, by organizing Speaker Sessions, Coding Contests, Quizzes and various fun and engaging activities.
Our recent addition to the set of activities is the Monthly Coding Contest. Through these we make students put their coding skills to work in a competitive environment. Thus, providing a great platform not only to improve their skills but also to develop a bent of mind to solve problems in tough situations.

Our aim is to ensure every individual in the Computer Science Department learns to code efficiently in order to upskill themselves in the major domains of CS and IT. In the long run, we aim to build a sustainable coding culture in our university.

orientation

Event name - GeeksforGeeks SNU Chapter Orientation

Date of the event - 29th October, 2022

Number of Attendees - 300+

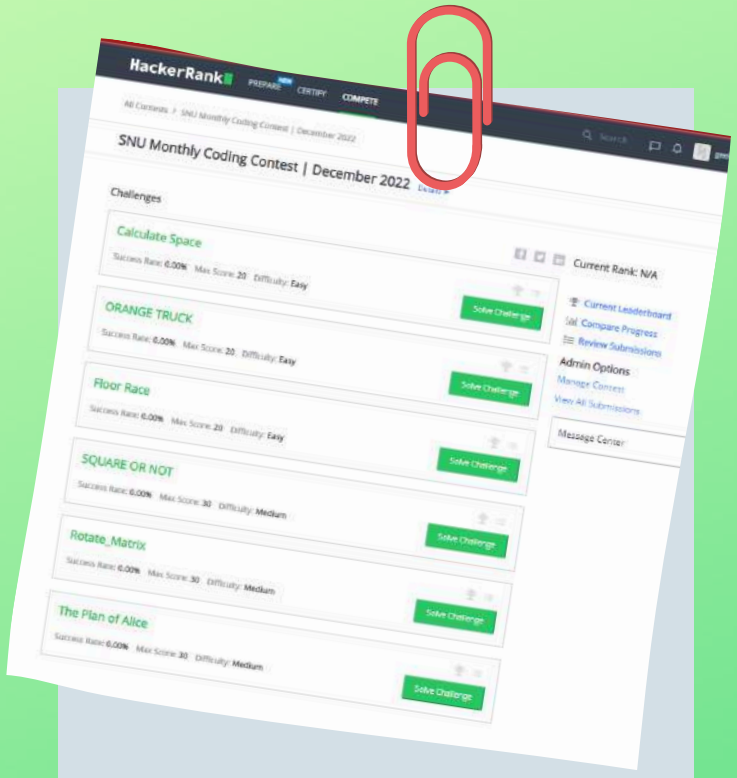
Highlight of the event

GfG Orientation Programme was specially organized for the newcomers in the Univ. The Programme gave them an overall idea about the Chapter, the Leads and at the end, there was also a Quiz session where the Top 15 were the Winners.

GeeksforGeeks Weekly Coding Contest- Week 100th - Special edition

After successful completion of 99 weekly coding contests and helping students for their Interview Preparation. GeeksforGeeks is coming with a Special Edition for the 100th week.

Date of the event - 30th April
Number of Attendees - 70+



Coding contest

GfG SNU Chapter also took an initiative for building a coding environment in the University by initiating a Monthly Coding Contest from the Month of December, 2022. 100+ Students from different years took part in the Contest.

Date of the event - 10th December, 2022

Number of Attendees - 100+

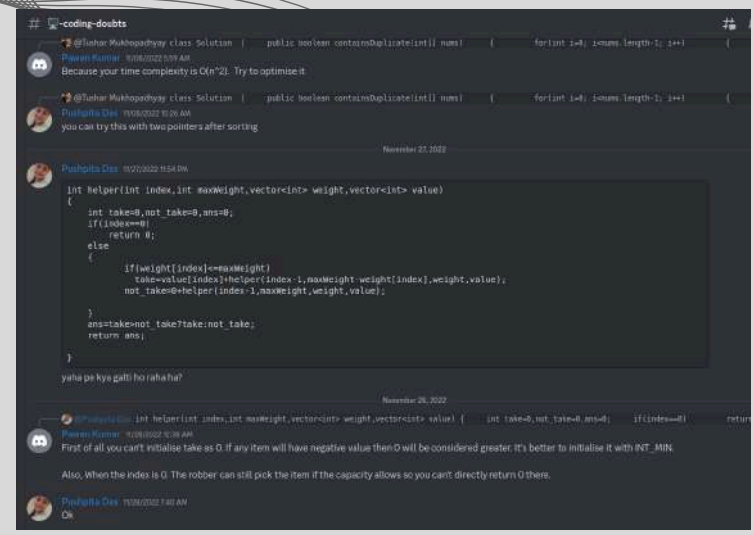
Highlight of the event

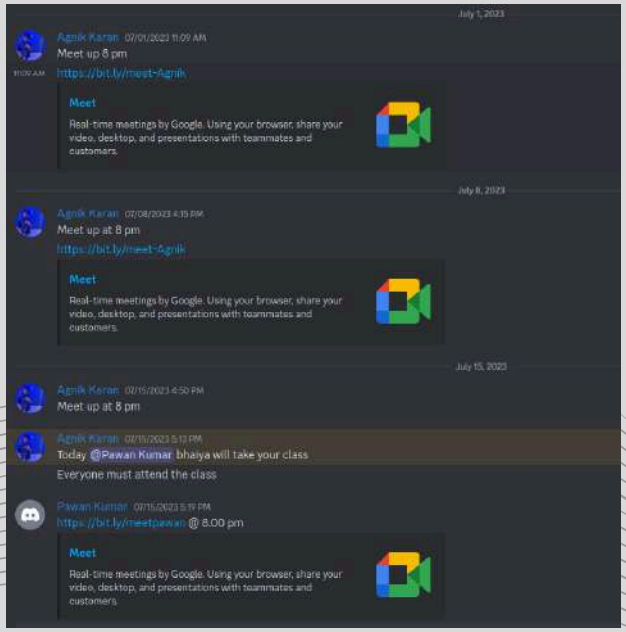
A Coding Contest to improve the Coding Culture in Sister Nivedita University.

The Royal Programming Club Events

Empowering Coders: Introducing the Royal Programming Club (RPC)

Welcome to the Royal Programming Club (RPC), a distinguished online community that fosters knowledge sharing, growth, and camaraderie among coding enthusiasts. Our core focus on Data Structures and Algorithms (DSA) is complemented by regular weekend classes and engaging discussions, creating an ideal environment for honing coding skills. It was Founded by Pawan Kumar and is currently Lead by Agnik Karan.

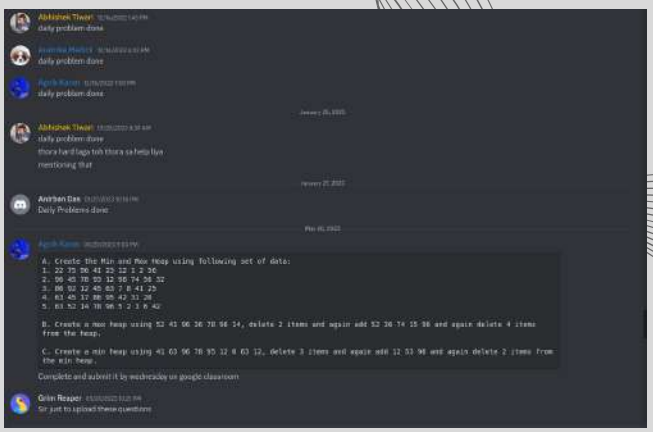




Join RPC - Where Empowerment Meets Excellence:

At RPC, we believe in empowering coders to unlock their true potential. Whether you are a seasoned programmer or just starting your coding journey, our community offers a nurturing space to grow, excel, and thrive.

Coding Doubts:



Unlock Your Potential:

🔍 Entrance Test: Embark on your journey by demonstrating your interest and basic coding skills through our entrance test. Let your passion for coding shine, and we'll welcome you to our exclusive community.

🔍 Professional Networking: Connect with fellow coders, share knowledge, and forge lasting professional relationships that can open doors to new opportunities.

🔍 Continuous Improvement: RPC is a place for continuous learning and improvement. Embrace challenges, seek feedback, and evolve as a coder in a collaborative environment.

The RPC Advantage:

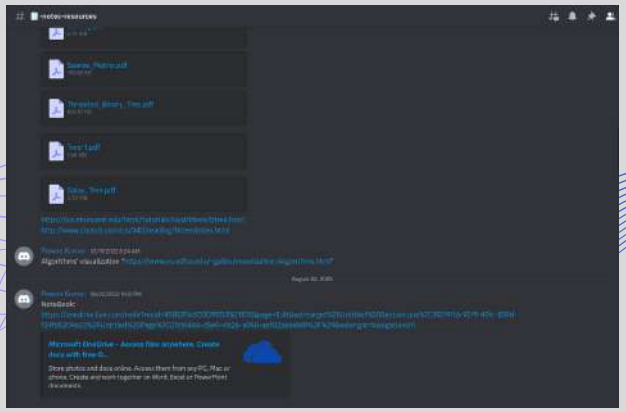
🔹 Structured Learning: Our weekly DSA classes provide a well-organized curriculum, empowering coders to master problem-solving techniques and algorithmic thinking.

🔹 Leetcode Challenges: Embrace healthy competition in our weekly Leetcode challenges, where coders can put their skills to the test and strive for excellence.

🔹 Mentorship & Resources: Our community leaders offer valuable mentorship, personalized assignments, and curated coding resources to help coders maintain a strong Leetcode profile and advance their proficiency.

🔹 Growth & Career Development: At RPC, we are committed to your growth and success. We provide a supportive environment to inspire and propel you toward achieving your coding aspirations.

Notes and Resources



royalprogrammingclub@gmail.com

Crossword

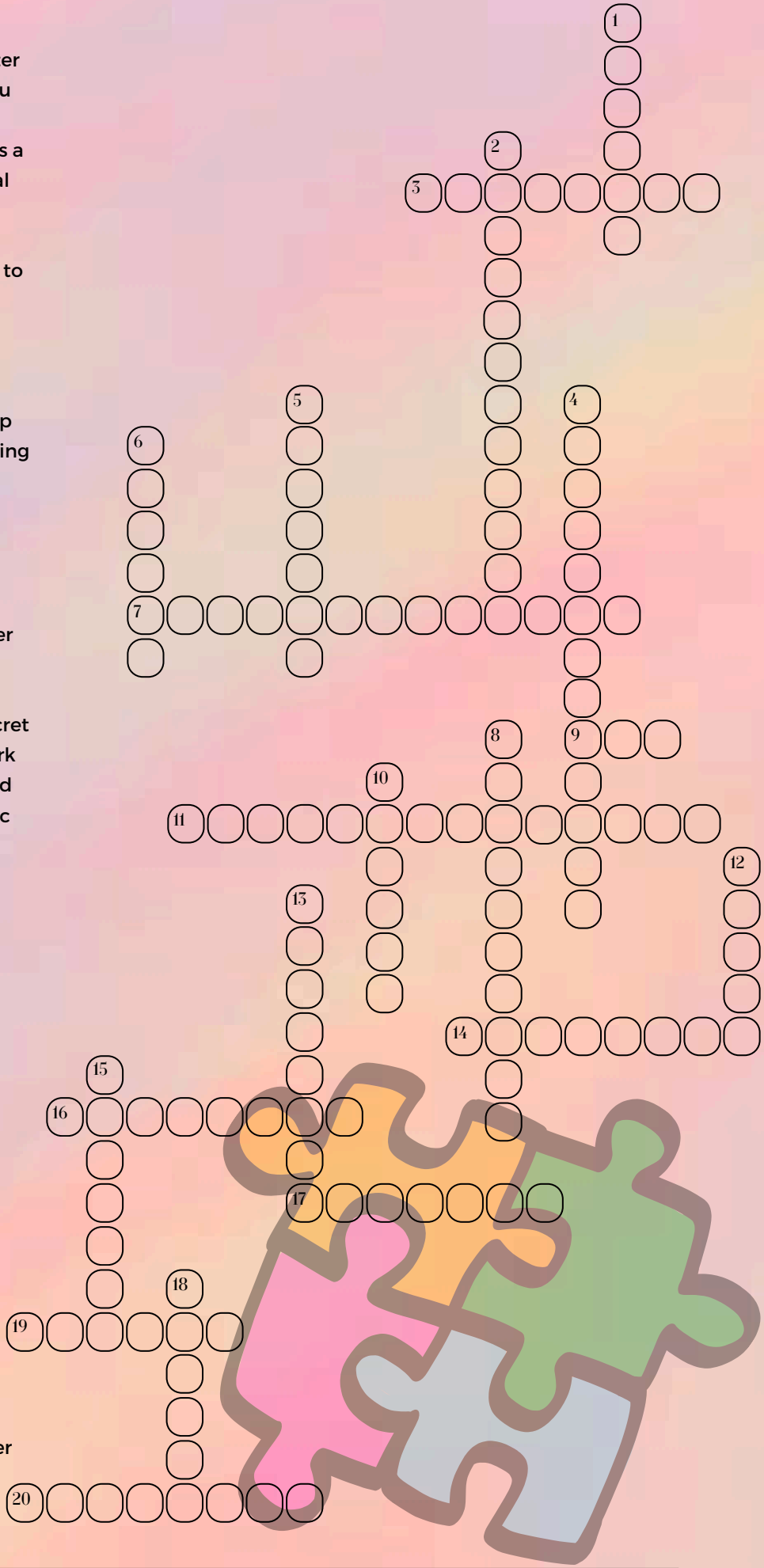
Hints

Across

3. magnetic storage medium for a computer
7. what is it called if people are nasty to you online?
9. it is a plug-and-play interface that allows a computer to communicate with peripheral and other devices
11. the father of computer
14. what is a network security system used to sop unauthorized access
16. a portable computer smaller than a laptop
17. a personal cloud storage device (sometimes referred to as an online backup service) that is frequently used for file sharing and collaboration
19. it indicates the position on the screen
20. a worldwide system of computer networks

Down

1. data sent to you compute by a web server that records your actions on a certain website
2. the process of converting data into a secret code for transmission over a public network
4. a problem in the coding of computerized systems that was projected to create havoc in computers and computer networks around the world at the beginning of the year 2000
5. a computer program sent to gather information from your computer
6. a device that channels the incoming data
8. the act of copying another person's ideas, words, or work and pretending they are your own
10. the electric holding place for instructions and data that your computer's microprocessor can reach quickly
12. a person who posts inflammatory comments or messages in an online community
13. copy (data) form one computer system to another, typically over internet
15. a device that feeds data into a computer such as a keyboard or mouse
18. a large printed picture used for decorations



Edutainment

Quizzer

1. One Petabyte (PB) = 1024 (TB). To put this in perspective, a 50PB hard drive could hold the entire written works of mankind from the beginning of recorded history in all languages.

2. 'Typewriter' is the longest word you can type on a QWERTY keyboard, using only one of the rows on your keyboard.

3. Do you know that you can code using just whitespace? The programming language that makes it possible is called 'Whitespace'. All it takes to write a program in this language is to use the spaces, tabs, and linefeeds. The interpreter ignores any non-whitespace characters.

4. YouTube was created to be a dating site. YouTube.com was registered on February 14th, 2005 (Valentine's Day) to be a video dating site. It was designed as a way for people to upload videos of themselves talking about the partner of their dreams. But after some time when no one was uploading their videos, YouTube changed to allow the uploading of any kind of video.

5. Motorola produced the first handheld mobile phone and their first phone call was to their rival. On April 3, 1973, Motorola researcher, and executive Martin Cooper made the first mobile telephone call from handheld subscriber equipment, placing a call to Dr. Joel S. Engel of Bell Labs (AT&T), his rival.

6. The average computer user blinks just 7 times a minute. It is said weblink seven times per minute instead of the usual 20 when using a computer. Which is why your eyes dry out more while working in front of a monitor.

1.Pierre Omidyar founded which popular online auction company in 1995 out of San Jose, California?

2.In 1999 Shigetaka Kurita invented what keyboard additions for cell phones that would eventually replace emoticons and even get their own movie?

3.What is the name of the bot project designed by the researchers at the Indian Institute of Technology (IIT), Ropar, to deliver medicines and food to COVID-19 patients in isolation wards?

4.What is 'Mayflower 400', which was making news recently?

5. 'Project Kuiper' is a proposed project of which multi-national technology company?

6.Which of the new sign language translator developed by Microsoft?

7.India was affected by the cyber spying campaign called ...?

Answer to the Crossword :

1. Cookie
2. Cryptography
3. Hard disk
4. Millennium Bug
5. Malware
6. Switch
7. Cyberbullying
8. Plagiarism
9. USB
10. Memory
11. Charles Babbage
12. Troll
13. Download
14. Firewall
15. Monitor
16. Notebook
17. Dropbox
18. Poster
19. Cursor
20. Internet

Answer to the Quizzer :

1. eBay
2. Emojis
3. WardBo
4. Artificial Intelligence Ship
5. Amazon
6. KINECT
7. Red October

CREDITS

Coming together is a beginning; keeping together is progress; working together is success.

MAGAZINE COVER ARTWORK

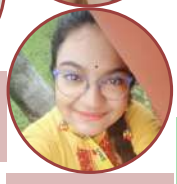
Dr. Debbroto Paul Chowdhury
Assistant Professor, Department of CS

DESIGN TEAM

Dr. Sadip Midya
Assistant Professor, Department of CS

Nirakshi Kundu | 2025 | CSE

Daita Sur | 2024 | CSE



Ankana Chakraborty | 2025 | CSE

Mainak Moitra | 2025 | CSE (AI/ML)

Sankhadip Majhi | 2026 | CSE

PHOTOGRAPHY TEAM

Soumyajit Nag | 2024 | CSBS

EDITOR TEAM

Dr. Indranil Sarkar
Assistant Professor, Department of CS

Bijaya Roy| 2025| CSE

Kushal Savit Choudhary| 2023| CSE

Aratrika Debnath | 2025| CSE

Nirakshi Kundu | 2025 | CSE

Rishu Raj | 2024 | CSE

Adarsha Halder | 2024| CSE

CLUB LEADS & TECHNICAL EVENT COORDINATORS

Ankana Chakraborty (President, Google Developer Student Club)

Chimmon Ghosh Pakma (Ex -President, Google Developer Student Club)

Sanmoy Dam (President, Geeks for Geeks Student Chapter & Ex-president, Skepsis)

Kajal Jaiswal (Vice President, Geeks for Geeks Student Chapter)

Adarsha Halder (President, Newton School Coding Club)

Swarna Jha (Vice-President, Newton School Coding Club)

Pawan Kumar (Founder, The Royal Programming Club)

Agnik Karan (Lead, The Royal Programming Club)

STUDENT SUPPORT TEAM

Arunima Chatterjee(President of Skepsis) | 2025 | CSE

Roop Kumar Chatterjee (Ex- President of Skepsis)| 2023 | CSE

Archisman Ray | 2025 | CSE

Jishnu Ghosh | 2025 | CSE

Arpan Basu | 2025 | CSE (AI/ML)

Ritika Sharma | 2025 | CSE

Saurojit Ghosh | 2024 | CSE

Ayush Mondal | 2024 | CSE

Astha Mishra | 2025 | CSE

Tushar Mukhopadhyay | 2025 | CSE

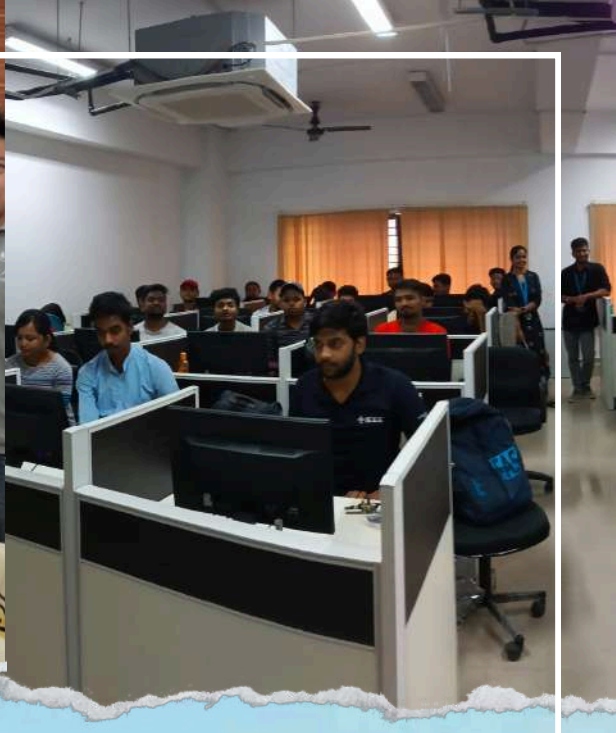
Sneha Prasad | 2025 | CSE

Sayukta Mishra | 2025 | CSE

Daipayan Hore | 2025 | CSE (AI/ML)

Aritra Basu | 2025 | CSE (AI/ML)


SKEPSIS & IIC, SNU
PRESENTS
SNU GAMING
IDEATHON
2022

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