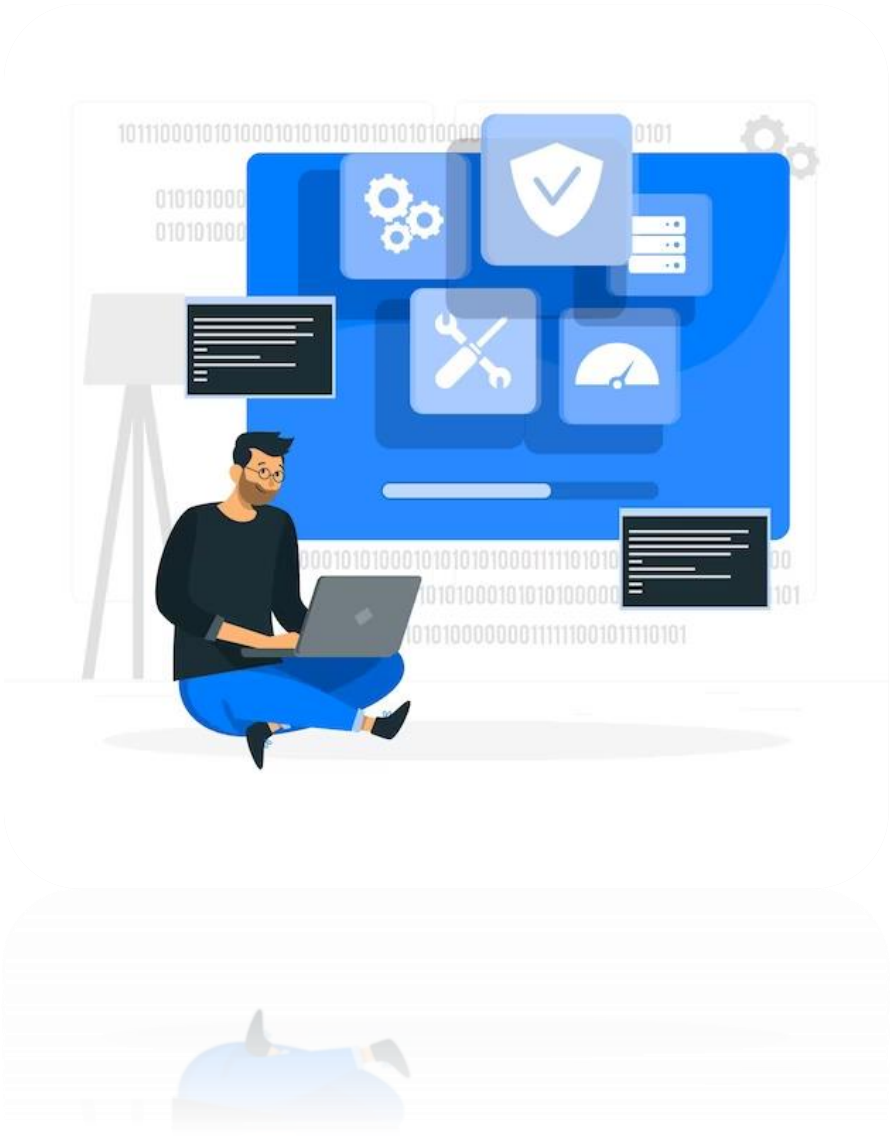
‘BOOT OF COMPUTER’

Best of Outstanding Technology

Department of Computer Science & Engineering Institute of Engineering and Science

IPS Academy, Indore

2020-21



CSE Department Information

Name and address of the department:

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Institute of Engineering and Science, IPS Academy
Knowledge Village

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Head of the Department

Name Of HOD

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PRINCIPAL MESSAGE

Technical Education is the most potential instrument for socio-economic change. Presently, the engineer is seen as a high-tech player in the global market. Distinct separation is visible in our education between concepts and applications. Most areas of technology now change so rapidly that there is a need for professional institutes to update the knowledge and competence.

Institute of Engineering and Science, IPS Academy is a leading, premium institution devoted to imparting quality engineering education since 1999. The sustained growth with constant academic brilliance achieved by IES is due to a greater commitment from management, dynamic leadership of the president, academically distinctive and experienced faculty, disciplined students and service oriented supporting staff.

The Institute is playing a key role in creating and ambiance for the creation of novel ideas, knowledge, and graduates who will be the leaders of tomorrow. The Institute is convinced that in order to achieve this objective, we will need to pursue a strategy that fosters creativity, supports interdisciplinary research and education. This will also provide the students with an understanding and appreciation not only of the process of knowledge creation, but also of the process by which technology and knowledge may be used to create wealth as well as achieve social economic goals.

I am delighted to note that the engineering graduates of this institute have been able to demonstrate their capable identities in different spheres of life and occupied prestigious position within the country and abroad. The excellence of any institute is a measure of achievements made by the students and faculty.

All the Best.

Dr. Archana Keerti Chowdhary
Principal

HOD MESSAGE

Today we find that information technology has become overwhelmingly pervasive, while its parent, computing science, has become correspondingly hard to find. While many CS educational institutions have shifted focus from core CS. This is the single most important attribute of the education offered here. Our department has remained true to the vision on which it was founded. There are several ways to present the canonical core of computer science. Over the years we have developed a distinct style and method that bridges the theory - practice divide while remaining grounded in the core. Technology changes rapidly, especially in the field of computing, whereas the science, if it changes at all, does so much more gradually. 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. Our Department has produced hundreds of professionals and has established a name for itself in the country and abroad. They have consistently excelled in the highly competitive industrial environment, Best Employer/ awards in top-ranking companies. I attribute this success to the winning combination of a dedicated faculty that works hard at imparting quality education, a well-planned syllabus and last but not the least, our students. 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. We believe that this approach to teaching-learning, coupled with practical experience gained during Industrial Training in reputed organizations, equips our students to handle the challenges posed by the software industry.

Dr. Namrata Tapaswi
HOD, Computer Science Engineering
IPS Academy, Institute of Engineering & Science

Vision & Mission of the Department

Vision

Attaining global recognition in computer science and engineering education, research and training to meet the growing needs of the industry and society.

Mission

Provide quality undergraduate and postgraduate education, in both the theoretical and applied foundations of computer science, and train students to effectively apply this education to solve real-world problems, thus amplifying their potential for lifelong high-quality careers.

Programme Education Objectives

The educational objectives of the Computer Science & Engineering programs are as follows:

1. To prepare students for successful careers in software industry that meet the needs of Indian and multinational companies.

2. To develop the skills among students to analyze real world problem & implement with computer engineering solution and in multidisciplinary projects.

3. To provide students with solid foundation in mathematical, scientific and engineering fundamentals to solve engineering problems and required also to pursue higherstudies.

4. To develop the ability to work with the core competence of computer science & engineering i.e. software engineering, hardware structure & networking concepts so that one can find feasible solution to real world problems

5. To inseminate in student's professional and ethical attitude, effective communication skills, team work skills, multidisciplinary approach, and an ability to relate engineering issues to broader social context.

6. To motivate students perseverance for lifelong learning and to introduce them to professional ethics and codes of professional practice

Programme Outcomes

An engineering program defines a set of specific program outcomes that relate to its educational objectives, including the items a-k listed below. We regularly review the courses in our curriculum to make sure that all these items are covered, and try to measure whether our students are successfully attaining the following goals:

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, 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

History Of Department

The Department of Computer Science & Engineering was established in the year 1999 offering Bachelor of Engineering (BE) with intake 60, it was increased to 120 in year 2012 and again intake was increased to 180 in year 2014. The programme is intended to educate students on the applications of scientific knowledge for practical purposes involving activities like modeling, analysis, design and other associated fields of core courses in Computer Science & Engineering education. It intends to equip graduates with profound theoretical knowledge and rich hands on **Attaining global recognition in computer science and engineering education, research and training to meet the growing needs of the industry and society**

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Department Faculty Details

 Dr. Namrata Tapaswi Professor	 Dr. Neeraj Shrivastava Assistant Professor	 Dr. Nitin Jain Assistant Professor	 Dr. Dharmendra Yadav Associate Professor
 Dr. Pratik Gite Assistant Professor	 Dr. Vaishali Gupta Assistant Professor	 Dr. Prateek Nahar Assistant Professor	 Dr. Dharmendra Choukse Assistant Professor
 Mr. Arvind Updhyay Assistant Professor	 Ms. Nisha Bhalse Assistant Professor	 Mr. Deepak Shukla Assistant Professor	 Ms. Angita Hirwe Assistant Professor

 Mr. Sourabh Jain AssistantProfessor	 Mr. Ved Kumar Gupta Assistant Professor	 Ms. Barkha Sahu Assistant Professor	 Mr. Pratik Jain Assistant Professor
 Ms. Anjali Verma Assistant Professor	 Mr. Yagyapal Yadav Assistant Professor	 Mr. Vijay Choudhary Assistant Professor	 Mr. Indra Kumar Shah Assistant Professor
 Mr. Sunil Nimawat Assistant Professor	 Ms. Nitu Mathuriya Assistant Professor	 Mr. Pankaj Pateriya Assistant Professor	 Ms.PriyankaVijayvera Assistant Professor

 Mr. Sumit Devray Assistant Professor	 Ms. Neha Yadav Assistant Professor	 Mr. Vishal Chhabra Assistant Professor	 Mr. Ashish Sharma Assistant Professor
 Ms. Shefali Aggrwal Assistant Professor	 Mr. Somil Neema Assistant Professor	 Mr. Neeraj Mehta Assistant Professor	

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APPLICATION OF CS IN REAL WORLD

Doubtless to say that computer science has penetrated into each and every aspect of our lives and, obviously, medical field is not secluded in this regard. Storage of huge amounts of data and expedient processing of information have made computers the warp and woof of the whole world. When it comes to medicine, a huge corpus of information is required to be kept. They are an important factor behind the successful functioning of not only large hospitals, but also small clinics. Patient-related data, record-keeping, X-rays, report-production, operation, database, prescription are only some of the various arenas in this field which are directly related to computer science. Infact, most of the medical-related equipments are, nowadays, have mini-computer programmes attached to them. The most recent implication of computer science can also be seen in the way the government has tried to create a Health ID for everyone to ensure that the history of hospital details of patients can be maintained. This is expected to make the whole procedure much easier for doctors and patients. It is also slated to help the government to reach the needy easily and on time. It has the potential to make the whole health program more robust. The thing to be noticed is that the whole programme is based on computer science. Had computer science not been there, no one would have been able to even think about all this.

Besides, the government schemes, campaigns, missions etc. related to health are all, completely, based on computer science. Thus, computer has, clearly, become sina qua non of medical field. Even the simplest task of any discipline (not only computer science) is closely related to computer science.

Though computers are a boon for the medical field, everything comes with its own pros and cons. For instance, computers cannot make decisions like humans and are not sensitive like human brain. Data entry poses another spanner which can be a cumbersome task for medical professional. Another major obstacle is virus which has the potential to destroy program files, data files and efface all data from hard disc. Despite the availability of anti-virus softwares, viruses can’t be completely eliminated with the emergence of new viruses. Moreover, hacking is another obstacle to face which is a threat to privacy and can lead to loss of huge amounts of money in ransom.

Nevertheless, computers are very essential and there is an urgent need for ensuring computer awareness among medical professionals so that the benefits can trickle down to the grassroots levels. The current pace of their establishment doesn’t match up with the apparent need for clinical computing systems.

0808CS201008

Abhijeet Anand

APPLICATIONS OF COMPUTER SCIENCE IN THE MILITARY

Computer Science is omnipresent in today's world. Each and every field has an element of computer science associated with it. Military cannot be an exception. Computer Science with its countless benefits is an integral part of the military system and both cannot be separated in today's world. We need to incorporate computer science in the various aspects of military in order to make the country a more secure place to live in.

Computer science is, obviously, going to pervade the whole military structure in the near future and its role at present, is already substantially high since it provides a legion of benefits ranging from expeditious transfer of information and communication, besides timely decision making. And the matter of speedy procedure is imperative with regard to the security of a nation where we cannot afford to waste even a single second. Keeping database for army personnel's regarding their salary, wages, uniforms, food and for various other tasks, monitoring the borders with advanced facilities like satellites, developing state of the art weapons e.g. missiles using GPS system, on-field real-time information using drones, are all fundamentally based on the principles of the discipline of computer science. Moreover, one should not forget the importance of computers in military research with the latter forming a very important part of security.

Besides, rugged computers are, quite, pertinent in military field since they can be used in the harsh-usage environments like extreme temperatures, wet or dusty condition. Computers meant for military purpose have optimized size-weight and power, therefore, making them more apt for military use. Another important factor is performance-per-watt of power and cooling.

Computer-literate soldiers are must for military in order to avail all the benefits which accrue from using computer science. But, there are problems associated with it as well. The security of country can be at stake at times as hacking is still a grave and insidious problem to which solutions exist but their efficacy is questionable. Thus, there is a strong need to ensure that computer science is made more intricately connected to military but that should happen keeping in mind all the contingencies especially those related to information leak.

0808CS201029

Anand Mandloi

BLUE EYES TECHNOLOGY

Have you ever thought about what will happen if our smart phones, tablets, and computers acquired the ability to sense our emotions? Imagine a world where machines can identify us, feel our presence, and interact with us the way we interact with each other. All these things will soon be a part of the world we are living in and will be achieved with the help of Blue Eyes technology. Blue eyes technology has been conducted by the research team of IBM at Almaden Research Center (ARC) in San Jose, California since 1997. It is an amalgamation of both hardware and software technologies with the help of which we can build machines having human-like sensory and perceptual abilities. In Blue eyes technology, Blue stands for Bluetooth which depicts a wireless and reliable mode of communication and helps in creating a PAN (Personal Area Network) for linking various components of the Blue Eyes devices, and Eyes that help us perceive the world and obtain interesting information. Blue eyes technology works on Artificial Intelligence. It aims to give human abilities to a computer. A research team of IBM has come up with this technology to make a computer understand and sense human feelings and behavior. The aim of the blue eyes technology is to give human power or abilities to a computer so that the machine can naturally interact with human beings as humans interact with each other, through speech, facial expressions and touch.

All these perceptual capabilities are embedded in the gadgets using the Blue Eyes Technology. This shows how far science and technology can progress and develop. The Blue eyes technology identifies human emotions using image processing techniques by extracting eye portion from the captured image and compares it with the stored images in the database. This high-end technology facilitates the computers to talk, listen and feel our presence with various tools of artificial intelligence like face recognition, fingerprint, and video calls etc. This technology is used to simplify life by providing user-friendly facilities. It also helps in reducing the gap between the computer and human. Hardware used in Blue Eyes Technology:

The Blue Eyes technology has two main hardware components –

1. Data Acquisition Unit (DAU)

2. Central System Unit (CSU).

Data Acquisition Unit's main objective is to acquire data with the aid of numerous sensors such as beepers, LCD screens, LED indicators, etc., and to transfer all that data to CSU with the help of Bluetooth. It uses Atmel 89C52 as its principal component. The Central System Unit's task is to analyze and process the data sent by DAU. It also performs access verification and system maintenance.

Software used in Blue Eyes Technology:

The software present in a Blue-Eyes device continuously monitors the conditions of the surroundings. When the conditions change, the software performs real-time analysis of the incoming data and triggers several operations based on the captured data.

The connection manager manages wireless communication between Data Acquisition Unit and Central System Unit. The physiological conditions of the user received by the sensors are analyzed by the Data Analysis module. The Visualization module acts as a UI for the superiors and helps them to watch the physiological condition of the user with a preview of the audio and video streams.

Blue Eyes Devices

The devices used for collecting the information in this technology are as unique as the technology itself. These are specially designed to obtain a plethora of data through touch, perception, hearing, etc. Some of the devices used in this technology are:

Emotion Mouse (For Hand) Emotion mouse is an input device that looks like a conventional mouse but it serves the purpose of evaluating the emotions of the user. It has pressure, photo, temperature, and GSR sensors that can classify a user's emotions into different categories like - fear, surprise, anger, sadness, happiness, disgust, etc. while the user is interacting with the computer.

Sentic Mouse

Sentic mouse is also an extension to computer mouse having directional pressure sensors giving conventional mouse the ability to measure emotional valence i.e. to sense attraction or avoidance for objects present on the computer screen.

Expression glass (For Eyes)

Expression glasses are wearable devices that help in determining what the user is interested in at a particular time by analyzing the interaction between user and computer. These glasses remember what the user is watching and also catch the facial expressions of the user at that time. Combining that visualization with the emotion of the user gives the level of interest a user has for that thing. One of its prototypes used piezoelectric sensors.

Blue eyes applications in real life

The Technology can be used in automobiles for simple touch computer devices. Electric power stations for sensing the measures of current. Generic control rooms use this technology for sensing. Used for flight communication and control purposes for accurate voice transmission.

0808CS201014

Abubakar Siddique.

CRYPTO CURRENCY

Cryptocurrency is basically a decentralized digital and virtual currency which is not regulated, monitored or controlled by any supervising authority. The only thing that upholds our integrity is cryptography and blockchain technology. And this is exactly where crypto currency and technology comes together, through blockchain.

Blockchain and cryptocurrency, being two very different technologies, are very deeply intertwined and the digital money is able to function because of blockchain. Blockchain also developed further with the popularity of crypto even though it is used in many other areas. Blockchain is a collection of blocks, i.e., digital information that is stored across various computers to form a database. When transactions through crypto take place, they are added to these blocks which later on form a chain. These chains are protected and are difficult to manipulate. Many experts claim that blockchain technology has the power to change our lives in significant and multi-dimensional ways. It has potential for much more than just crypto and it is an innovative and miraculous way of storing data. It ensures then authenticity and protection of data and one of the most impactful uses we could attain out of it is as simple as storing sensitive yet personal data.

There are hardly a couple of things which attracted as much attention as the coronavirus and Cryptocurrency was surely one of them. With the first Cryptocurrency being introduced in 2009, the very famous Bitcoin, very few people knew or as much as cared about them. Then one day suddenly, the world was after these decentralized digital currencies and we could literally look at 800% surge in even satiric and 'joke' coins (read DOGE).

A person who had invested in these as a part of some truth or dare game was now a millionaire and every newspaper had the same headline. A new trend was here and it was not some dance or meme, but a Laxmi chit fund-sure shot-in a whip way of becoming rich, only difference being, this was actually legit.

Does this not seem too good to be true? Why don't people buy 20$ worth of these coins, get rich and end poverty? Because these supposedly new age replacement for real, normal, everyday money were not really so. In Jan 2021, all these crypto currencies crashed leading to $134B losses. How did this happen? The distrust of governments and unstable market were the main culprits to blame. However, this opened investor's eyes and the bitter truth of investment was realised yet again, that loss and gain are the two sides of the same coin.

Yes, Cryptocurrency is an excellent investment opportunity and could be the boon for our generation or until the next quick money option emerges, but it comes with equally high-

risk factors. With no regulatory body or no nodal authority, it is just a peer-to-peer network of transactions and the anonymity worries government and people alike. As of now, crypto can more easily be used for criminal activities rather than daily life transactions. With more developments, maybe a new age of virtual cash could come with crypto as safe as rupee and dollar, but today with the ever-fluctuating rates and such vague nature, further huge advancements are necessary.This tug of war situation is a part of the journey and at the end either Cryptocurrency will be a revolutionary idea or just a primitive prototype of virtual currency which taught quite a few lessons.

0808CS201033

Ankita Jain

CYBER SECURITY AND IT'S SHORTCOMINGS IN THE PANDEMIC

Look around today's world, and you'll see that daily life is more pendent on technology than ever before. The benefits of this trend range from near-instant access to information on the Internet to the modern conveniences provided by smart home automation technology and concepts like the Internet of Things. With so much good coming from technology, it can be hard to believe that potential threats lurk behind every device and platform. Yet, despite society's rosy perception of modern advances, cyber security threats presented by modern tech are a real danger. According to Forbes, 2022 will present us with a pack of diverse and terrifying cyber security challenges, everything from supply chain disruption to increased smart device risks to a continued cyber security talent drought. According to Cybercrime Magazine, cybercrime will cost the world $10.5 trillion annually by 2025. With advances in technology, cybersecurity is not an option it has become a necessity. Cyber security is a discipline that covers how to defend devices and services from electronic attacks by nefarious actors such as hackers, spammers, and cybercriminals. A strong cybersecurity strategy can provide a good security posture against malicious attacks designed to access, alter, delete, destroy or extort an organization's or user's systems and sensitive data. Cybersecurity is also instrumental in preventing attacks that aim to disable or disrupt a system's or device's operations.

Maintaining cybersecurity in a constantly evolving threat landscape is a challenge for all organizations. Traditional reactive approaches, in which resources were put toward protecting systems against the biggest known threats, while lesser-known threats were undefended, are no longer a sufficient tactic. To keep up with changing security risks, a more proactive and adaptive approach is necessary. Several key cybersecurity advisory organizations offer guidance. For example, the National Institute of Standards and Technology (NIST) recommends adopting continuous monitoring and real-time assessments as part of a risk assessment framework to defend against known and unknown threats. Cyberthreats take many forms, some of which are: Malware is a form of malicious software in which any file or program can be used to harm a computer user. This includes worms, viruses, Trojans, and spyware. Ransomware is another type of malware. It involves an attacker locking the victim's computer system files -- typically through encryption -- and demanding a payment to decrypt and unlock them.

Social engineering is an attack that relies on human interaction to trick users into breaking security procedures to gain sensitive information that is typically protected. Phishing is a form of social engineering where fraudulent email or text messages that resemble those from reputable or known sources are sent. Often random attacks, these messages intend to steal sensitive data, such as credit card or login information. Spear phishing is a type of phishing attack that has an intended target user, organization, or business. Insider threats

are security breaches or losses caused by humans -- for example, employees, contractors, or customers. Insider threats can be malicious or negligent in nature.

Distributed denial-of-service (DDoS) attacks are those in which multiple systems disrupt the traffic of a targeted system, such as a server, website, or other network resources. By flooding the target with messages, connection requests, or packets, the attackers can slow the system or crash it, preventing legitimate traffic from using it.

Advanced persistent threats (APTs) are prolonged targeted attacks in which an attacker infiltrates a network and remains undetected for long periods of time with the aim to steal data. Man-in-the-middle (MitM) attacks are eavesdropping attacks that involve an attacker intercepting and relaying messages between two parties who believe they are communicating with each other.

Cybersecurity is continually challenged by hackers, data loss, privacy, risk management, and changing cybersecurity strategies. The number of cyberattacks is not expected to decrease in the future. Moreover, increased entry points for attacks, such as with the arrival of the internet of things (IoT), increase the need to secure networks and devices. One of the most problematic elements of cybersecurity is the evolving nature of security risks. As new technologies emerge, and as technology is used in new or different ways, new attack avenues are developed. Due to the pandemic, millions have been forced into remote work all around the world. From education at schools and colleges to work at huge MNCs, everything shifted online, creating major opportunities for cybercriminals. The negative cybersecurity impacts of these online changes have led many experts to summarize the events as a growing “cyber pandemic.” Criminals quickly picked the ideal strategy to take advantage of the pandemic and the confused people: phishing, internet frauds, and spreading fake news. Already at the beginning of the pandemic, in May 2020 the number of coronavirus-related cyber-attacks increased from just a few hundred to over five thousand a day.

Healthcare organizations and banks became the major target of cyber-attacks. This is particularly problematic due to the significant functions performed by both institutions, and the amount of personal data stored in both institutions. Leakage or theft of such confidential information could end in a tragedy for the victims. The business sector too experienced a significantly increased number of attacks with a shift to online mode. Not only that, cybercriminals have been trying to exploit people’s heightened levels of reasonable concern around COVID-19, trying to promote misinformation and scam people out of their money or personal data. Nevertheless, cyber-attacks have been prevalent regardless of the situation in the world.

0808CS201055

Chaitanya Arora

CYBERBULLYING

Cyberbullying is a form of online bullying or harassment that occurs over digital devices and platforms. With the widespread use of technology and the anonymity that comes with it, cyberbullying has become more frequent and prevalent. Hidden behind their computer or mobile screens, people don't hesitate in harassing others. This can be clearly seen in the increase in suicide cases due to online bullying. From time to time we even see celebrities facing online trolls and bullies. A recent study by CRY (Child Rights and You), a non-governmental organisation, shows that around 9.2 per cent of 630 adolescents surveyed in the Delhi-National Capital Region had experienced cyberbullying and half of them had not reported it to teachers, guardians or the social media companies concerned. Nationwide, according to research conducted by Symantec, nearly 8 out of 10 individuals are subject to the different types of cyberbullying in India. Out of these, around 63 per cent faced online abuses and insults while 59 per cent were subject to false rumours and gossip which became responsible for degrading their image. The same study ranks India as the country facing the highest cyberbullying in the Asian Pacific region.

Cyberbullying can occur in several forms such as sending, posting, or sharing negative, harmful, false or mean content about someone else. It can include sharing personal or private information causing embarrassment or humiliation. Although it may be difficult to understand how some text on a screen can affect a person drastically, cyberbullying can lead to trauma and various mental health issues. It becomes important to understand that unlike face-to-face bullying one cannot escape such an incessant, insistent and brutal form of torture. It can continue at any time, throughout all hours of the night.

Cyberbullying leaves little opportunity for victims to defend themselves. There are no teachers or parents to see, intervene to put a stop to it. Cyberbullying can also be anonymous, leaving the victim little recourse to even report the bully to an authority figure. The anonymity of social media emboldens people and their hurtful words are left forever on the internet for everyone to watch and read. Blocking or reporting them is not a solution when a new account can simply be created. Even if what is said or posted is false, people tend to believe anything they see online. Thus, cyberbullying can be more detrimental, distressing and damaging to a person.

One of the major weapons to fight against cyberbullying is to create tough and strong laws against it. It becomes even more important to create awareness among youngsters about this issue and such laws so that they can take appropriate measures in times of need. In India, although there is no specific legislation that has provisions against cyberbullying, certain sections in the Indian Penal Code (IPC) deal with cyberbullying in a way. Section 67 of the Information Technology (IT) Act prescribes punishment for publishing or transmitting obscene material in electronic form. Section 507 of the IPC states the punishment for criminal intimidation through anonymous communication while Section 66 E of the IT Act prescribes punishment for violation of privacy.

There are hardly a couple of things which attracted as much attention as the coronavirus and Cryptocurrency was surely one of them. With the first Cryptocurrency being introduced in 2009, the very famous Bitcoin, very few people knew or as much as cared about them. Then one day suddenly, the world was after these decentralized digital currencies and we could literally look at 800% surge in even satiric and 'joke' coins (read DOGE). A person who had invested in these as a part of some truth or dare game was now a millionaire and every newspaper had the same headline. A new trend was here and it was not some dance or meme, but a Laxmi chit fund-sure shot-in a whip way of becoming rich, only difference being, this was actually legit.

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With the increase in dependency on electronic devices, it becomes important to teach people the proper 'netiquettes'. Parents have an important role to play in monitoring their child's behaviour and activity on the internet. It is also important for schools and educational institutions to have strict guidelines against such behaviour and to provide counsellors to aid the students. Stringent laws need to be made to help ensure that such behaviour doesn't go unpunished. Social media platforms must be held responsible and should have the means to report and prevent harassment and bullying.

0808CS201085
Harsh Tiwari

DATA PRIVACY

Data privacy, sometimes also referred to as information privacy, is an area of data protection that concerns the proper handling of sensitive data such as certain financial data and intellectual property data, to meet regulatory requirements as well as protecting the confidentiality and immutability of the data. Roughly speaking, data protection spans three broad categories, namely, traditional data protection (such as backup and restore copies), data security, and data privacy . Ensuring the privacy of sensitive and personal data can be considered an outcome of best practice in data protection and security with the overall goal of achieving the continual availability and immutability of critical business data.

What are some of the most important technologies for data privacy? Encryption is a way to conceal information by scrambling it so that it appears to be random data. Only parties with the encryption key can unscramble the information.

With the increase in dependency on electronic devices, it becomes important to teach people the proper 'netiquettes'. Parents have an important role to play in monitoring their child's behaviour and activity on the internet. It is also important for Access control ensures that only authorized parties access systems and data. Access control can be combined with data loss prevention (DLP) to stop sensitive data from leaving the network. Two-factor authentication is one of the most important technologies for regular users, as it makes it far harder for attackers to gain unauthorized access to personal accounts. These are just some of the technologies available today that can protect user privacy and keep data more secure. However, technology alone is not sufficient to protect data privacy.

What are the laws that govern data privacy? As technological advances have improved data collection and surveillance capabilities, governments around the world have started passing laws regulating what kind of data can be collected about users, how that data can be used, and how data should be stored and protected. Some of the most important regulatory privacy frameworks to know include: General Data Protection Regulation (GDPR): Regulates how the personal data of European Union (EU) data subjects, meaning individuals, can be collected, stored, and processed, and gives data subjects rights to control their personal data (including a right to be forgotten).

National data protection laws: Many countries, such as Canada, Japan, Australia, Singapore, and others, have comprehensive data protection laws in some form. Some, like Brazil's General Law for the Protection of Personal Data and the UK's Data Protection Act, are quite similar to the GDPR.

California Consumer Privacy Act (CCPA): Requires that consumers be made aware of what personal data is collected and gives consumers control over their personal data, including a right to tell organizations not to sell their personal data. There are also industry-specific privacy guidelines in some countries: for instance, in the United States, the Health Insurance Portability and Accountability Act (HIPAA) governs how personal healthcare

data should be handled. However, many privacy advocates argue that individuals still do not have sufficient control over what happens to their personal data. Governments around the world may pass additional data privacy laws in the future.

What are some of the challenges users face when protecting their online privacy? Online tracking: User behavior is regularly tracked online. Cookies often record a user's activities, and while most countries require websites to alert users of cookie usage, users may not be aware of to what degree cookies are recording their activities.

Losing control of data: With so many online services in common use, individuals may not be aware of how their data is being shared beyond the websites with which they interact online, and they may not have a say over what happens to their data. Lack of transparency: To use web applications, users often have to provide personal data like their name, email, phone number, or location; meanwhile, the privacy policies associated with those applications may be dense and difficult to understand. Social media: Social media posts may reveal more personal information than users realize.

Cyber crime: Many attackers try to steal user data in order to commit fraud, compromise secure systems, or sell it on underground markets to parties who will use the data for malicious purposes. Some attackers use phishing attacks . What are some of the challenges businesses face when protecting user privacy? Communication: Organizations sometimes struggle to communicate clearly to their users what personal data they are collecting and how they use it. Cyber crime: Attackers target both individual users and organizations that collect and store data about those users. In addition, as more aspects of a business become Internet-connected, the attack surface increases. Data breaches: A data breach can lead to a massive violation of user privacy if personal details are leaked, and attackers continue to refine the techniques they use to cause these breaches. Insider threats: Internal employees or contractors might inappropriately access data if it is not adequately protected.

Why is Data Privacy important? In many jurisdictions, privacy is considered a fundamental human right, and data protection laws exist to guard that right. Data privacy is also important because in order for individuals to be willing to engage online, they have to trust that their personal data will be handled with care. Organizations use data protection practices to demonstrate to their customers and users that they can be trusted with their personal data. Business Asset Management: Data is perhaps the most important asset a business owns. We live in a data economy where companies find enormous value in collecting, sharing and using data about customers or users, especially from social media.

Regulatory Compliance: Managing data to ensure regulatory compliance is arguably even more important. A business may have to meet legal responsibilities about how they collect, store, and process personal data, and non-compliance could lead to a huge fine. If the business becomes the victim to a hack or ransomware, the consequences in terms of lost revenue and lost customer trust could be even worse. Personal data can be misused in a number of ways if it is not kept private or if people don’t have the ability to control how their information is used: Entities may sell personal data to advertisers or other outside

parties without user consent, which can result in users receiving unwanted marketing or advertising. When a person's activities are tracked and monitored, this may restrict their ability to express themselves freely, especially under repressive governments.

For individuals, any of these outcomes can be harmful. For a business, these outcomes can irreparably harm their reputation, as well as resulting in fines, sanctions, and other legal consequences.In addition to the real-world implications of privacy infringements, many people and countries hold that privacy has intrinsic value: that privacy is a human right fundamental to a free society, like the right to free speech.

0808CS201121

Mohit Sharma

DATA VISUALIZATION AND POWER BUSINESS INTELLIGENCE

Every day a huge amount of data is generated. This data can even vary in nature and structure. A business, for example, can have data on sales revenue, marketing performance, customer interactions, inventory levels, production metrics, staffing levels, costs, etc. But with so much data to sift through, it can be difficult for people to see the story it tells. Data visualization helps you turn all that granular data into easily understood, visually compelling—and useful—business information. Data visualization is the graphical representation of information and data. By using visual elements like charts, graphs, and maps, data visualization tools provide an accessible way to see and understand trends, outliers, and patterns in data. In the world of Big Data, data visualization tools and technologies are essential to analyse massive amounts of information and make data-driven decisions.

Hidden within your data lie important insights that can help drive the business forward. But the challenge is that you can't always connect the dots by looking at raw numbers alone. When you look at your data presented in a visual format, patterns, connections, and other insights emerge that would otherwise remain out of sight.

Our eyes are drawn to colours and patterns. We can quickly identify red from blue, and a square from a circle. Our culture is visual, including everything from art and advertisements to TV and movies. Data visualization is another form of visual art that grabs our interest and keeps our eyes on the message. When we see a chart, we quickly see trends and outliers. If we can see something, we internalize it quickly. It's storytelling with a purpose. If you've ever stared at a massive spreadsheet of data and couldn't see a trend, you know how much more effective a visualization can be.

It's hard to think of a professional industry that doesn't benefit from making data more understandable. Every STEM field benefits from understanding data —and so do fields in government, finance, marketing, history, consumer goods, service industries, education, sports, and so on. While we always increasing talk about data visualization there are practical, real-life applications that are undeniable. And, since visualization is so prolific, it's also one of the most useful professional skills to develop. The better you can convey your points visually, whether in a dashboard or a slide deck, the better you can leverage that information. Skill sets are changing to accommodate a data-driven world. It is increasingly valuable for professionals to be able to use data to make decisions and use visuals to tell stories of when data informs the who, what, when, where, and how. While traditional education typically draws a distinct line between creative storytelling and technical analysis, the modern professional world also values those who can cross between the two.

Today, data visualization tools run the gamut from free versions you can access with a browser to feature-rich platforms that integrate with a wide variety of mainstream business applications. One such tool is Power BI, an interactive data visualization software product developed by Microsoft with a primary focus on business intelligence (BI). Power BI offers cloud-based services for interactive visualizations with a simple interface for end-users to create their own reports and dashboards.

Power BI was first conceptualized by Ruler and Dhers Netz of the SQL server coverage services team at Microsoft. It was further designed by West Chadic George in the year 2010 and named Project Crescent. In 2011, It was bundled with SQL Server Codenamed Mount McKinley. Microsoft unveiled the first preview to Power BI in September 2014. And finally, the first version of Power BI was released on 24 July 2015. It was based on Excel Based Add-ins like Power Query, Pivot, view, and Map.

Today Power BI comes across as one of the most powerful and efficient data visualization and analytical tool. Some of the many advantages it offers include pre-built dashboards, real-time updates, secure and reliable connection to your data sources in the cloud or on-premises, integration with both Python and R coding, etc. Moreover, it is backed by artificial intelligence and machine learning. This tool, however, currently has some disadvantages in terms of sharing the reports made and certain types not being compatible with it. These are likely to be overcome in the future as Power BI is further developed.

0808CS201112

Meenakshi Sharma

E-GOVERNANCE – BETTER GOVERNMENT OR BITTER GOVERNANCE

It is not an alien fact that covid-19 took over the world like a storm, even faster than the denims or K-Pop! There was no country, society or community which was left untouched by the pandemic and which did not evolve to fit into a digital structure. Our governments were no exception. To overcome the obstacle of not being able to step out of our houses, the screens became our window to interact and carry out our lives as normally as possible. The government offices, structures and processes also took a similar stance and many portals, websites and apps were launched to carry out tasks from Aadhaar verification to vaccination. Some countries like the USA even conducted their elections through online forums and contactless polls. Such a way of going on with government official activities through digital means is e-governance. In formal and descriptive terms, E-Governance is defined as a way to provide and facilitate government services, communication and information through Information and Communication Technology (ICT). Now the question arises: why do we need a way to organize the government into a digital structure? Imagine collecting and maintaining the data of billions of people in the form of physical files. The picture that comes into our mind is of long aisles of dusty and dirty shelves filled with files.

Yes, it might not be so but for even a small government organization, the database is huge and every piece of information is equally vital. Now, if this information is stored in proper software, then it reduces time and effort as well as prevents data redundancy, duplicity of data and saves storage space. Same goes with forms, applications and submissions. The physical copy trend has been going on since long and is very vital but it also poses the same problems. Formulating online forums, platforms, channels and websites to access the required information, get the relevant process started, verify whatever information was provided and then giving the provided result within the span of two weeks automatically reduces half the burden of the officials and reverts the human resource to more useful tasks. It also automatically enters the new data in relevant places and keeps records up to date. In India, online vaccination, online Aadhaar verification, passport application etc. are excellent examples of E-Governance which have worked successfully till now. E-governance, therefore, surely makes the system a bit more efficient and smooth sailing.

However, it does put doubts in many a head regarding the safety of their private information and their security. Governments are already the target of many hackers and haters with varying interest and the large amount of data makes it even more tempting to access it. Data theft is a serious risk with e-governance and is one of the major concerns, other than that a corrupted official could do as much harm by leaking or selling the information, a trade for which they will be highly paid for and be lavishly compensated.

0808CS201189
Tanvi Mangesh Kulkarni

WARNING THROUGH COMPUTER

Today, it is impossible to start earning without investing but I am bringing forward to you a variety of ways by which you can earn and you also do not have to make a big investment. You can make money at your own pace, on your own time whether you are looking for a full-time income or part time, there are ways to make your own investment free money from your computer. As the use of technology is rising the possibility of making money from your computer also increases. They are directly proportional to each other. You can do jobs online which didn't even exist a few years ago. While there are several scams out there but we are going to highlight the best ways to make online money. The options vary, whether you want to earn a few bucks while watching your favourite television show or you want to start an online business. There are easy and difficult ways to start this journey. Some work may only require a few hours a month while the other may require a few days and the rest a few months. Earning a significant amount of money online takes time, commitment, hard work and dedication. But with will there are endless possibilities to earn.

You can start by selling items online. You can start by selling your old furniture, clothing, kitchen appliances, or tools online which might be of no use to you but there are millions of people who are in search of such products. It hardly takes a few minutes you need to click good pictures of the item and upload it with a description on a suitable platform like OLX, eBay etc. and find a good bid amount for it. There is another very famous way which is becoming popular these days that is Taking surveys and being paid for it all it takes is a few minutes for each survey and money is yours. While it won't make you rich or anything but you can earn quickly from it. Many brands and companies are looking for individuals to gather information about consuming habits and preferences of their customers. Hence, the longer you take the survey the more you are paid. A few such sites are PineCone Research, Lifepoints Panel, Survey Junkie etc. and you might also earn a few Vouchers from the same. The most prominent way of earning through the computer is blogging. Its popularity is increasing day by day and there is a great potential to make money if you start a blog. All you need to do is be consistent and if you truly enjoy blogging then its perfect for you. There are many ways to make money through blogging like advertising, sponsored content and affiliate networks. There are many people who leverage their blog to get freelance writing jobs, paid speaking gigs and book deals. You can also become a Virtual Assistant. It is not only a great way to earn money from your own computer, but it has the opportunity to become a full-time job. The Virtual assistant helps a person or a business online. It is similar to an executive assistant, but all online. Jobs vary but common tasks are scheduling meetings, proofing content, sharing content on social media and other administrative tasks.

Creating a course is another most fun way of earning through computer. If you feel you have a skill or have a knowledge that you can share with others then you can start taking online classes. These days the online classes have become really popular especially during covid and all you need is a good Wi-Fi connection and teaching skills. You can also earn

by selling stock photos if you are skilled in photography. You can sell quality photos online to be used as stock photos. These are the photos which others pay to download and use in their own marketing and websites. You can sell these photos on websites like istockphotos. The most interesting fact about selling stock photos is that once you click and upload it, the rest is passive income. You are paid everytime once someone downloads it. If you have a knack for graphic designing then you can start Designing logos and selling them to companies and individuals. All you need to have is a creative mind and then this is your future. There are free softwares and applications to do such designing like Canva, Sketch Up which you can use to design logos. It is said that a pen is mightier than a sword. Well, it is well said the ability to write a resume well is rare and a strong resume- writing skills are in demand as everyone in the world are in search of good resumes. Best of all, there are a myriad of ways to work from home while correcting resumes. You can work for a resume writing company or even start your own business. You can start by building your own resume and provide it as a sample to others. People these days are also earning by translating documents. The demands for translators is increasing as companies and individuals interact with each other around the globe. Hence, you can earn by working for a translating company or by your own.

If you enjoy crafting like making jewellery, art or sewing then you can open an Etsy shop to sell your items. Etsy is an online marketplace for people looking for handmade goods. You open your own shop with your own handmade products and consumers can search and buy their own items. Etsy is great because you don’t have to go searching foryour own customers infact consumers will come looking for you.

0808CS201115

Mishika Mandloi

ETHICAL HACKING

The term ‘hacking’ has a very negative connotation attached to it. It refers to gaining unauthorized access to data in a computer or system. It is the unlawful use of another’s resources. However, hacking when done with permission is not only legal but has several advantages to organizations and companies. What kind of vulnerabilities does a hacker see? What information might be targeted by a hacker? What will the attacker do with the information and how many people notice the attempt? What can be done to fix the vulnerabilities in the system? All these questions can be answered by an ethical hacker. Ethical hacking is the act of identifying vulnerabilities in an application, system, or organization's infrastructure that can be exploited by an attacker. By lawfully hacking into networks and looking for weak places, ethical hackers (also known as the white hats) try to avoid cyberattacks and security breaches.

Ethical hacking has great importance in today’s times. Finding vulnerabilities from the perspective of an attacker, addressing weak areas in a system and putting in place a secure network to avoid security breaches are some such examples. Ethical hacking can also be necessary to earn the trust of customers and investors by assuring the security of the products and data. It prevents people with malicious intentions to gain access to sensitive or confidential information. One major use of ethical hacking is to protect the national security of a country. Any breach or loophole in the information or defence databases of the country can put the safety of its citizens at great risk. Thus, impenetrable defences need to be forged and erected so that no enemy nation or terrorist organisation can obtain official, classified government data. Using ethical hackers is one such way to ensure cybersecurity. They can identify the vulnerabilities and help protect data from cyberattacks and breaches. For example, in the United States of America, the “Hack the Pentagon” event, led by the Defense Digital Service, kick-started the partnership between the Department Of Defense and the white hat community. In addition to finding 138 vulnerabilities, they also uncovered the need to have an enduring open door for hackers to report the vulnerabilities they find. Later, they also started the ‘Vulnerability Disclosure Policy’ which has become one of the largest disclosure programmes in the world. Ethical hacking has five major phases. Reconnaissance is the preparatory phase where the hacker collects preliminary information about the target prior to the attack. Through scanning, the hacker identifies a quick way to gain access to the network by exploiting the vulnerabilities of the system. After gaining access to the network, the user privileges are escalated to control the systems connected to it. Having gained the access, the hacker tries to maintain it by securing access to the organization’s Rootkits and Trojans. These are used to launch additional attacks on the network.

0808CS201091

Huda Shaikh

THE EMERGING TECHNOLOGIES

CRISPR, Quantum, Graphene, Smart Dust, Digital Twins, the Metaverse… You've heard about it all. Seen it all. Read it all. These technologies no longer hold any secrets for you. Hell, you've probably mentioned them over dinner or at work and have become the go-to person for questions about future innovations.

Yet, technology is ever-changing, and this precious knowledge must be both managed and updated regularly. With this in mind, I've put together a list of the top future technologies that are not on the public's radar as of today but are likely to make big waves in the future.

Femtosecond Projection Two-Photon Lithography. Researchers have developed a method that uses lasers to project millions of points simultaneously onto 3D-printing material, instead of using one point at a time. And because they're bad at branding, they called it Femtosecond projection TPL. To easily understand FP-TPL, simply imagine using a million heated needles to strategically melt a block of wax versus using a single needle. This means that incredibly tiny structures can be 3D-printed much, much faster (a thousand times faster, give or take), while still ensuring a good quality of the build.
How will it change the world Quick discoveries around materials have led researchers to think that they will be able to build small but imagination-baffling structures in the near future. Once the quality can be controlled over large scales, one could easily imagine this technology being used for the creation of healthcare-related nanorobots, allowing for the treatment of a multitude of diseases on the molecular level.
LiFi What is it? LiFi aims to use light to transmit information from point A to point B. The technology works by encoding digital data and turning LED bulbs on and off faster than humans can notice to transfer it. The light then travels to a photoreceptor, which can decode and translate the data to a more classic radio frequency (WiFi, 4G, 5G…). There are a lot of advantages to doing things this way. What with light being used, the speed at which the information is transmitted is very, very high — up to 100 Gbit/s, in theory; 5 times faster than 5G. Furthermore, the sheer number of LED bulbs already around us hints at a potential future wherein (cheap) access points to receive data are everywhere. Finally, the light waves used as the basis for LiFi do not pass through walls (but can however be reflected off of them). The risk of hacking is therefore much lower than with WiFi, though this seriously limits indoor use cases. On the other hand, the use of LiFi requires one to be near an operating light source. Its range is thus very limited, and interference is possible with other light sources such as natural sunlight. How will it change the world As of today, this future technology is very much of a niche, despite having been hyped in some circles for half a decade now. One obstacle to popular adoption is the size and price of photoreceptors. As such, key use cases are within areas that are particularly sensitive to hacking and/or electromagnetic interference, such as hospitals, aircraft, military operations…

Energy-storing Bricks For these bricks to store and then release energy, researchers heat them to 160 degrees and vaporize their surface with hydrochloric acid mixed with an organic compound called EDOT. When in contact with hematite, this mix causes a chemical reaction, creating a new plastic nanofiber coating called PEDOT. the amount of energy these bricks can store is still low, but the proof of concept is a staggering success. It's possible to power a small lamp for 50 minutes with 60 bricks, which doesn't sound like much until you realise it only takes 13 minutes for these bricks to recharge. This future technology also has a long lifespan, since even after 10,000 storage and retrieval cycles, the bricks still retain 90% of their original capacity, without altering the rate of charge and discharge.

How will it change the world? The main benefit of this technology of the future would come about when used at a house equipped with solar panels. The bricks could then store unused electricity and thus compensate for the intermittence of this renewable energy. This would make our homes more self-sufficient in energy and less dependent on electric cables and/or the likes of lithium batteries. Discussions are currently underway with several companies in Europe and the United States to consider its commercialisation and know that the next generation of bricks will be able to increase its energy capacity by 50%. Enough to charge a laptop? Only time will tell.

4.Robotic **bees** Details are scarce, but most researchers estimate that the bees would work by attaching horse hair coated with ionic liquid gel to a tiny drone. The hair picks up pollen from one flower, and moves it to the next. Researchers at Harvard have long been working on "RoboBees" using such techniques. What Walmart offers on top is a wide array of sensors, cameras, artificial intelligence… to locate the relevant crops and pollinate them as needed. How will it chnage the world? If the costs of operating such future technology continues to decrease, we could see autonomous insect pollinate large fields in the coming years, which could save thousands of farmers from ruin, and ensure we can still have almond milk on the superstores' shelves.

Unnamed Dynamic Neural Networks Technology Neural network uses hidden layers to break down information (the input-images, audio, videos, handwritten text…) into tiny pieces of easily understandable components, allowing a computer to inform a prediction about the nature of said input. It does this thanks to a wide array of training data and mathematical models. In doing so, it works "similarly" to our brain, hence the technology's name. This is far from new, but the world of data science has been on the lookout for faster and more efficient ways of using neural networks to serve the upcoming IoT revolution. How will it change the world? First and foremost, the technology reduces computing resources required of the host CPU and cuts back on costs of running data centres, something which seems benign compared to all the issues discussed in this article, but is nevertheless incredibly important at scale.

0808CS201155

Rimjhim Pathak

Rise Of Phones, Laptops And Everything That Our Parents Hated

Haven't we all heard our parents and grandparents scream their heart out at us? Just jump into that phone and never come back! There's a world outside your phone too, you know that? It felt so annoying when we heard that. Nowadays, it is these phones and laptops that are going over the lockdown barriers and keeping us in touch with our family, friends and loved ones. The video calls go on for hours and people are witnessing marriages over Skype! What a world is it now. Education, corporate and governments, everything is dependent on these screens and it seems like life would be impossible without them. Our mothers have shifted from daily soaps to OTT and Netflix recharge is given priority over cable recharge. Televisions are being used to run Prime and Disney+ which shows from kids tv to sports at one place. Turing on your tv and watching your favourite show whenever you want is a luxury and there is no need to suffer through ling advertisements, rigid timings, recaps and missing out on our shows. People are getting certificates from Harvard and oxford through online courses and giving their CV a boost in a matter of few weeks. Working in boxers, shirt and tie was a utopia that has suddenly come true.

What made all of it possible? How did we keep ourselves sane for over 8 months trapped inside our houses? These machines called phones, tablets, laptops and computers were our saviors. From games of ludo with people miles away to birthday celebration and wedding on conference, we were slowly molding ourselves into a new lifestyle without any realization that it is here to stay. Us youngsters were still very much enjoying the free time we had but for the elders it became a time of loneliness. Their walks, visit to parks etc. were abruptly not even allowed all pf a sudden and then our phones came to their rescue. To be honest, we have pretty smart parents and grandparents because they caught up really quick. It provided them an escape and YouTube became their best friend. The devices they used to curse were now their companion when their children were attending classes or working remotely.

Who knew it would take a pandemic for our elders to befriend these devices? Now things are getting back to normal and the walks resumed a while ago. But now walks consist of songs, podcast or even spiritual rhymes. Technology helped us all stay sane and kept our lives on track. If it would have not been for it, our world would have halted with no livelihood, production, education and even basic errands.

0808CS201190

Tushar Khanna

7 phases of the Software Development Life Cycle (SDLC)

Today, technology has become an integral part of our lives. Day in and day out we use thousands of softwares or applications for various purposes like gaming, editing, streaming, social media, etc. but have you ever wondered how these softwares are developed and maintained? Behind every software that exists on your device, there is a framework known as Software Development Life Cycle or SDLC. It is a structured process that enables the production of high-quality, low-cost software, in the shortest possible production time. The goal of the SDLC is to produce superior software that meets and exceeds all customer expectations and demands. The SDLC defines and outlines a detailed plan with stages, or phases, that each encompasses its own process and deliverables. Though SDLC has various models of execution, certain core phases are common to all of them:

Planning phase - The planning phase encompasses all aspects of project and product management. This typically includes resource allocation, capacity planning, project scheduling, cost estimation, and provisioning. During this phase, the team determines not only what is desired in the software, but also what is not wanted.

Analysis and defining requirements - This phase focuses precisely on feasibility analysis and the requirements that the application should meet. At this stage, the developers often create a software requirements specification (SRS) document. An SRS document is a description of the software's aim and expected performance. It also includes the functionalities that the application should offer.

Design - SRS details act as the single point of reference for Software architects to chart out the best design for product development. Usually, it is a practice to come out with multiple solutions and prepare a Design Document Specification (DDS) with a detailed solution approach. The final design solution mentions what all modules should it have, their architecture, workflows, entity, and data-flow diagrams along with the third-party dependencies if any.

Build Phase - This phase has many names such as the Development or Coding or Implementation phase. At this stage, the actual development starts based on the agreed blueprint laid down by the DDS. A well-written design document that has sufficient, structured, and apt details, can make coding relatively easy and assist the developer to finish on time. Every organization has coding standards, guidelines, and best practices that intend to produce quality and reusable code. All the programmers are mindful of them while working on a development task.

Testing – The testing phase of the SDLC is one of the most important. It is difficult to convey quality programming without testing. There is a wide assortment of testing important to gauge quality. Testing can be done manually or automatically.

Deployment – This phase is also known as the Acceptance phase or the Beta Evaluation phase. After the Software testing finishes successfully, the product gets ready to ship to the customer for deployment.

0808CS201188
Tanishq Lambhate

TECHNOLOGY IN CINEMA

Technology and Cinema go hand in hand, as technology advances, so is the ability of filmmaking. We have advanced from Black and White to Color, from shooting on matte paintings or curtains to green screens, and the set design is setting new heights now and then. I have found myself obsessing over filmmaking or behind-the-scenes videos recently, the sheer creativity of making a movie amazes me, how every scene included has some story behind how it was shot, why those particular colors are used and how have they been achieved.

How many of you have come out of the theatre and said," the storyline was bland but the songs were amazing or the lightning or the colors", well, we all have said it, haven't we? Filmmaking is not just about the storyline but it is a collective effort of the screenplay, background score, sound quality, lighting and colors, makeup, and much more. We have found ourselves leaning toward K-dramas more and more recently, why? the reason is the same as explained above, we love the aesthetics. Why we can't stop listening to some songs even if their lyrics make no sense, the reason is their amazing sound quality. Even the academy has accolades for the best background score, best makeup, and best soundtrack, they are not just value addition but an important part of the movie itself.

Well, who doesn't like Sanjay Leela Bhansali's grand, royal, extravagant films, it will not be wrong to say that he makes all the actors look like walking portraits in his films, well some of you might think it is due to the exquisite costumes and eminent direction but you will be surprised to know that the cinematography has an upper hand here. For filming Bhansali collaborated with NY VFXWAALA, a leading Indian VFX corporation that delivered this film over eight months in terms of CGI creation and visual effects with a team of 50 to 60 artists working on it. Talking about it Prasad Sutar, Founder and Managing Director says that he and his team were involved with the film from the scripting stage. Throughout the shooting process, they would discuss and analyze whether a particular shot was possible to shoot live or with CGI or VFX, and arrangements were made accordingly. He further adds that he likes to shoot live and further adds effect to make it as realistic as possible. Talking about scenes he says," The opening war wherein the entire army was created using CGI, was shot in broad daylight and then converted into the night. The close-ups were shot indoor therefore we had to match and blend all the shots. This sequence itself had around 300 VFX shots with minute detailing as this was the introductory sequence. The climax sequence had live water shot on a camera with CGI horses, arrows, and fireballs. Bhansali sir had visualized the climax but our team enhanced the scene with our thoughts and ideas. The climax took around 15 to 20 days to be completed with perfection. Bajirao Mastani went on to win several awards for the CGI and VFX used in it including Asian Film Award (AFA) for Bajirao Mastani, becoming the only Indian VFX house to have won the AFA award to date. Bajirao Mastani, a grand Period Drama was brought to life by the enhanced VFX work.

Let's talk about something recent, Gehraiyaan although not a very appealing movie due to its storyline but had been criticized positively regarding its Cinematography. Kaushal Shah,

the Cinematographer of Gehraiyaan revealed that the shots have been taken in a way to make the viewer read between the lines, to feel things being unsaid, the music and background score has been set in such a way that it gives us a sense of therapy but with a tint of hopelessness in it too. If one observes the lighting and the filters keep on changing following each phase of the film.

Talking about everyone's favorite Harry Potter, Framestore a British animation, and visual effects company worked side by side with directors of all 8 films of the Harry Potter series crafting key characters, otherworldly environments, and of course magical effects. Dobby, Buckbeak, and the watery underworld created during Triwizard Tournament, etc. are all visual effects creations.

Technology had, has, and will continue to influence filmmaking. Thanks to it we all have experienced fantastical worlds that could never exist on our earthly plane, recently successful Marvel films and Squid Games are proof that people indeed are ready to witness technology on their screens which also is an incentive for making such films. This also has opened wide doors for new career opportunities and creativity. Just brace yourself to witness a technological revolution in Filmmaking.

0808CS201196
Vaishnavi Mandloi

TECHNOLOGY: BOON OR BANE

Technology is said to be one of the greatest inventions of mankind. It has made our lives easier by leaps and bounds. You need to pay money to someone, use online transactions; you want to learn from educators miles away from you, use distance learning programs: you want ice cream but don't want to visit a store, use online shopping applications and much more. Technology advances every second, take a simple example of Whatsapp, you can delete messages for both sender and viewer, can use on multiple devices at a time and the group limit exceeds every now and then. Technology undergoes evolution continuously to equip it with new features and for making it more user friendly. In short, everything has increased: speed, accuracy, endurance to work with technology. Technology has opened wide doors for new career opportunities. It is been used in fields like Medical, Education, Transportation, Defence, Filmmaking etc.

Well, it will not be wrong to say that technology has made an important spot in everybody's lives. It has several advantages but it does have certain disadvantages which should be talked about, one such case is the recent Bulli Bai Case which has exposed a different side of technology which most people are still unaware about.

The amount of hazardous content being served on Internet has influenced youngsters to take malevolence steps, today we can access thousands of videos, audiobooks and images on internet according to our need but some of these elements are being used to share hateful content. An engineering student from Jorhat, Assam named Niraj Bishnoi was arrested in the Bulli Bai Case. The case is related to hundreds of Muslims women being listed for auction on the Bulli Bai app on Github Platform. What does this tell us? technology could be harmful in some ways too. What about the dark web? It contains harmful content like videos for promoting terrorism, violence, etc. Cyber-attacks are threats for individuals as well as nations' security. The recent incidents like use of spyware Pegasus have caused distrust on usage of technology. Frauds are actively working online, how can we keep a check on all these liberties on online platforms, the sheer ease of accessing internet has resulted in all these crimes.

Technology has taken a toll on our health as well, the excessive screen time we devote streaming videos has made our eyes vulnerable of straining. A 5- year study in the journal Applied Ergonomics found an association between texting on a mobile phone and neck or upper back pain in adults. Using technology too close to bedtime may cause issue with sleep. It has reduced physical activity in our lives and increased chances of diseases like Diabetes and Obesity in adults. One less talked reason but an important one is that technology has resulted in Isolation of individuals. A 2017 study, in young adults aged 19-32 years found that people with higher social media use were more than three times as likely to feel socially isolated than those who did not use social media as often. Social media often causes insecurities among people.

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VIRTUAL REALITY

When we talk about virtual reality we tend to feel it's something like we see in movies like 'minority report' or the 'labyrinthus' however we can find virtual reality around us these days while playing video games, education, medicine etc. and it is here to stay. Virtual Reality is a computer-generated environment with scenes and graphics that appear to be real making the user feel immersed in it. This environment is perceived through a virtual reality headset or helmet. It makes us feel as if we are the main protagonist in the video game or the story or as if we are playing the sport in reality like Golf. It helps us to perform surgeries or improve the quality of the sports training to maximise the performance.

This may seem futuristic but it isn't a new concept. In fact the first virtual reality device was called Sensorama, a machine with a built-in seat that played 3D movies, gave off odours and generated sensations and vibrations to make the experience wholesome and real. It was invented back in the 1950s.

There are many sectors today in which virtual reality is applied like medicine, culture, education, and architecture. From guided museum visits to the dissection of a muscle, VR now allows us to cross boundaries that would otherwise be unimaginable. It helps us to transcend into a new world leaving behind our real surroundings. It has been used and studied in Primary education, anatomy teaching, military, astronaut training, fight simulators, miner training, medical education etc. There have been a few very famous concerts during the covid pandemic which were possible only because of Virtual reality like Billie Ellish performed on Oculus Venues on October 24, 2021 and the Pop group Imagine Dragons will perform on June 15,2022.

Virtual reality is the technology with the highest projected potential for growth. According to the latest forecasts from IDC Research, investment in VR will multiply by 21-fold over the next four years. Nowadays, the market is demanding applications that go beyond leisure, tourism or marketing and are more affordable to the users. Virtual interfaces also need to be improved to avoid defects such as clipping, which makes certain solid objects as if they can pass through. Or to minimize the effects that VR produces in people, among them motion sickness, which consists of dizziness induced by the mismatch between the movement of our body and the mind.

Though Virtual Reality is good and technologically a right fit for today's World however it has lead to a variety of problems as well like Concerns related to health problems in both Children and adults. Also, threat to privacy is a main concern as the persistent tracking required by all VR systems makes the technology particularly useful for, and vulnerable to, mass surveillance.

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