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THE FUTURE OF ROBOTICS

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ABSTRACT:-Over the past decade, the robotics industry has created millions of new jobs, most notably in the consumer electronics and electric vehicle industries. By 2020, robotics will be his \$100 billion industry on par with tourism. For example, the market for rehabilitation robots has grown tenfold between 2010 and 2016 due to advances in rehabilitation/therapy robots, active-hi prostheses, exoskeletons, and wearable robotics. In short, robotics will become a key component of a wide variety of applications as early as the next decade, and robots combined with AI will perform complex actions that can be learned from humans, advancing the phenomenon of intelligent automation. You will be able to So in this post I will try to give you some direction

KEYWORDS: - Active-hi prostheses, Exoskeletons, and Wearable robotics

I. INTRODUCTION

Most of us are familiar with the concept of a robot, but it can be difficult to define a robot as a separate entity from other types of machines. Robots differ from other machines in the way they interact with the world. They can change their environment based on their actions and react to the world around them. "A robotic system is a networked system that can use sensors to perceive its environment, determine events, plan using algorithms implemented in computer programs, and perform actions activated by actuators. Robotics is engineering: the field of conception, design, construction, operation, application and use of robots. Digging a little deeper, we find that robots are defined as machines that independently perform a set of actions and automate tasks normally performed by humans. In fact, in the early 2000s, scientists and companies began applying the binomial theory of robotics/AI to nearly every possible field. It was a 'simple' notion that new technology could do any job. That's partly true. However, it is becoming increasingly apparent that there are many bottlenecks that are very difficult to overcome. In practice, there are at least three problems that limit both the efficiency and functionality of such machines and greatly hinder the dream of "multifunctional" robots. Such limitations are (1) Mechanical, (2) Energetic, and (3) Computational. In fact, robot mechanics tend to reach unsustainable levels of complexity when moving from a limited feature set to a larger feature set. Similarly, increased mechanical degrees of freedom increase power consumption, severely impacting the energy life of the machine and leading to critical failures. After all, AI's computational resources have largely proven to be very good at solving a single task, but conversely, when processing more of the possible output, efficiency drops to decrease proportionally.

Applications of Robots

Like robots, they are versatile machines reflected in a wide variety of shapes and functions Healthcare: Robots in the healthcare industry do everything from assisting in surgeries to physical therapy, walking people, navigating hospitals, fetching essential medicines and providing beds. linen. Healthcare robots are also helping fight the ongoing pandemic by filling and sealing swabs and creating ventilators.

- Home Life: To find a robot in someone's house, you have to find a Roomba. But they don't just vacuum the floors now. Home robots can mow lawns and extend tools like Alexa.
- Manufacturing: Manufacturing was the first to adopt robots, such as the aforementioned car assembly line machines. Industrial robots perform a variety of tasks such as arc welding, material handling, steel cutting, and food packaging.



- **Logistics:** Everyone wants their online orders to be delivered on time. As a result, businesses are using robots to stack storage racks, pick goods, and make short-haul deliveries. Space exploration: Mars rovers such as Sojourner and Perseverance are robots. The Hubble Telescope is classified as a robot, like spacecraft such as Voyager and Cassini.
- **Military:** Robots take on dangerous tasks, none more so than modern warfare. As a result, the military has a diverse selection of robots equipped for many of the high-risk tasks associated with war. For example, his Centaur, an explosive detection and disposal robot that searches for mines and his IEDs, his MUTT, which follows soldiers and carries equipment, and his SAFFiR, which deals with fires on a warship Entertainment: We already have toy robots, robot statues and robot restaurants

How robots will change the world:

Automation and machines will change the way we work, according to a McKinsey report. They predict that workers across Europe may need different skills to find jobs. Their model shows that by 2030 there will be an 18% decrease in activities that require primarily physical and manual skills, and a 28% decrease in activities that require basic cognitive skills. 4,444 workers will need technical skills, and the need for workers with STEM expertise will be even greater. Likewise, many roles require social and emotional skills. This is especially true in roles that cannot be replaced by robots, such as: B. Nursing and Education. We may also see robots as a more integral part of our daily lives. In our homes, many simple tasks such as cooking and cleaning can be fully automated. Similarly, robots that can use computer vision and natural language processing could lead to machines that can interact more with the world, such as self-driving cars and digital assistants. Robotics can also shape the future of medicine. Surgical robots can perform surgeries with great precision, and eventually, with advances in AI, they will operate on their own. The ability of machines and robots to learn may offer an even wider range of applications. Future robots that can adapt to their environment, learn new processes and change their behavior will be better suited for more complex and dynamic tasks. Ultimately, robots have the potential to improve our lives. Besides shouldering the burden of physically demanding and repetitive work, they improve healthcare, make transportation more efficient, and give us the freedom to pursue our creative endeavours.

Advantages and disadvantages of robots

The field of robotics offers solutions to many different problems. As we will see, the future of robots could change the world we live in. However, this technology is not without its drawbacks. As investigated by Open Step by the University of Reading, there are some advantages and disadvantages to using robots in modern society. Unlike humans, robots don't get bored. The same process can be repeated continuously until worn out.

- Extremely accurate to fractions of an inch, especially useful in microelectronics manufacturing.
- Robots can work in environments that are dangerous to humans, such as in the presence of hazardous chemicals or high radiation areas. They do not have the same physical or environmental needs as humans.
- Some robots have more powerful sensors and actuators than humans.

Disadvantages of Robots

- Robots are replacing human jobs in some industries, and this could lead to economic problems.
- By and large, robots can only do what they are told. So it's not improvisation (although AI and machine learning are changing this).
- Current robotics technology means that most machines are less skilled than humans and cannot compete with humans' ability to understand what they see. Although experts are working to develop robots that can perceive the world better.
- Robots with practical applications are generally expensive in terms of initial cost, maintenance, need for additional components, and need for programming to perform tasks.

The Future of Robotics and Robots

Thanks to improved sensor technology and significant advances in machine learning and artificial intelligence, robots will evolve from routine machines to cognitive collaborators. These advances and other related fields are on the rise, and robotics will benefit greatly from these advances. It can be assumed that more and more sophisticated robots will be integrated into more areas of life and cooperate with people. Unlike the dystopian apocalyptic, these upgraded robots will not replace workers. Industries will ebb and flow, some becoming obsolete in the face of new technology, bringing new employment and educational opportunities. This is for robots. Perhaps there will be fewer human workers welding car frames, but the need for skilled technicians to program, maintain and repair machines will increase. In many cases, this means that employees receive valuable in-house training and education, providing robot programming and maintenance, as well as a range of skills that can be applied to other fields and industries..

The future of robotics: Will robots take over the world?

Robots are already all around us, whether they're automated machines that build cars or virtual assistants that use conversational interfaces to help us around the house. As such, they are not currently suitable for all areas of life. But will that change in the future? Such a scenario seems unlikely, despite the threat of an AI takeover as the dominant intelligence on Earth is replaced by machines. But his PwC at Business Network predicts that up to 30% of jobs could be automated by robots by the mid-2030s. Others report that the global inventory of robots could reach 20 million units by 2030, and automated workers could take over as many as 51 million jobs over the next decade. They may not rule the world, but we can expect to see more robots in our daily lives.

Sophia -humanoid Robot

Sophia is a social humanoid robot. Sophia's architecture includes scripting software, a chat system, and his OpenCog, an AI system designed for general reasoning. Sophia can mimic human gestures and facial expressions, answer specific questions, and have simple conversations about predefined topics (such as the weather). (Google's parent company) and is "designed to get smarter over time." Its text-to-speech functionality is provided by CereProc's text-to-speech engine, and it can also be sung. Sophia's intelligence software was developed by Hanson Robotics. The AI program analyses the conversation and extracts data that will allow us to improve our answers in the future.



most advanced humanoid creation, Design -Sophia embodies the potential of artificial intelligence. As a cutting-edge robotics and AI research platform, Sophia combines science, engineering and art to present the future of AI and robotics. Sophia shows how each person's perception of AI robots varies. As a result, Sofia is the world's first robot citizen and she is considered UNDP's first robot and her ambassador for innovation.

Appearance-Sofia has a human appearance with a real human expressive face, patented artificial skin, configurable skin tone, facial design, speaking style and arm colour was created to.

Facial Expressions-Artificial intelligence robots have vivid and expressive faces that can mimic human emotional expressions. It can also interpret sentences and context with cloud connectivity, synchronizing mouth, face and body as you speak.

How robots will change the world

In our homes, many simple tasks such as cooking and cleaning can be fully automated. Similarly, robots that can use computer vision and natural language processing could lead to machines that can interact more with the world, such as self-

driving cars and digital assistants. Robotics can also shape the future of medicine. Surgical robots can perform surgeries with great precision, and eventually, with advances in AI, they will operate on their own. The ability of machines and robots to learn may offer an even wider range of applications. Future robots that can adapt to their environment, learn new processes and change their behaviour will be better suited for more complex and dynamic tasks. Ultimately, robots have the potential to improve our lives. Besides shouldering the burden of physically demanding and repetitive work, they improve healthcare, make transportation more efficient, and give us the freedom to pursue our creative endeavours. Robots boost economic growth and productivity, creating new career opportunities for millions of people around the world.

II. OPINION ON ROBOTS AND AI (ARTIFICIAL INTELLIGENCE):

Artificial Intelligence (AI) is evolving rapidly with automation and robotics technologies at tipping points. Recently, robots have been developed that perform various tasks without human intervention. Automated systems, on the other hand, greatly expand the capabilities of workers beyond just taking on repetitive tasks. Several industries, from banking to manufacturing, are embracing automation to increase efficiency, profitability, security and competitiveness. In many cases, automation improves the quality of production through its ability to provide precise reproducibility unattainable by human labor. Therefore, in the future there will be more integration between humans and robots, AI and automation. Work together seamlessly to achieve more efficient and effective results. This research paper therefore uses the context of the literature review to describe the future of robotics, AI, and automation, especially in the United States. The robotics market is growing faster than expected (Bekey, 2012). According to recent projections, it will be worth \$77 billion by 2022. AI, on the other hand, is developing even more rapidly than robotics. Expected to grow to \$3.2 trillion by 2022, it represents a significant development. It is therefore very clear that all these technologies are very powerful and that combining them in society can effectively change people's lives for the better.

III. CONCLUSION

Most robots now work for humans in industries, factories, warehouses and laboratories. Robots are useful in many ways. For example, businesses need to be efficient to keep up with industry competition, thus boosting the economy. The use of robots therefore helps business owners to be competitive as robots can perform tasks better than humans. B. Robots can build and assemble cars. But robots can't do all the work. One of the tasks of robots today is to support research and industry. Finally, as technology improves, there will be new ways to use robots that offer new hopes and possibilities. But robotics and AI, while useful, can give us power to control the world and can be very dangerous. We believe our analysis can provide broader insight into the world of robotics and how we approach it in the near future.

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