

Current Trends in Information Technology- Which Way for Modern It Experts

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Abstract: *The majority of services are currently made possible by IT. Technology development has had both positive and negative effects on society's way of life. The majority of human life today is impacted by new technology. Cloud computing, mobile computing, social media, ubiquitous computing, data analytics, data science, and the Internet of Things (IoT), a network of a large number of computing devices embedded with microchips, sensors, and actuators, have emerged as a result of this development. The various technological trends in information technology, their evolution, the percentage impact of technologies on business and government, and, finally, the creation of a framework for the way forward for IT professionals are the topics covered in this paper.*

Keywords: Information Technology Advancements, Cloud Computing, Mobile Computing, Social Media, Internet of Things (IoT), IT Expert, Ubiquitous computing, Emerging Trends

I. INTRODUCTION

The history of Information Technology is traced to early civilizations when the art of recording the information developed. It followed mechanical and later electronic path as in today's society. In the early age, information was recorded on objects such as stones, metal plates, cloth, and paper like materials. The term Information Technology is a collective term for the various technologies. The various technologies involved in the processing and transmission of information, including computing, are collectively referred to as Information Technology's involved in processing and transmission of information, which includes, computing, telecommunication and microelectronics just to mention a few[1].

Evolution of Information Technology included some steps, which led to various developments. The first break through was the invention of paper and Ink. The invention of the paper in 105 A.D. in China and subsequently the ink also. Paper provided better and durable writing medium than the earlier fragile ones[1]. The other most important landmark in the history of recorded knowledge was the invention of movable type by Gutenberg in 1438. A.D. in Germany. It led to the proliferation of literature and brought a revolutionary change in the development of library.

The third in the series of great inventions are the development in the field of telecommunication, which include. American SFB Morse invented the telegraph in 1837. Bell invented the telephone in 1876, Graham Bell the radio in 1895, and Marconi, an Italian, the telephone. TV was invented in 1925 by a Scotsman named J.L. Baird. Theodore Mainan, an American, invented the laser in 1960. Other innovations include optical fibre communication, facsimile transmission, communication satellites, electronic mail, and more [1].

It is well known that information technology has impacted people's daily lives in practically every area of their lives, including business, communication, healthcare, and education [2]. We can gather, share, manage, and connect a massive volume of data and information with the use of information technology. Numerous IT-related technologies, such as cloud computing, mobile computing, social media, etc., are developing quickly and transforming how work is done. [2]. With the help of cloud computing we are able to get hardware and software resources virtually on pay per demand basis [3]. This helps an individual as well as organizations to avoid installing heavy and costly software on their systems. [4] Through cloud computing we are able to get applications, platforms as well as infrastructure over the internet[3].

Mobile computing enables human beings to access and process data on their mobile devices as with the speed of personal computer [3]. Social media helps to interact with the peoples over the globe in a very user-friendly manner[5]. These days, wireless devices are becoming increasingly popular. The Internet of Things (IoT) or ubiquitous computing

is enabling nearly every object to sense, process, and transmit data in real time between other objects over existing networks. We can control the objects remotely thanks to this, which saves us time. Today, ubiquitous computing is the main area of study, and the number of embedded devices containing computers is expected to rise rapidly in the coming year

II. RELATED LITERATUR ON IT TRENDS

The information technology industry has been characterized as a new sector experiencing rapid technological advancement [7]. Since its inception, the sector has experienced numerous significant trends. Since the beginning of the new millennium, information technology has made a significant contribution, and the majority of businesses share a few common objectives to promote technological innovation. Using previous studies, reviews of the literature, and journals, this paper delves into the current trends in information technology and the path forward for experts in the field [7].

2.1 Cloud Computing

Cloud Computing is one of the latest developments in information technology that has had a greater daily impact on the expansion of businesses is cloud computing. It is said that cloud computing is made up of a pool of shared resources like servers, storage, networks, services, and applications. These resources can be shared with people and businesses on a pay-per-use basis at a low cost. Third-party providers typically own and manage cloud computing services, which are provided to users on a pay-per-use basis [3]. The following are some of the most important computing services offered by cloud computing for customers: SaaS (software as a service): Customers are very familiar with the SaaS type of cloud service. The highest level of cloud computing architecture is Software as a Service, which provides customers with a complete application over the internet [5].

CRM applications like Salesforce, storage solutions like Google Drive, Drop Box, and productivity applications like Google Apps are among the most well-known software as a service (SaaS) applications currently utilized by businesses [3].

Platform as a Service (PaaS), which is the middle layer of cloud computing architecture and provides software developers and end users with an execution environment as a service without the need to download or install software, is another important service [3]. Microsoft Azure and Google App Engine are two examples of Platform as a Service (PaaS). Infrastructure as a Service is the other service.

IaaS Services: The lowest level of cloud computing architecture is Infrastructure as a Service, which provides virtualized sharing of hardware resources for service execution [5].

The primary goal is to make resources like servers, the network, and storage easily accessible to operating systems. There are a variety of cloud computing models that make it possible to carry out its functions [5]. This category includes; Community Cloud, Hybrid Cloud, Private Cloud, and Public Cloud. Cloud computing includes the following: Dropbox, Google App, Google Drive, Virtual Office, and e-mail. The following are some of the advantages of using the cloud: Cloud computing makes it easier to maintain software and hardware because installation is not required on each end user's computer, it promotes the idea of virtualization, which enables server and storage devices to be used across the organization, and it reduces the cost of the IT infrastructure for the company.

2.2 Mobile Computing Technologies

According to Kumar (2016), mobile computing technology makes it possible to transmit data, audio-video, and voice over any device with a wired or wireless network connection without having to connect to a specific physical location. The popularity of mobile computing has increased as a result of the proliferation of portable computing devices and the desire to connect to the internet without returning to a fixed location. Recent advancements in mobile computing, such as GPS, GPRS, Long Term Evolution (LTE), 3G, 4G, and Wi-Max, have greatly increased the use of mobile computing. [5].

The long-awaited introduction of 5G mobile devices is one of the main IT trends for 2019. The first smartphones that are ready for 5G are on the market, and the networks of the new generation have been tested. This new standard promises 10 times faster internet services than 4G and broadband download speeds over mobile networks. However, the

use of the new generation network is much wider. The Internet of Things, self-driving cars, virtual and augmented reality, robotic surgery, and drone delivery, to name a few, will all benefit from 5G's impetus [8].

The following mobile computing devices help make the service possible: Wearable devices include smart phones, personal digital assistants (PDAs), laptops, and head-mounted displays like Google Glass and Apple's smart watch. The development of mobile computing has resulted in a number of benefits and drawbacks, including: Due to its effectiveness and efficiency, it increased productivity some of the image signs for communal social media platforms.

It saves time because there is no need to travel to find the network, it is flexible because no one has to work in a specific location, and it is a source of entertainment because most gadgets are used for a variety of entertainment purposes [5]. Mobile computing, on the other hand, has its own set of limitations, including problems with connection and insecurity.

2.3 Social Media

Due to its expansion and increased use as a communication tool, the majority of nations' media are now regarded as the fourth estate or fourth pillar of democracy. Social media now provide support for this fourth estate of media [5]. All of today's social issues can now be discussed on social media. The world is becoming more integrated thanks to social media. By raising important social issues, social media also contribute to making the world a better place to live. The development of information technology is altering all facets of daily life, and social media platforms have emerged as significant instruments in the expansion of business marketing [5].

Businesses are motivated to market their products on social media platforms due to the widespread use of these platforms by consumers and businesses worldwide. Social media is a powerful marketing and advertising tool. Nearly all businesses are utilizing social media to better serve customers and connect with them. Customers can also give reviews and feedback about certain products on social media, which helps new customers learn about the product and the company learn what customers think about it. From being a buzzword among computer geeks to a massive platform for professionals, business owners, and organizations that seek greater identification and recognition at a very low price [5]. Increased the use of social media has been credited with a number of advantages, including the ability to advertise and market online, the lack of geographical restrictions, the immediate feedback provided to the parties interacting, and the fact that it can be used worldwide.

2.4 Big Data

In 2018, the technologies related to big data will continue to gain importance. Digital marketing is now more popular than traditional marketing because of its high return on investment, speed of impact, and measurability [9]. This means that big data is now being used by big businesses because many digital marketing campaigns can rely on huge amounts of data to ensure effectiveness and a wider reach. To guarantee conversions from online connections, businesses now rely on data management [9].

2.5 User Interface

Since the introduction of the touch screen, one area that has undergone significant change is the user interface. The application's user interface has been fundamentally altered by the touch screen's capabilities. The method by which users can interact with the application is enhanced by the touch screen capability. Without the need for an intermediary device like a mouse, users can now freely interact with the content being displayed [9].

2.6 Data Analytics

In recent years, the field of analytics has experienced rapid expansion. The process of finding informational patterns in data is called analytics. Operations research, statistics, and computer programming are all combined in the field of analytics. The fields of data analytics, predictive analytics, and social analytics have all contributed to the expansion of the analytics field. A tool for supporting the decision-making process is data analytics. It transforms unstructured data into useful information. A tool called predictive analytics is used to make predictions about the future based on both current and past data. Companies use social media analytics to learn about and meet the needs of their customers. In the

past ten years, a lot of progress and changes have been made in the ever-evolving field of information technology. In addition, the emerging trend can be concluded to have a growing impact on business and will assist businesses in better serving customers

2.7 Internet of Things(IOT)

The Internet of Things, or IoT, is a network of interconnected physical computing devices, digital and mechanical machines, animals, objects, or people with the ability to exchange data over the network without human or computer interaction. The term "thing" in the Internet of Things (IoT) refers to a large number of computing devices, including an implanted heart monitor, a biochip transponder in a farm animal, a car with a built-in sensor to notify the driver of a potentially hazardous situation, and so on. These kinds of devices can anonymously exchange data between devices over a network by collecting data through sensors [5]. When actuators and sensors are added to the Internet of Things, the technology becomes more powerful and capable of handling a variety of tasks. Building management, energy management, healthcare management, transportation management, environment management, and other areas are among the IoT's applications.

III. RECENT EVOLVING TECHNOLOGIES

It is essential to note in this paper that some technologies are still undergoing adoption due to development difficulties. Depending on user feedback, full implementation of such technologies may take some time. The following technologies are still in development and not widely used.

3.1 Quantum Computing

You might be surprised to learn that conventional computers perform rather slowly. According to 2019 information technology trends, quantum computers will be the next generation of computers. They are currently actively maturing and will significantly outgrow their ancestors. Based on the phenomena of quantum mechanics, quantum computing is a brand-new method of transmitting and processing data. Information is handled by traditional computers using binary code, or bits. The bit can only exist in one of its two fundamental states, which are zero and one. Qubits based on the superposition principle are used in the quantum computer. Additionally, the qubit has two basic states: one and zero. However, because of superposition, it is able to combine values and simultaneously exist in all of these states [9]. Using quantum computing's parallelism, the solution can be found directly without having to check all possible system state variations. Additionally, a quantum-computing device does not require a significant amount of RAM or computational power. Imagine: A system with 100 particles can be calculated with just 100 qubits, whereas a binary system needs trillions of trillions of bits. Quantum computing applications have already been developed, and their continued development and widespread adoption are a goal for developers [9].

3.2 Block-chain Evolution

The technology known as blockchain ought to unquestionably be included on the list of tech trends for 2019, as it has been expanding rapidly over the past few months and still possesses enormous potential. Despite the fact that the majority of people only think of cryptocurrencies, block-chain technology can be successfully applied to numerous non-crypto related fields. The development of the block-chain industry's image and its separation from bitcoin and other cryptocurrencies will be the focus of the year 2019. Block-chain technology is likely to merge with IoT, machine learning, and fog computing technologies. Consequently, there will be a rise in the demand for block-chain specialists and the representation of new practical use cases [11].

3.3 Use of Drones Technology

Drones are probably mentioned in discussions of the most recent IT trends on all lists. The so-called UAV (unmanned air vehicle) or UAS (unmanned air systems) industry, which has been in existence for a few years, has blossomed into a whole industry [11]. It is expanding at an incredible rate. Farming, military surveillance, accident monitoring, and other fields all make use of autonomous aircraft. The drone industry will see an increase in investment in the coming year. Worldwide, more and more drone delivery systems will become commercial projects. In fact, NASA will finish the

Unmanned Aerial System Traffic Management (UTM) system for controlling drone traffic in the sky.

3.4 Cybersecurity and Artificial Intelligence

Cyber security is becoming more and more important to everyday life and business, but it's getting harder to manage because of all the obstacles. As a result of cyber-insecurities, exploits have become extremely sophisticated, making it difficult for IT professionals to control attacks. To improve automated scripts and data analytics, AI is required. Pure automation is no longer sufficient. It is anticipated that humans will continue to be involved in decision-making; consequently, the connection to ethics. However, AI is not secure against cyberattacks on its own. Artificial Intelligence/Deep Learning (AI/DL) methods must be made more robust in the presence of adversarial traffic in any application area in order to manage and control these issues that affect the two technologies. It is anticipated that this will be implemented soon [11].

3.5 Virtual Reality

Virtual reality technology is becoming more common. Virtual reality software is preparing numerous industries for various scenarios before they occur. In the coming years, the medical field is expected to use virtual reality for some treatments and patient interactions [11]. Cost-effective virtual training sessions for businesses increase education and fill in personnel gaps. By 2023, Gartner (2019) predicts that virtual simulations for a select group of patients with specific illnesses will have reduced the number of emergency room visits in the United States by 20 million. Virtual-reality care will still be able to provide patients with adequate attention thanks to the intelligence capabilities of these simulations (Gartner, 2019).

IV. INFORMATION TECHNOLOGY EXPERTS WAY-FORWARD

The various trends discussed in this paper demonstrate how the rapid advancement of technology will shape the role of IT specialists in the future. However, the use of the new generation of networks is much more widespread. The Internet of Things, self-driving cars, virtual and augmented reality, robotic surgery, and drone delivery, to name a few, will all benefit from 5G's impetus.

The most recent trends in information technology that we have talked about in this paper show that IT will see big changes and new breakthroughs in the coming years. It is anticipated that the technology will contribute to an overall increase in the growth of ICT by the Business and government news of the moment increase because, as depicted in Figure 2, ICT will have a positive impact on governments and businesses over the next four years. Expanding very quickly. Because they are the ones who drive technology, information technology experts must be aware and offer advice on how to move forward. The Internet of Things, social media, cloud computing, and mobile computing are all topics of discussion. The internet-based sharing of hardware and software resources is made possible by cloud computing. People no longer need to be connected to a specific physical location to access data and information thanks to mobile computing. Social media is making the world a much smaller place to get to know each other by providing new ways to connect with people from all over the world. In comparison to traditional media, social media offers new trends in marketing and advertising, and nearly all kinds of businesses have established social media accounts to connect with customers. Through existing network infrastructure, the Internet of Things (IoT) enables computing devices and chips to embed with a variety of real-world objects and transfer data between them. The various trends discussed in this paper demonstrate how the rapid advancement of technology will shape the role of IT specialists in the future.

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