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**KARMAVEER BHAURAO PATIL COLLEGE OF
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1.Blockchain Technology: A New Era Solution.

Blockchain technology was back introduced to the world in 2008 and came into existence in January 2009 as bitcoins i.e cryptocurrency by an individual or a group of individuals named as Satoshi Nakamoto. The study purpose is how to use blockchain in the insurance sector to resolve the claim settlement problems using smart contracts in insurance and healthcare industry to help user for better healthcare facility. A smart contract will help to bring multiple companies claim options together in which user has the policy and ease the claim settlement process.

From ancient period Ledgers are maintained to keep track of the trading i.e. information about buying and selling goods and services. Ledger like clay tablets, papyrus, tally sticks, double entry bookkeeping, spreadsheets and now distributed ledgers (i.e., Blockchain). The first work on a cryptographically secured chain of blocks as described in 1991 by Stuart Haber and W. Scott Stornetta. In 1992, Bayer, Haber, and Stornetta incorporated Merkle trees (hash tree) to the blockchain as an efficiency improvement to be able to collect several documents into one block. Blockchain was conceptualized in 2008 and was implemented the following year as digital currency bitcoin, by an anonymous person or group of individuals known as Satoshi Nakamoto.

The blockchain is a distributed ledger which can be either public or private. Blockchain consists of a block in the chain and each block contains data, hash, timestamp, and hash of the previous block. As Blockchain has a distributed ledger it uses Peer-to-Peer network where ledger can be seen by every another person in the network which reduces the possibility of attacking by hackers. Use of Blockchain is implemented in the global economy in the form of cryptocurrency, as blockchain has various inbuilt security and is less prone to attack we can use blockchain technology in various fields like governance, industries, medical, insurance, markets etc.

Blockchain provides security by hashing each block in the chaining and distributing copy of block to everyone connected to the blockchain. Each block consists of data (Merkle tree), timestamp, and hash of the previous block.

Use of blockchain in various fields would help the users to get transparency in the system and would remove third party involvement saving users time and money and would limit the fraudulence to certain limits.

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2.What is Big Data Analytics?

Data is information in raw format. With increasing data size, it has become need for inspecting, cleaning, transforming, and modeling data with the goal of finding useful information, making conclusions, and supporting decision making. This process is known as Big Data data analysis.

Data mining is a particular data analysis technique where modeling and knowledge discovery for predictive rather than purely descriptive purposes is focused. Business intelligence covers data analysis that relies heavily on aggregation, focusing on business information. In statistical applications, some people divide business analytics into descriptive statistics, exploratory data analysis (EDA), and confirmatory data analysis (CDA). EDA focuses on discovering new features in the data and CDA focuses on confirming or falsifying existing hypotheses. Predictive analytics does forecasting or classification by focusing on statistical or structural models while in text analytics, statistical, linguistic and structural techniques are applied to extract and classify information from textual sources, a species of unstructured data. All are varieties of data analysis.

The Big Data wave has changed ways in which industries function. With Big Data has emerged the requirement to implement advanced analytics to it. Now experts can make more accurate and profitable decisions. In this session of Big Data Analytics tutorial for beginners, we are going to see characteristics and need of data analysis. An analysis is an interactive process of a person tackling a problem, finding the data required to get an answer, analyzing that data, and interpreting the results in order to provide a recommendation for action.

A modern data ecosystem includes a whole network of interconnected, independent, and continually evolving entities. It includes data that has to be integrated from disparate sources, analyze to generate insights, and finally collaborate with the active stakeholders to present and act on the insights hence obtained.

Data analysis is the process of gathering, cleaning, analyzing, and mining data, interpreting results and reporting the findings. With data analysis, we find patterns within data and correlations between different data points. And it is through these patterns and correlations that insights are generated, and conclusions are drawn. Data analysis helps businesses understand their past performance and informs their decision-making for future actions. Using data analysis, businesses can validate a course of action before committing to it. Saving valuable time and resources and also ensuring greater success. We will explore four primary types of data analysis, each with a different goal and place in the data analysis process.

Importance of Big Data Analytics:

Everyone has a question, why Big data is so popular nowadays? the answer is because of its robustness. It is full of specialized analytics systems and software and high-powered computing. Big data is performing a superior job in every field but in business, it is a boon.

In business, Big data help to increase marketing, improve customer service, and much more. By finding a different pattern in the purchase history, a marketing strategy can be improved and a better strategy is used to improve the growth.

For example, if someone buys milk and bread together, put milk and bread together in a supermarket to increase the sale of both items. By putting together

both items, a person who comes to buy only milk might purchase bread too. So using such tactics there is an increase in market growth.

3. When a human interaction with computer...!

WHEN A HUMAN INTERACTION WITH COMPUTER...!

In the game of twenty questions, your goal is to guess what others are thinking. Of course, the other party must answer honestly. The point is that they only use one of two options when answering a question, yes or no. Through a series of coincidences and interpolations, the way we interact with regular computers is almost like 20 questions. Computers speak in binary 1s and 0s, but humans don't. Computers have no inherent meaning in the universe; in fact, there is nothing but the possibilities of binary or quantum computers. Because of this, everything from concept to input is transferred to the computer by raising the level of human abstraction from the underlying communication layer. It means 1 and 0 or yes and no. Much of today's computing work is determining how to get people to explain more complex ideas simply and easily. On the other hand, humans try to help computers process these ideas faster by building a layer of abstraction on top of the 1s and 0s. Most people use it to interact with computers on a daily basis.

“Computers are the 'ENZYMES' of culture; They significantly enhance human interaction in society.”

Human-Computer Interaction (HCI) is the computer user interface that the system user interacts with to achieve their given tasks and see how the system is used. Information technology (IT) is essentially an integrated human-machine system that provides information support for operations, management and decision-making. Human Computer Interaction (HCI) focuses on the interactions between humans and computer systems in order to achieve the functionality of the IT system, user experience, usability, promoting the effectiveness of interaction with the user

(Draganova, A, and Doran, P., 2013, p.245). According to *Dragan, A. and Doran, P. (2013, p. 245)*, users are increasingly preferring to use online business systems and thus becoming intolerant of systems that are not user-friendly. The field of human-computer interaction is increasingly concerned with the processes and context of the user interface.

The goal of HCI is to design computer systems that support user productivity and security. Humans and machines interact through a user interface that facilitates manipulation and monitoring of system status. The functionality of a system is defined by the set of actions or services it provides to its users. System usability describes how the system can be used effectively and adequately to accomplish a task. An effective design process pays attention to the work being supported and the users who operate the system. A human factor is an attribute (physical or cognitive) that is specific to the people who use the system and how it affects the normal functioning of the system as well as the achievement of a human-environment balance. The three most used user interfaces are:

1. *Popular Graphical User Interface (GUI).*
2. *Voice user interface.*
3. *Multi-model interface that uses a combination of several methods of user input into the system.*

User interfaces can generally be divided into *command-line interfaces and GUIs*. A command-line interface requires the user to provide input in the form of a command on a command line, such as in a *UNIX* environment. A GUI contains windows, icons, menus, and pointers (*WIMPs*) and facilitates interaction through graphical elements. However, the GUI is more user-friendly and attractive than the command-line interface. A command, files,

and folders can be represented by an image called an icon.

Surface technology eliminates input/output devices through a touch-sensitive feature that plays the role of input/output devices due to the merging of the physical and virtual worlds (Farooq, U., et al, 2011, p. 25). Through surface technology, the user eliminates the use of GUI media. According to *Farooq, U, et al (2011, p. 26)*, the user interacts with the digitized world with just the touch of a finger thanks to surface technology. There are two classes of surface technology, one for the display and the other that uses a touch-sensitive mechanism to interpret user signals. Farooq, U., et al (2011, p. 26) point out that a display component can be built on a display platform.

Conversely, the interpretation component of the user signal is based on the image captured by imaging cameras, which are generally infrared based. In such a setup, the cameras are set to cover the entire screen. The three ways in which infrared sensing can be achieved are *frustrated total internal reflection, diffuse illumination, and diffuse surface illumination*. Direct communication with the user can be ensured by direct interaction with the screen, which precludes the use of input devices such as a mouse or keyboard. In this way, multiple processing points are offered at the same time, as opposed to a mouse, which only provides one point where the cursor is processed, while user interaction is made available in a common time slot. Surface technology is completely revolutionizing how people interact with computers (Farooq, U., et al, 2011, p. 27). This is a technology that is now widely used in touch screens.

HCI adequately addresses the various needs of user groups and individuals. Practical research contributions in HCI reveal unknown insights regarding the degree of interaction between the end user and the technology, called **endowment**.

HCI abounds in practical research methods such as field experiments, formal experiments, field studies, surveys, focus groups, interviews, usability tests, contextual inquiry, case studies, ethnographies, diary studies, automated data collection, and experience sampling. As a multidisciplinary field, HCI draws benefits and contributions from various fields such as psychology, organizational and social science, computer science, and cognitive science to explore user experience and interaction with technology. A wide variety of research methods are used in HCI, as the arena is multidisciplinary in nature, and therefore there is an amalgamation of research methods commonly used in engineering, social science and medical fields.

Human-computer interaction can definitely make human life easier. *Fred Beecher (Director of UX, The Nerderly)* says:

“How do I explain what

I'm doing at a party?

The short version is as I say

I humanize technology.”

4.The Joy Of Learning Python

Python is a general-purpose, high-level programming language. It was initially developed by Guido van Rossum in 1991 and developed by Python Software Foundation. The main objective of it was to provide code readability and advanced developer productivity. Python has along 30 years journey. It has seen many versions, the two most used versions of Python are 2.x

and 3.x. Python 3.10.4 is the latest stable version. Over the period Python has gained massive popularity.

Python is a beginner-friendly language. It's user-friendliness helps programmers learn the fundamentals of programming more quickly. It's syntax is similar to ordinary English in most

ways. The syntax of languages like C++, Java, and PHP is difficult to recall at the same time. Students who are required to learn these other types of languages, rather than Python, have the burden of syntax alongside the new concepts of programming. While learning python, more

complex programs are easy to code.

Compared to most modern languages Python language is efficient, reliable, and much faster. Regardless of the platform one is working on, Python can be used in almost any environment without experiencing any performance degradation. Python has a bunch of libraries. These libraries are collections of pre-written codes. Python has a strong standard library, and programmers can select the modules they want from a large range of options using this library.

There are many real world applications for Python. Listed below are some examples:

- Pyscript is a python language framework that can be used for frontend development.
- Using Django and Flask you can do backend development.
- Python can be used in the development of desktop applications.
- PyGame provides functionality and a library for game development.
- The majority of individuals select Python for machine learning and artificial intelligence.

The first programming language I learned was Python. "Simple High Level Programming Language" is how I would sum up the Python language if I had to. Python is my favorite programming language. I advise my junior learners to start their programming careers with Python.

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5.Cyber Crime - The Bloodless War

In today's era, people use the Internet everywhere like social networking, communication purposes. Due to this, hackers and cyber criminals use the internet as a tool to spread malware and carry out cyber-attacks. Internet security is a branch of computer security specifically related to the internet. A cyber-attack is an attack launched from one or more computers or networks. Cyber-attacks can be broken down into two broad types: attacks where the goal is to disable the target computer or knock it offline, or attacks where the goal is to get access to the target computer's data and perhaps gain admin privileges on it. There are several types of crime like Malware, Phishing, Denial of Service, Man in the middle, SQL injection, etc. Cybercrime, Cyber criminals are so smart and working in a collaborative manner which makes cybercrime a serious issue for all over the world. When we hear about "Cyber-crime" our focus is gone on "cyber security".

Many people throughout the world lack sufficient understanding about computer security and associated topics, and the number of those people is very high, which is why hackers take advantage of it and new hacking groups emerge. This gives rise to plenty of other illegal acts such as cyber-attacks, cyber-crime, and hacking etc.

There are seven types of cyber-attack:

A. Malware:

Malware is software that is meant to harm a single machine, server, or computer network, regardless of how it is constructed or run. Malware includes worms, viruses, and Trojan horses. These assaults render a computer or network unworkable or give the attacker root access to the system, allowing them to operate it remotely.

- B. Phishing:** Phishing is a technique by which cybercriminals craft emails to fool a target into taking some harmful action
- C. Denial of service:** A denial of service attack is a brute force method to try to stop some online service from working properly. This attack uses an army of computers, usually compromised by malware and under the control of cybercriminals, to funnel the traffic towards the targets.
- D. Man in the middle:** A man in the middle attack (MITM) is a method by which attackers manage to interpose themselves secretly between the user and a web service they're trying to access.
- E. SQL injection:** An attacker can use SQL injection to gain control of a victim's database by exploiting a vulnerability. Many databases are built to respond to Structured Query Language commands.

Prevention of cyber-crime-

1. Use Strong Passwords
2. Be social media savvy
3. Secure your Mobile Devices
4. Protect your identity online
5. Protect your computer with security software

Malware (Ransomware)

Malware short for malicious software, is a blanket term for harmful computer programs hackers use to wreak destruction and gain access to sensitive information. A software designed to cause damage to a single computer, server, or computer network."

A Ransomware is a malware that prevents users to access their personal information and demands ransom amount to regain access. They ask amount in the form of crypto currency e.g., Bitcoin.

a. Methods of Injection of Ransomware

1. Users are fooled into running a legitimate program which is not actually a legitimate program. Request are sent in the form of discounts or free gifts when user clicks on that links the injection of ransomware happens
2. Using replica of authentic looking email attachment - Ransomware links are sent by making request in very authentic ways through legitimate looking emails
3. Visiting malicious websites - Ransomware can enter into systems as users visit unknown websites.
- 4 Ransomware can spread through data transfers between computer

b. Recent ransomware attacks:

1. Top company ACER in march 2021 was attacked by a hacker group and asked for Ransom amount in bitcoin.
2. Over 30,000 entities in the United States, including local governments, federal agencies, and companies, were hacked by a Chinese hacking gang.
3. Hackers gained access to the personal information of over 533 million Facebook users as a result of a cyber-attack. The user's name, date of birth, current city, and wall posts were all included.
4. The Not Petya ransomware attack cost FedEx \$300 million in the first quarter of 2017.

6.ROBOTICS AND IoT

-By Sayali Rakesh Nalawade (TY CSE)

The combination of IoT and Robotics technologies is likely to shape the future of both the robotics and IoT markets.

People often hear about the Internet of Things (IoT) regarding connected devices like security cameras and wearable fitness trackers, but what about combining IoT with robotics? This combination is likely to shape the future of robotics and is already disrupting the norm in many cases. People often talk about the two technologies together as part of the Internet of Robotics Things (IoRT). What's on the horizon? The Internet of Things, or IoT, refers to the billions of physical devices around the world that are now connected to the internet, all collecting and sharing data. Internet of Things (IoT) provides a robust platform to attach objects to the web for facilitating Machine to Machine (M2M) communication and transferring knowledge exploitation commonplace network protocols like TCP/IP. IoT is gaining chop-chop day by day and until date, billions of devices square measure already connected and within the coming back few years, the amount will even bit trillions. With consistent advancements, innumerable areas like Military, Agriculture, Industry, Healthcare, Robotics, engineering science square measure adapting IoT for advanced solutions. The analysis paper proposes a comprehensive read of the new idea of IoT particularly planned for AI i.e. web of Robotic Things (IoRT). IoRT could be a mixture of numerous technologies like Cloud Computing, AI (AI), Machine Learning and web of Things (IoT). The paper additionally discusses design that plays a big role in style of Multi-Role Robotic Systems for IoRT. Additionally to the current, enlists technologies behind IoRT, applications of IoRT and existing robotic systems supported automaton, Mobile, Flying and Swarm envisaged for future IoRT systems.

Internet of Things (IoT) technology is birthing a robust base for users to form their existing devices, good and modify to attach them to the web permitting the devices to exchange data among one another. As the Internet of Things (IoT) penetrates completely different domains and application areas, it's recently entered additionally the planet of AI. AI constitutes a contemporary and fast-evolving technology, progressively getting used in industrial, industrial and domestic settings. IoT, at the side of the Web of Things (WoT) may give several advantages to robotic systems. a number of the advantages of IoT in AI are mentioned in connected work. This paper moves one step additional, finding out the particular current use of IoT in AI, through numerous real-world examples encountered through a bibliographical analysis. The paper additionally examines the potential of WoT, at the side of robotic systems, work that ideas,

characteristics, architectures, hardware, code and communication ways of IoT square measure utilized in existing robotic systems, that sensors and actions square measure incorporated in IoT-based robots, further as within which application areas. Finally, the present application of WoT in AI is examined and mentioned.

Robotics will get pleasure from the embarrassment of analysis and development in IoT, in terms of resource constraint hardware and code, low-power communication algorithms and protocols, further as optimum solutions for wireless device networks (WSN), like networking, mobility, knowledge propagation, topology building and maintenance etc.

Internet of Things (IoT), within the close to future altogether with numerous areas like AI, Machine Learning, Deep Learning, increased Reality, Cloud Computing and Swarm Intelligence will modification the face of AI by proposing next generation category of Intelligent AI titled as “Internet of Robotic Things (IoRT)”.

Internet of Robotic Things (IoRT) idea goes to successive level of networked or cloud AI via integration of heterogeneous intelligent devices into a distributed design of platforms operational each within the cloud and also the Edge. IoT technologies, design and standards assists robotic systems with quicker access to back-end knowledge, pc services within the cloud, takes input from pervasive, aid from a lot of sensors operational in surroundings and advanced communication systems.

Recently, Ericsson rumoured that already one billion individuals square measure coated by 5G networks several of these 5G connections are going to be for essential IoT applications like remote surgery, autonomous vehicles, industrial management, machine-driven ports, military operations, and others. The Integrated SIM (iSIM) are going to be one among the essential technologies supplying huge industrial IoT adoption, and it'll be a customary feature on billions of connected devices, Next year, essential IoT with cellular property can increase to quite one billion devices, and it'll still grow double-digit percentages over successive 5 years.

IoT and Robotics has a lot of scope for future. Automation is on top of everyone's agenda to improve quality, productivity and predictability of outputs produced. Robotics and IoT play very important part in automation. This will happen a lot in the supply chain and manufacturing world. There is significant scope of these fields in the healthcare. Human less surgeries and procedures are now not strangers to anyone and as things progress we keep seeing more and more adoption. Evidence suggests that the IoT will play a defining role in allowing robot operators to exert more control over their equipment, such as by manipulating the machines from a distance using an app. Amateur tech enthusiasts can even follow a step-by-step process while moving a robotic arm with an IoT app.

Robotics, together with IoT, constitute dynamic and active research fields and there is much ongoing research in these areas. This section focuses on the existing challenges and barriers, as well as future research opportunities that arise from the combination of these technologies together in the future.



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Article on

7.New Age Storage Technologies

Submitted by,

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There were significant changes within the data storage ecosystem throughout 2020. And, in 2021, that trend is set to continue.

In 2020, storage admins saw advancements and updates related to storage class memory (SCM), 3D quad-level cell (QLC) drives, cloud storage, Kubernetes persistent storage and machine learning.

This year, there are several emerging storage technologies that will mature, and make their way into the enterprise:

- PCIe Gen 4 and Gen 5
- Compute Express Link (CXL) 2.0
- Switchless interconnect
- Data processing units (DPUs)

While some of these technologies might not seem cutting-edge, they will have a profound effect on storage performance in 2021. Most will likely appear in servers from vendors such as Dell Technologies, HPE, Cisco and Supermicro before they appear in storage systems. Software-defined storage (SDS) is likely the first storage type to take advantage of them.

PCIe Gen 4 and Gen 5

PCIe Gen 4 delivers twice the bandwidth per lane as Gen 3, and Gen 5 delivers twice that of Gen 4. This is crucial to eliminate a major external and internal interconnect bandwidth issue. A Gen 3 PCIe slot provides approximately 32 GBps of total throughput, or close to 256 Gbps (see the chart below). That's not going to cut it for multiple 200 Gbps network interface cards (NICs) or adapters, let alone 400 Gbps interconnect; it becomes a performance chokepoint.

The good news is Gen 4 delivers approximately 64 GBps total throughput, or roughly 512 Gbps, which is more than sufficient for multiple 200 Gbps ports. Gen 5 doubles that again to nearly 128 GBps, or approximately 1,024 Gbps, solving the issue of multiple 400 Gbps interconnects.

Intel has said its processors will support both Gen 4 and Gen 5 in 2021. AMD supports Gen 4 but has said nothing about Gen 5. Because most storage controllers are based on Intel and AMD, expect storage systems to start including PCIe Gen 4 and Gen 5 in 2021. By 2022, Gen 5 support should be the standard.

CXL 2.0

PCIe Gen 5 support is important because of the latest version of the [CXL 2.0 open standard interface](#). CXL is a CPU-to-device interconnect protocol on PCIe that targets high-performance workloads. It specifically takes advantage of the PCIe Gen 5 specification and enables alternate protocols to use the PCIe physical layer.

Once CXL-based accelerators are plugged into a PCIe x16 (16-lane) slot, it negotiates with the host processor port at PCIe 5.0 transfer rates of 32 giga-transfers per second (GT/s). When both sides support CXL 2.0, they will use CXL transaction protocols, which are more efficient and have lower latencies. If one or both do not support CXL 2.0, they will operate as standard PCIe devices. Transfer speeds are up to 64 GBps bidirectionally over a 16-lane link.

Switchless interconnect

Switchless interconnect solves a major storage problem. As scaling requirements escalate, switches become less efficient, add more latency and increase costs.

Switchless interconnect does its own routing. It limits hops and latency, and reduces requirements for power, cooling, rack space, cables and transceivers. It can use a dragonfly configuration instead of a [fat tree](#). This simplifies the large configurations that high-performance computing environments demand. The vendor that delivers switchless interconnect has spent years developing it. Although the vendor is still in stealth, expect to see this technology in storage systems and SDS by the second half of 2021.

DPU

[DPUs are another emerging storage technology](#) to track in 2021. There are two currently in the market: one from Nvidia/Mellanox and one from Fungible.

The [Nvidia/Mellanox DPU](#) is focused on networking offload. It offloads the majority of the most common high-performance networking protocols, such as [RDMA](#), NVMe/JBOF, storage space direct (S2D with RDMA), Lustre RDMA, NFS RDMA, NVMe-oF (RDMA over Converged Ethernet, InfiniBand, TCP/IP), Open vSwitch Kernel

Datapath offload, Network Packet Shaping, Nvidia GPUDirect and User Datagram Protocol offload.

The Nvidia/Mellanox DPU aims to accelerate communications between initiators and targets. The Nvidia/Mellanox Connect-X NIC/Adapter stands out in the market for its high performance, especially in storage. It is likely to stay that way in 2021. Although, Fungible is a tough competitor.

There are two different Fungible DPUs. One is an initiator that runs in servers. The other is specifically a storage target up to four times the bandwidth at 800 Gbps. The Fungible DPU is designed to offload all infrastructure services from x86 processors. It works on both PCIe Gen 3 and Gen 4. It has built in encryption/decryption, compression/decompression and programmability. It supports NVMe-oF, NVMe over TCP and, uniquely, Fungible TrueFabric. TrueFabric further reduces latency and guarantees no more than three hops, no matter how big the number of initiators, switches and targets. TrueFabric requires both Fungible initiators and Fungible storage targets; although, the latter are compatible with Nvidia/Mellanox initiators

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8.Virtual Reality: parallel world within the glance

Virtual Reality (VR) is a computer-generated environment with scenes and objects that appear to be real, making the user feel they are immersed in their surroundings. This environment is perceived through a device known as a Virtual Reality headset or helmet. VR allows us to immerse ourselves in video games as if we were one of the characters, learn how to perform heart surgery or improve the quality of sports training to maximise performance.

Although this may seem extremely futuristic, its origins are not as recent as we might think. In fact, many people consider that one of the first Virtual Reality devices was called Sensorama, a machine with a built-in seat that played 3D movies, gave off odours and generated vibrations to make the experience as vivid as possible. The invention dates back as far as the mid-1950s. Subsequent technological and software developments over the following years brought with them a progressive evolution both in devices and in interface design. Medicine, culture, education and architecture are some of the areas that have already taken advantage of this technology. From guided museum visits to the dissection of a muscle, VR allows us to cross boundaries that would otherwise be unimaginable.

Nowadays, the market is demanding applications that go beyond leisure, tourism or marketing and are more affordable for users. Virtual interfaces also need to be improved to avoid defects such as clipping, which makes certain solid objects appear as though they can be passed through. Or to minimise the effects that VR produces in people, among them motion sickness, which consists of a dizziness induced by the mismatch between the movement of our body and what is being seen in the virtual world.

The big technology companies are already working to develop headsets that do not need cables and that allow images to be seen in HD. They are developing Virtual Reality headsets in 8K and with much more powerful processors. There is even talk that in the next few years they could integrate Artificial Intelligence. The

latest 5G standard can also provide very interesting scenarios for the evolution of VR. This standard will allow more devices and large user communities to be connected. In addition, its almost imperceptible latency will make it possible for consumers to receive images in real time, almost as if they were seeing them with their own eyes.

All this means that Virtual Reality is no longer science fiction. It is integrated into our present and, in the coming years, it will lead to advances that will shape the future.

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Article on

9.Upcoming Technologies in Mobile Phones

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Let's now have a look at what mobile technologies we can witness in the future.

Top 10 Mobile Technologies to Look Out for in 2021

1. Instant Apps for The Android Users

Android instant applications are one of the many mobile technologies you would say hello to in 2021. These instant apps are software that enables the users to test run a native android application without having to install it.

These include the following:

1. Skyscanner
2. Red Bull TV
3. NYTimes Crossword
4. BuzzFeed
5. Onefootball

It is supported by the latest devices i.e., Android 5.0 to Android 8.0 and others.

2. Cloud-based Mobile Applications

According to industry experts, cloud-based applications will be a big hit in 2021. Not only for the users, but even the businessmen also claim that these cloud-based applications such as Dropbox and Google Drive have helped them with their IT strategies.

These cloud-based applications run on a cloud operating system. It ensures smooth data sharing and security. Some application that uses the cloud-based technology are:

1. Twitter
2. Google
3. YouTube

3. Artificial Intelligence

With each passing year, we get a step closer to robots being a part of our everyday life. However, we are still not fully there. There have been some advances in artificial intelligence, mainly in the telephonic industry.

Examples of artificial intelligence in the telephonic industry:

1. Siri
2. Google Assistant
3. Alexa
4. Cortana

These advancements can be seen in regular mobile applications too. Such as face and speech recognition features are some of the few artificial intelligence enhancements.

Artificial intelligence has helped in filling translation gaps with the help of voice recognition features. As the user voice can be understood clearly and the marketers can learn more about the users. This will help them know their target audience and likewise, generate better revenue through relevant marketing.

4. Healthcare Focused Application

The world is moving towards a healthier and better society. To stay in the run, mobile developers too introduced different healthcare-focused applications. These applications benefit both; the health professionals and people who are health conscious.

An example of a healthcare-focused application is [Fitbit](#). This company has healthcare-based watches that help a person track his health. The thought behind this idea is for the general public to track and screen their wellness and wellbeing venture. With the application, it's not difficult to think about information and how you are working throughout the span of a day, week, month, or even year.

Some examples of healthcare-focused software are:

1. Fitness bracelets
2. Smartwatches
3. Healthcare monitors.

(Also Read: [What is Mobile Marketing: A Comprehensive Guide](#))

5. Cross-Platform Development

Cross-Platform Mobile applications are the new advancements in the mobile technology world. Application developers launching their app for Android and iOS devices can soon take advantage of cross-platform development.

It is very important for an application to be available on only one platform and not on the other. Since these require high costs, previously businesses were a little reluctant to launch their businesses on both platforms. However, today launching on just one platform is not feasible.

Businesses had to build two different applications. But thanks to cross-platform development, businesses can now run on both platforms. Some examples of cross-platform development are

1. Chrome
2. OpenOffice
3. Adobe Reader
4. Apache
5. Thunderbird

6. Applications For Foldable Devices

Foldable phones were in fashion back then. However, they are coming back to the world today. Samsung recently introduced the Samsung Galaxy Fold while other devices are still on their way.

In the Android developer's summit 2018, Android phones claimed that it supports foldable devices continuing screen API. Samsung has already adapted to this change. Apple is also on the list in adopting this new trend as it has been working on a foldable device. So be ready to see foldable devices from Apple soon.

The bigger display is helpful for application designers as it guarantees a profoundly vivid encounter for its clients. This is especially obvious on account of gaming and eCommerce applications as the presentation size would straightforwardly identify with the client experience.

7. IoT For Smart Devices

Most of you must have seen many interconnected devices; thanks to the IoT industry. Different wearable watches to home appliances, IoT has enabled the devices to stay connected through the internet.

For instance, Fitbit. The company focused on wearable devices that helped the development process of mobile applications i.e. integration of phones with other smart devices. Moreover, android and iOS applications are under construction and we would soon get to experience these apps integrated with other devices such as wearable bands.

Mobile application engineers presently approach another stage that is that they can create applications while zeroing in on giving a model client experience on wearable gadgets.

8. Reality Or Augmented Reality?

Augmented reality requires something that has a touch of realness. For example, different filters on Snapchat and Instagram.

Most mobile companies use this to generate revenue. Pokémon Go, a game that took the internet by storm fits best under the example of augmented reality. Did you know that this game had over 800 million downloads?

Many mobile companies are now adopting augmenting reality in their businesses like Snapchat, Instagram, and Pokémon Go. This will increase their revenue, downloads, and brand awareness.

1. Mobile Payments

Another trend to look out for is online mobile payments. Mobile security has improved over the years that caused a rise in revenue for app developers too. There are different mobile payment modes commonly used known for their advancement and ease:

1. Different bank apps
2. Google pay
3. Apple pay
4. Samsung pay
5. PayPal

2. Virtual Reality

If anything, virtual reality will grow in 2021. Since these applications do not require a phone or a tablet, the advancements take a little time. However, it is said that people would eventually adapt to this and start using goggles or helmets. Each user would have a separate controller that could be paired with the mobile applications.

Facts About Mobile Technology Trends In 2021

6. According to [Statista](#), 7 billion people will be mobile users by 2021.
7. According to [App Annie](#), by 2020's second quarter, streamed hours increased by 40%.
8. According to [App Annie](#), Banking applications downloads hit a new record of 4.6 billion downloads.

Final Thoughts

Mobile technology has gotten on the road of growth and is still going on. There have been many recent advancements made in the mobile industry to make it more user-friendly. COVID-19 has glued us to our homes hence leaving us no choice but to use our phones all the time.

To make the user interface better, different mobile app developers have come up with different ideas and innovations. Read the article to learn about the innovations and trends

10: ALL ABOUT TECHNOLOGY

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ALL ABOUT TECHNOLOGY

Technology is a broad concept that deals with a species usage and knowledge of tools and crafts, and how it affects a species' ability to control and adapt to its environment. In human society, it is a consequence of science and engineering, although several technological advances predate the two concepts.

The human race's use of technology began with the conversion of natural resources into simple tools. The prehistorical discovery of the ability to control fire increased the available sources of food and the invention of the wheel helped humans in traveling in and controlling their environment. Recent technological developments, including the printing press, the telephone, and the Internet, have lessened physical barriers to communication and allowed humans to interact on a global scale. However, not all technology has been used for peaceful purposes; the development of weapons of ever-increasing destructive power has progressed throughout history, from clubs to nuclear weapons.

The role and impact of technology in both our personal and working lives is ever growing. Understanding how people shape technology and how technology shapes people's interactions with each other and the natural world is important - not only for those who research, develop and implement new technologies, but also for all those people and organisations that have to use those technologies in their working and personal lives.

The relationship of technology with society (culture) is generally characterized as synergistic, symbiotic, co-dependent, co-influential, and co-producing, i.e. technology and society depend heavily one upon the other (technology upon culture, and culture upon technology). It is also generally believed that this synergistic relationship first occurred at the dawn of humankind with the invention of simple tools, and continues with modern technologies today. Today and throughout history, technology influences and is influenced by such societal issues/factors as economics, values, ethics, institutions, groups, the environment, government, among others. The discipline studying the impacts of science, technology, and society and vice versa is called Science and technology in society.

There are three important aspects to this definition:

1. Technology is about taking action to meet a human need rather than merely understanding the workings of the natural world, which is the goal of science. The invention of the microscope was driven by a need to explore the world of the small, beyond our unaided vision. This technological solution to a long standing problem has in turn enabled us to understand more the workings of the world which in turn has led to the development of more technologies.
2. It uses much more than scientific knowledge and includes values as much as facts, practical craft knowledge as much as theoretical knowledge. The iPod is an example of where the physics of making a small device carry so much music is married with creative design to make an iconic must have accessory.

3. It involves organised ways of doing things. It covers the intended and unintended interactions between products (machines, devices, artifacts) and the people and systems who make them, use them or are affected by them through various processes.

Technology is not a neutral word. Different people will give it different meaning depending on their viewpoint and context.

7 types of technology

Construction technology

using systems and processes to put structures on the sites where they will be used.

Manufacturing technology

Developing and using devices and systems and processes to convert materials into products in a factory.

Medical technology

Developing and using devices and systems to promote health and cure illnesses.

Energy power technology

Developing and using devices and systems to convert transmit or process energy.

Information communication technology

Developing and using devices and systems to gather process share information and share ideas.

Transportation technology

Developing and using devices and systems to move people and cargo from an origin point to a destination.

Agriculture and bio technology

Developing and using devices and systems to plant grow and harvest crops.

