TECHNOLOGY: THEN & NOW THE DIFFERENCE

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ABSTRACT*: The current paper examines the current and new tech nological trends occurring around the world. The aim of the paper is to manifest the new trends, explain them, and provide several ways that these trends can be implemented in the real world. In addition, the paper intends to carry out this theoretical examination based on an in-depth analysis by researching and identifying the technologies with the substantial possibilities to change society's view of technology in the coming years.*

KEYWORDS*:* Technological Trends, New Trends, Computing Science, Information Technology, Technological Applications.

I. INTRODUCTION

Technology has expanded its scale through several aspects of advancements and computing technologies, formulations in the several and diverse perspectives of the trending implementation and applications such as the cloud research, mobile applications, knowledge systems of management and concentrated on the high quality of performance. The general predictions of several technological experts, which is essentially based on an in-depth examination and analysis, can easily identify the top technological applications and trend that could have essential importance in the world through the coming years [1]. The technical society around the world generally depends on the field of Computer Science as the source of technological trends, technology IP, and technological information and data.

The revolution of advanced technology emerged in the late years of the 20th century, which has presented mainly a redimensioning procedure of the practical and theoretical approaches of thinking and understanding within the computer science fields. Through the diverse and several aspects of social, economic, cultural, and environmental aspects, the information technologies (ITs) have presented new and modern possibilities to comprehend the experiences of such aspects [2]. This technological revolution has provided a re-formulation of the society's lifestyle and the practical approach that individu- als implement in their daily lives [3]. The general application of technologies has certainly become a paradigmatic element for all the fields and aspects of knowledge. Formosinho, Reis

and Renato (2013), when examining specifically the field of computer science from a technological and operational dimension, stated, "the technocentric aspect of thinking provided a complex reductionist vision of human style of life that includes a model of community, an educational idea, and a knowledge conception, where the important value is in a narrowed comprehension of usefulness" [3].

The technological creations and inventions through the years have provided humanity with the absolute knowledge and power to change society from undeveloped societies to advanced societies in many fields of science, health, education, economy, industry, and so on. Technology provided the conceptualized understanding as an important tool, which has effectively supported the educational process, the technological management of innovation; therefore, contributing towards the advancement of society leading it to create more wonders [3].

II. THE NEW TENDS OF TECHNOLOGY

The current section provides a brief yet thorough explanation and examination of the new trends of technology, its services, applications, and the way it currently shapes and will shape the lives of every individual around the world. Such trends vary between Artificial Intelligence, Recognition Technologies, Advanced Robotics, Transportation, News Media, Book Publishing, etc. The current paper will provide the necessary information that every trend include in order to have a better understanding of the fundamental role of these trends and how they will play a significant role in the future.

Modern Initiatives

The services and resources offered and provided by the modern initiatives of technology have changed rapidly in the last years. These alterations were depending on the academic and industry-led society's endeavors towards realizing and understanding computing as an essential utility [4]. This vision has been achieved, but there are continuing changes in the cloud computing landscape, which this paper aims to present. Applications now aim to leverage cloud infrastructure by mak- ing use of heterogeneous resources from multiple providers. This is in contrast to how resources from a single cloud provider or data center were used traditionally. Consequently, new computing architectures are emerging. This change is affecting a number of societal and scientific areas.

The following list contains the new trends of technology that will shape the future of human beings:

1. Artificial Intelligence

Artificial Intelligence (AI) is a fundamental aspect of computer science in which computers are set and programmed to execute orders that often need human intelligence. Such execution of order includes reasoning, learning, problem-solving skills, perceiving a certain environment or situation, and understanding languages. AI is a very broad and large field, which implements its own languages of computer and even particular forms of networks, which are modeled and shaped from the human brains [5].

In the broad field of computer science, AI often referred to as a "machine intelligence", which intelligence is presented by a mere machine in direct opposition to the usual intelligence presented by an animal or a human. The AI research is considered the study of intelligent agents; as any device perceives its surroundings and performs actions that increase the success chances for fulling its objectives [6].

1.1. The Creation of AI

The general idea that people could one day develop artificially

intelligent robots was first proposed by distinguished philosophers and scientists in the 1700s. Ada Love- lace, a mathematician, while translating a scientific paper, submitted a theory that one day a computer may have the ability to do creative activities and to reason, just like humans. Between the 1940s-1950s, mathematicians, such as Vannevar Bush published a story called "As We, May Think" envisioning intelligent robots helping humans, while Warren McCulloch, Alan Turing, and Water Pitts published scientific papers that conceptualized the neural networks. In the 1950s, Turing finished another paper, the "Turing Test", while Shannon published a study analyzing how computers could be programmed to play chess. In addition, Grace Hopper helped in spreading that idea introducing and developing early programming languages that were somehow similar to the English language [5].

In 1956, a historic meeting was set at Dartmouth where John McCarthy first mentioned/developed the concept of "artificial intelligence". In the 1960s-1970s, as the field of AI was exploding, Cambridge's Margaret Masterman and her team developed the first semantic networks. Jane Robinson created the "Processing of Natural Language" group [5].

Scientists had been developing a dynamic AI, through implementing the human brain for inspiration; however, they did not have the required access to enough data, power, or trained individuals to progress the field. In the past years, the modern advances of Amazon, Alphabet, IBM, Microsoft, Apple, Facebook, and so on, have reignited the funding and excitement entering the modern era of Artificial Intelligence.

1.2. The Trends of AI

1.2.1 AI Cloud

In the past few years, the corporate managers of the artificial ecosystem have been competing to have an AI cloud share and become the reliable provider of AI on distant servers. Mi- Microsoft's Azure, Amazon Web Services, Alphabet, and IBM are all developing new packages and offerings for users and developers, in the hopes to create more affordable by the developers for a broad group of AI startups to initiate and offer their futuristic ideas into the digital market [5].

1.2.2 Homegrown, Proprietary AI Languages

Currently, the major companies are beginning to engage in the mindshare and market share. Major companies like IBM, Microsoft, Alphabet, and Amazon are offering software packages for users and developers along with special programming AI applications languages. For instance, Uber revealed the company's "Pyro", which is a probabilistic programming language written in Python. This move indicated the most likely fragmentation of the AI ecosystem in the future [5].

1.2.3 AI Chipsets

The typical CPUs found in the laptops, tablets, desktops, and phones have undoubtedly gotten powerful over the years; however, CPUs are not designed to fulfill the demands of a learning machine. The issue with the present CPUs is that they are not equipped with enough processing units that can create the required computations and connections needed in the next age of computing. Entering a suite of modern processors found on the SoC (System On a Chip) Apple, Huawei, IBM, NVID- IA, and Intel are all developing new systems of SoCs and architecture. The AI Chipsets indicate that these chips are prepared to operate on AI ventures and should promise significant velocities and more secure information [5].

1.2.4 Cognitive Computing

The systems of cognitive computing apply natural language processing and AI to understand the individual's intentions. IBM platform is a system that applies natural language processing and machine learning to enable machines and individuals to naturally interact with the environment. On the technological horizon, the cognitive systems are created to help the knowledge developers with their thinking missions in several companies, banks hospitals, and so on [5].

1.3. AI's Applications

AI is generally relevant to any intellectual profession. The contemporary techniques of artificial intelligence are highly common and are numerous to list []. For instance:

1.3.1 Health Care: AI is breaking into the healthcare system by helping doctors to find the right cancer treatments. There is a significant amount of drugs development and research relating to cancer that has been done by the assistance of AI [7].

1.3.2 Automotive: Among several other factors, AI's advancements have contributed to the automotive industry growth through evolution and creation of self-driving vehicles [8].

1.3.3 Finance and Economy: The financial firms have long implemented the systems of artificial neural network in order to observe any claims or charges outside of the usual norm, away from any human error. Currently, banks use the systems of AI to manage operations, preserve the bookkeeping, manage properties, and invest in stocks [9].

AI implementation goes through more aspects and specializations such as the government, video games, art, marketing, auditing and accounting, military, and so on [10].

2. Recognition Technologies

Hidden Bias in Recognition Technologies, Faceprints, WI- FI Tracking, Voiceprints, Personality and Character Recognition, Gesture Recognition, and Ambient Proximity are all essential applications of AI within the category of recognition technologies; as AI made is completely possible to identify and recognize an individual through any aspect of the human body, shape, and sound [5].

3. Data, Security, and Privacy

The historical conflict and debate between privacy and security will have an impact within the coming years. Network users are providing more data every day, which provides their data, as long as they are connected to their devices, to the marketplace to be in an auction. However, AI plays a fundamental role in providing, protecting, and shielding the data from any attacks by known hackers or the attempt to infiltrate an individuals' identity and general aspects of life [5].

4. Advanced Robotics

A new generation of robots now has the ability of self-assembly, allowing them to split, merge, and repair themselves. Eventually, those robots will be ingested to provide medications, work on factory floors, construction sites, and so on. The self-assembling robots are created with the concept of possibilities for manufacturing, medicine, military, and construction. When it comes to future applications of health, robots might become surgeons, nurses, and provide

medications [5].

5. Entertainment and Media

With the several aspects that technology can integrate within the entertainment industry, Holograms, Virtual Reality (VR), 360-Degree Video, Augmented Reality (AR), Mixed Reality Arcades, etc. For instance, The Mixed Reality (MR) integrates the digital and physical realms and includes a various number of technologies: virtual reality (VR), augmented reality (AR), holograms, and 360-degree video. The previously mentioned elements are not new, but they are being developed in the coming years to be more affordable to consumers

equipped with new contents that can significantly allow building out the constant experiences and stories for each individual on every platform. For instance:

5.1. Holograms

In 2017, researchers at the Rochester University released the Illumyn 3D Display, which is a system that applies laser projection to produce images in 3D in the midair. The midair 3D images are enclosed within a sphere of glass filled with a metallic vapor. The hologram technology remains in constant development; thus, it is a bit early for most organizations to implement [5].

5.2. Virtual Reality (VR)

VR is a computer-simulated setting used as a tethered practice through wearing a couple of goggles and initiating the stimulation process of the individual's sensations of being present physically in the scenes that the user is seeing. Virtual Reality can be also experienced untethered through slipping a mobile phone into a, particularly designed mask. In 2017, a number of VR headsets went on sale from Microsoft, Google, Oculus, and HTC. Due to the fresh environment of the VR tech, its relative value of HMDs is not attractive yet for the normal consumers [5].

5.3. 360-Degree Video

The 360-degree video is developed with a particular set of camera systems able to record 360 degrees of a certain scene or location simultaneously. Once the video is eventually rendered, the viewers can use their fingers, a normal mouse, or a certain gesture in order to watch the video from any angle or perspective. Many major sites on the Internet such as Facebook, Vimeo, and YouTube provide 360-degree videos services. Because the technique does not need to require separate hardware for seeing, it provides a cost-effective alternative to the Virtual Reality tech [5].

6. Marketing and Advertising Technologies (Martech)

Marketing technology is a designed group of tech that marketers use to improve and conduct their marketing strategies. The general aim of marketing tech is to make challenging procedures easier, measure the effect of marketing strategies, and provide more adequate spending. Marketers use Virtual Reality (VR) or Artificial Intelligence (AI) in order to help him/her reach the required customer. The applications of Martech are considerably wide and expected to change the process of marketing forever [5].

7. Energy

Charging Stations, Green Tech, Better Batteries, and Ultra-High-Voltage Direct Current and Macro Grids are known technological trends that changed the environmental perspective for many individuals across the world. Currently, the extreme conditions and events of the weather along with the ongoing change of climate have made many individuals seeking a solution due to the weather's powerful effect. For instance, The International Energy Agency stated that

renewable energy would make up for 45% of the global power grid by the year 2035. Green tech is expected to be fully developed in the coming (5) years along with witnessing an unprecedented number of modern charging stations for electric cars [5].

7.1. Green Tech

Solar panels, Electric vehicles, wind turbines along with several examples that constantly demonstrates the global hostility to the green technologies. The past few years have witnessed the birth and development of green technology by harvesting the world's renewable energy. Currently, it is considered the momentum level of clean power. The extreme events of weather and the ongoing change of climate have made many scientists develop and utilize renewable energy sources, as it will make up nearly 45% of the international grid by 2040. In the coming years, the world will witness the rapid growth and change in green technology, which will be more advanced that it has ever been seen before [5].

7.2. Charging Stations

In the few years to come, the unprecedented number of modern charging stations for electric cars will be on the rise. The charging stations will be the start of an inconvenience disruption for the gasoline retail business and supply chain. The E.U. is banning cars run on fossil-fuel by 2040. France will ban the fossil-fuel cars in 2030. The company of General Motors has 20 new EV models ready to put in the market by 2023. All of which and more indicates that the world will see more charging stations throughout societies everywhere, which also shows the world's willingness to change [5].

7.3. Better Batteries

Batteries have been always a common problem for the world. The technological devices never seem to have the required life battery, which requires charging from various sources of power and carried chargers. Developing a better battery has been an elusive yet desired challenge for many years. Such an elusive and desired challenge might be solved in the few years ahead [5].

III. CONCLUSION

The previous examples were but a few aspects of the wide and significantly broad field of the new technological trends coming in the future. Computer technology has been rapidly advancing and changing over the past years due to the public demand for institutional and personal advance technologies and computers. While this technological trend is expected to be a constant phenomenon, many past and current trends will fade away to provide the path for the AI, Recognition tech, Robotics, and so on. Because it is known and realized that technology is thoroughly intertwined with a numerous number of other

fields of modern change within the fields of education, Economy, media, government, and much more.

Eventually, it is recommended for the society to comprehend the role technology played and still playing within the lives of every individual. To do this, society needs to widen its perspective regarding technology and accept it as a

construction needed for its survival.

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