Inquiry: In the past century, has Computer Science revolutionized the world?

With the recent boom in Computer Science, many innovative inventions and algorithms are produced daily. From self-driving cars to Amazon's Echo, we continue to interact with this field on a daily basis. We often take these luxuries for granted and forget where they have originated from. In 1936, Konrad Zuse blessed humanity with the first programmable computer. Since then, computers have rapidly advanced and so did Computer Science. From the first programming language came more efficient and robust languages that are used today and dominate the computer science field: Python, C++, Java, and many more. With mere letters, Computer Science has contributed to the development of various fields, such as medical**. I believe that Computer Science has made its mark on the universe by achieving the unfathomable and providing innovative solutions to universal issues.** From using machine learning to diagnose diseases to creating the software in that phone in your pocket, Computer Science has drastically transformed the world in a way where we cannot turn back.

One field where Computer Science continues to make an everlasting effect on is the medical field. Before, the process of discovering potential cures for disease required a human to manually test various chemical combinations. Now, neural networks are able to mix and match functional groups and active sites quicker as well as autonomously. It has also made detecting potential diseases more accurate and efficient through disease detecting algorithms. By entering a database full of various pictures of the disease, the algorithm trains itself to understand specific patterns and symptoms, allowing for a consistent and accurate diagnosis, "Facial recognition

software is being combined with machine learning to help clinicians diagnose rare diseases. Patient photos are analyzed using facial analysis and deep learning to detect phenotypes that correlate with rare genetic diseases" (Emerj). With Computer Science, it has allowed for the discovery of crucial cures and convenient assistant machines in surgical rooms. It has incorporated efficient, effective, and innovative solutions and has left an imprint in the medical field. By utilizing programming, advancement in robots have made its way into the surgical room, such as Duke Universities' T.R.I.N.A (Tele-Robotic Intelligent Nursing Assistant) — an assistant that's able to safely contact contaminated materials and minimize human exposure to contagions and other biohazards. The technology continues to advance, making the lives of humans safer. It has made an everlasting effect in the industry by doubling the life expectancy from the 1900s. A century ago, the thought of living past eighty was unfathomable. Thanks to Computer Science, ideas from the philosophical realm have become reality

In the 21st century, Computer Science has stormed the gaming industry and furthered it to greater heights. Specifically, it has given rise to Virtual Reality — an experience where the individual is immersed in a simulated world. The field is fairly new, allowing room for further advancement in terms of technology and in affordability. From a simple Virtual Reality machine, it people can explore foreign environments and battle through phobias, "The benefits of VR are still being calculated because certain proposed ideas, such as therapists using VR to help patients overcome phobias, have not yet been tested. As illustrated below, VR technology provides intuitive ways for users to explore new environments and master new skills"

(ComputerScienceDegreeHub). Computer Science can combine the various sensors, screens, and audio in order to immerse the individual into an environment. By doing so, the person can participate in intense simulations — such as surgeries or chemical labs — without being in any potential danger. Compact inventions like these are able to drastically impact the way we interact with the world by allowing us to endlessly explore various dimensions in the safety of our home.

Specifically, in the field of study, Artificial Intelligence — machines demonstrating human intelligence — has even seeped its way into the car industry through self-driving cars. The automotive AI market is expecting the value of AI in automotive to be at $11 billion in 2025 and the IHS Markit also predicts the installment rate of AI-based systems to rise 109%. Cars are now implementing the necessary technology for AI, “Autonomous vehicles are being fitted with cameras, sensors and communication systems to enable the vehicle to generate massive amounts of data which, when applied with AI, enables the vehicle to see, hear, think and make decisions just like human drivers do” (Medium). This technology allows cars to be alert like humans, however, cars don’t fall victim to fatigue like humans. With the incorporation of AI in cars, it creates a system where traffic and human-driving are eliminated and increases efficiency as well as lowering car accident rates. Entrusting everything to a robot that’ll reroute you through the most efficient route is unorthodox but incredible. By doing so, you trust your life in the hands of the programmer that designed, created, and tested the AI system. This is just another step in proving our reliance on the technology surrounding us — technology that programmers develop algorithms for.

With rapid development, Computer Science has simultaneously question human morals, potential evil tools, and unforeseen technological disasters. From questions asking ‘Who’ll be responsible if self-driving cars crash?’ and ‘How can Artificial Intelligence be dangerous?’ it makes you wonder about the possible consequences of advancements in computer science. A potential answer to these questions was written in the Seattle Times, “Currently, if two cars collide, either the drivers work it out, or police or insurers talk to the drivers and examine the evidence to make a determination of who’s at fault” (Seattle Times). The concept is great on paper, however, there are various circumstances that expose the weakness of it, such as lacking the necessary information to determine who’s the victim. The answer remains unclear, nevertheless, Computer Science has made us rethink certain policies that may soon be outdated. It has incorporated another contributing factor amongst accidental events but has theoretically improved the car industry. As for questions surrounding the magnitude of danger Artificial Intelligence brings, it has made many question the ethics of the field. There are certain scenarios that researchers believe make Artificial Intelligence dangerous, “The AI is programmed to do something devastating… The AI is programmed to do something beneficial, but it develops a destructive method for achieving its goal” (FutureOfLife). There are numerous scenarios that come into mind when reading these conditions — like someone creating a robot aimed at destroying humans or an AI car preventing a car crash but instead running over a human — all of which aren’t urgently addressed. These are only some of the questions that remind us

of the endless potential Computer Science holds, both in the good and bad spectrum. It furthers our way of thinking of certain policies that incorporate technology.

Computer Science has only been around the past century and it has seeped into all fields of studies. Being in the 21st century, the area has much room to advance in terms of technology and theory — all of which provide an efficient, effective and innovative method in various industries. In twenty-four hours, the amount of time the average citizen interacts with the field is extraordinary — from interacting with your phone to any software application you open. Without the technology that many have become reliant on today, many human boundaries would remain as well as ineffective systems. As humans, we have become so accustomed to the software that programmers create, which is why it's impossible to turn back. From a simple computer, it has allowed for Computer Science to exponentially grow and leave its mark with the use of texts. As we continue living our daily lives, we unconsciously interact with programming, whether that may be from performing a quick Google search to unlocking your phone via face detection or fingerprint. As we continue to rely on advanced technological contraptions, we subconsciously trust Computer Scientist with our lives — from handling personal data to using self-driving cars. Today, all of us lean on a field that has recently occurred in the past century, something that can't be said for other ancient studies

Citations

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