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AI - Current Landscape and Future Predictions

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Abstract:- This paper is the introduction to the Artificial Intelligence (AI) landscape in the present day and its future properties. AI is now being used in numerous fields, such as technology, finance and banking, and healthcare to name a few. The current use of AI is in automation, to perform tasks at the same level or even better than humans can in terms of efficiency, accuracy and speed. This is why AI is being used in more businesses, and why understanding AI has become more important than ever before. The majority of people don't truly understand what AI even is, and assume that it's a dangerous field filled with killer robots, however that couldn't be farther than the truth. The following chapters in this paper will explain what AI actually is as well as comparing it to the public's perception. Once a proper understanding of AI is established, the paper aims to show how AI is being applied into industries, and how they can skyrocket the success of all of them in vast ways that were never possible before the AI revolution.

Keywords:- *AI, Landscape, Future Properties, Automation, Technology, Finance and Banking, Health Care, Businesses, Industries, Robots, Revolution, Accuracy, Efficiency, Speed.*

I. INTRODUCTION

Artificial Intelligence, also known as AI, has changed the way we do everything, from how we invest in stocks and businesses, to how we administer healthcare to patients in need. AI is seeing tremendous growth in vast amounts of industries due to its nature of efficient, accurate, and rapid automation.

The question of what exactly AI is has been asked a lot in the past years. AI has been the most popular in recent times, and for good reason. More people are starting to realize that AI is an untapped gold mine that when utilized properly can shake up the most profitable industries.

AI is a branch of science that involves using certain characteristics of human cognitive ability and implementing it into algorithms to solve problems. Since AI is currently in its infancy, it is only practical to employ AI in the form of automation. However, as AI becomes more advanced there's infinite possibilities to apply AI in plenty of endeavors. Although AI is generally associated with computer science, it also heavily encompasses math, philosophy, psychology and biology just to name a few. Combining the knowledge from these fields will help us on our quest to create the highest quality AI that can assist us to bring humanity to new inconceivable heights.

This paper covers everything from demystifying the public's perception of what AI is compared to what it actually is, the different ways AI is being used in the present day, and what the future holds for AI's impact on the world.

II. DEMYSTIFYING AI

AI can be loosely defined as a field in which vast data is collected and applied to solve problems. The algorithms that make up AI also encompass sub-fields which include deep learning and machine learning which are frequently mentioned in regards to AI. These are just AI algorithms which aim to create high quality systems which in turn makes predictions, organizations, classifications and etc. based on input data.

Before continuing, it's important to really understand the different types of AI on a fundamental level. AI is really just an umbrella term used for different types of algorithms that use data. The main types of AI fall into three main categories: AI which focuses on rules, which follows a set of pre-programmed data to make its decisions; machine learning, that employs algorithms to learn from data and then use that data in various ways; and deep learning, a subset of machine learning that uses neural networks to process large amounts of data and perform tasks such as image and speech recognition, like the AI seen in Siri, for example. Each of these types of AI has its own unique capabilities and is being used in different ways to improve various industries around the world.

Even though AI can be boiled down to just a smart algorithm that learns from inputted data, many people seem to think that it's something much more powerful. Take the blockbuster series "Terminator" for example. In the film AI is portrayed as this incredibly dangerous computer system that is fully sentient. The "AI" in the film then proceeds to cause doomsday by terminating most of humanity with nuclear weapons and killer robots. Although this is a cool idea for a movie, it is an irrational fear, since AI simply cannot do all that Hollywood has advertised that it can do.

Although AI cannot easily cause the end of the world, it can still change the world for the better. Various industries such as technology, finance and healthcare have all been shaken due to the introduction of AI, resulting in possibilities that were never so easily achievable before.

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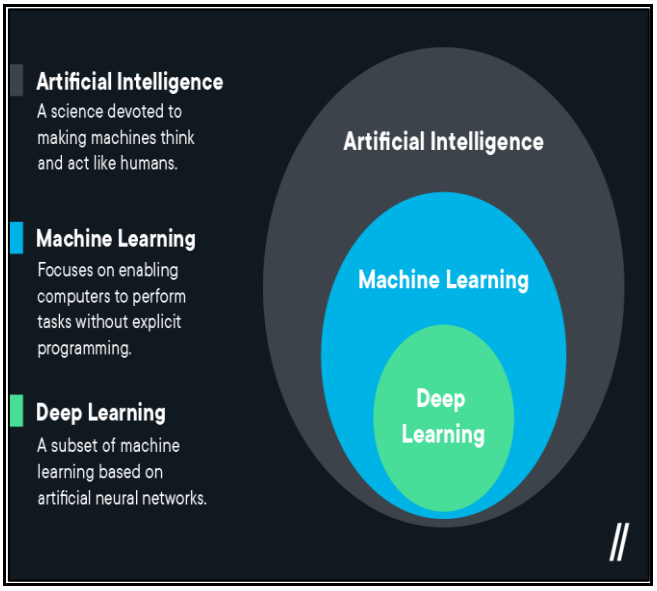

Fig 1 Different Types of AI

III. THE FRAMEWORK OF AI

AI has been implemented into many different industries of life, from virtual assistants who give medical and investment advice to robots that automate tedious tasks so humans can spend their time on more meaningful endeavors. The Framework of AI in the present day has shaken the world with its never-before-seen methods of automation, efficiency, and speed.

The following section dives deep into explaining and showcasing the various ways AI revolutionized productivity, jobs, workflow, and customer service in the present day. Ethical concerns are also discussed, determining if the value of AI is worth the potential risk it causes to easily automated jobs and the like.

➢ *AI in Productivity*

AI has been used to greatly enhance the productivity of everyone from massive business empires to the average person.

Tasks that can be automated by AI include data entry, scheduling, invoicing, and customer support via chatbots. AI powered assistants such as Siri, Alexa, and Google Assistant have been created to help users with these everyday tasks which can save users lots of time and money.

AI can also connect people like never before, resulting in more productivity and collaboration. For example, AI can provide real time language translations which tears down the language barrier that previously stopped people from working together in the past.

Machine learning algorithms also have the capacity to prioritize emails from other spam and help users organize their inboxes and other folders that may benefit from some tidiness. All in all, AI in productivity has been proclaimed as a very good thing, and time will tell how productive the world can become once integrating AI into their daily lives.

➢ *AI in Ethics*

Ethical concerns about AI have been one of the most if not the most argued topics in the past few years. Many people say that AI will cause the fall of the human race, however that has already been disproven earlier in the paper. Others pick out the flaws of AI calling it “super biased” and unworth using. It is true, due to the current nature of AI, it can produce biased results based on the data that it is being fed. A recent example is when researchers asked AI to create images of a school girl and school boy. The results came out very differently. The girl prompt creating inappropriately mature images, while the boy showed standard results. This claimed to prove that there lies some gender bias in the algorithms.

Another issue is the fact that AI can collect personal data and use it without the consent of the individual to whom it belongs to. This is already a problem with hackers and data miners; however, AI uses the personal information to make its decisions, potentially having the ability to leak information to the public in an extremely dangerous way.

A debated topic on AI is whether or not it should be used in the court of law. Defenders suggest that AI can be used to provide faster, better, and more efficient justice than a judge. Soon, AI can be used to create new more fair criminal judicial systems, but many point out the flaws. Such issues include the previously mentioned bias in the databases and the private information that is being leaked, etc. People are still pondering over the possible future of being judged by a robot that knows your personal information, and whether or not that will lead to a better trial or not.

Despite the current problems in AI, the benefits have been considered to way outweigh the issues and risks of AI. AI’s issues can all be solved with time, since AI is still in its infancy. The rest of the paper goes on to show the current power of AI and what the future can hold for AI in all manner of vast industries.

➢ *AI in Jobs*

AI in jobs has been a heated topic for discussion. There are two ways that AI can take over the workforce that people tend to argue over. The first way AI can replace workers is automating repetitive jobs that workers used to complete. The second way is creating new opportunities for people instead of putting them on the sidelines. Both are valid viewpoints with plenty of evidence. For example, Uber started their business by offering thousands of jobs to drivers around the world. When Uber announced their self-driven AI cars, instead of destroying jobs like the media immediately assumed, the self-driven cars ended up employing even more people. Uber had to hire thousands of coders and other types of tech experts as well as regular drivers to drive their cars in the experimental phase.

Due to AI’s efficiency in automation, there is a chance that people do lose their jobs, however instead of simply replacing, AI offers new opportunities for those people and assists them with tasks only humans can do and that can’t be

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done with simple automation. Figure 2 shows that despite automated jobs being replaced by AI, there are still more jobs being created then replaced. AI's role isn't to get rid of people, but instead to assist them in their jobs by doing the mundane and repetitive tasks while letting them focus on skilled jobs that only humans can do.

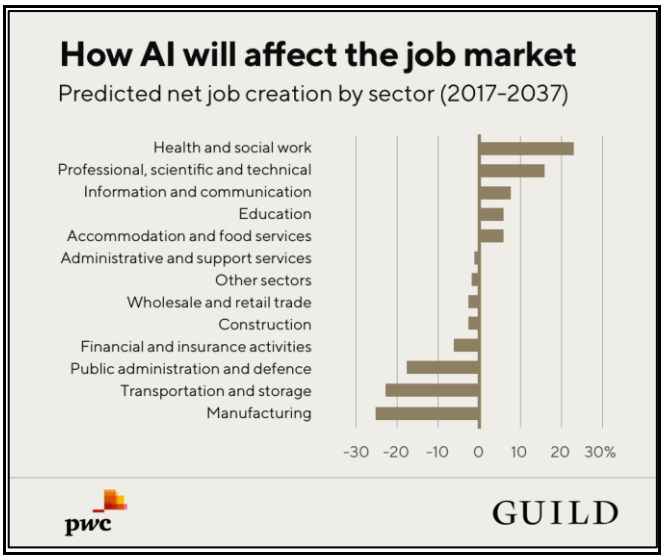

Fig 2 AI's Impact on Jobs

➢ *AI in Workflow*

With the rise of automation, tasks that were originally tedious and time consuming can now flow and be completed quickly, efficiently and with ease. First, AI can identify tasks that can be automated, which lets businesses profit off of opportunities they weren't even aware of. Next, AI can come up with solutions to the problem by identifying exactly what type of technology to use and then implement itself to automate the task at hand. AI can do this all quite quickly, allowing businesses to collect the fruits of fast and accurate automation.

Once AI has been administered into workflow, the benefits don't end there. AI will continue to improve itself by finding which areas can be improved, and make the necessary changes to provide even better results than ever before.

➢ *AI in Customer Service*

AI in customer service is like peanut butter and jelly, they may seem odd at first, but they work extremely well together. AI can automate tasks like generating reports, finding customer problems and routing customer inquiries. The simple inquiries can even be completely answered by AI, leaving the more complex tasks to the humans. These all help customer support provide better assistance and greatly reduce the time it takes to do so, therefore resulting in less holding for a few hours for a representative to speak with you.

In the eyes of the consumer, AI can aid with personalization of their experience. AI can collect and figure out purchasing habits, browsing history, and the general demographic to find out exactly what the consumer wants and offer to send them to a place where they can get what they want faster. Another great use of AI is with chatbots, which can assist the customer without even needing to talk to an agent. This allows the support team to have reduced work and the customer to have an increased experience due to the accuracy and much faster speed of the response.

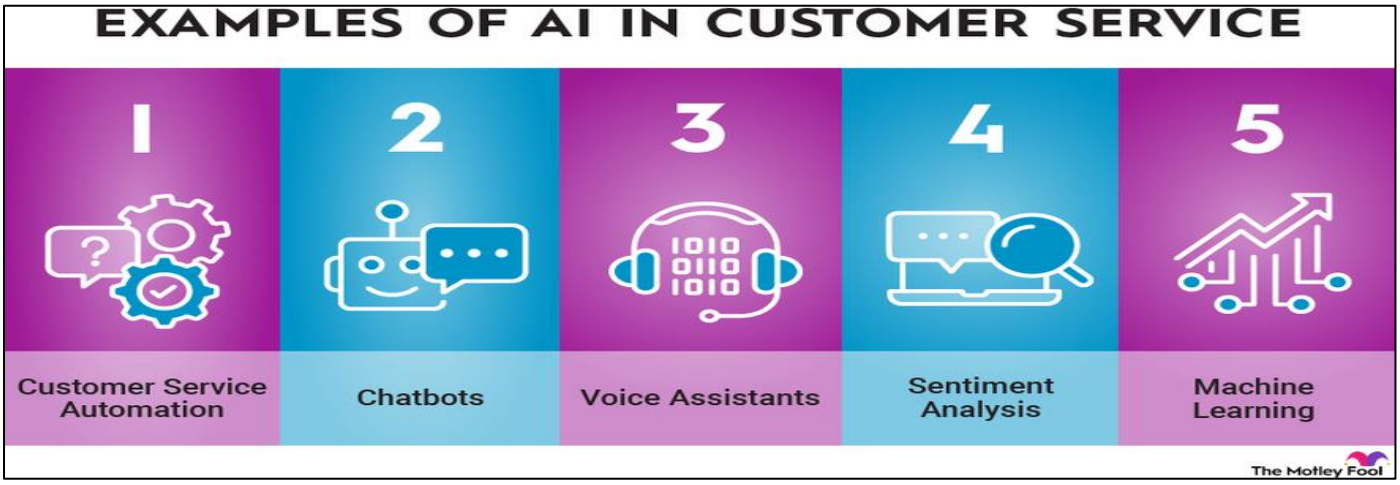

Fig 3 AI in Customer Service

IV. HOW HAS AI CHANGED THE WAY WE DO THINGS

The way AI affects computers has a part in its impact on technology. With AI, computers can leverage vast quantities of data and apply their acquired knowledge to quickly arrive at the best conclusions and make decisions in a fraction of the time it would take for humans. The way AI affects computers has a part in its impact on technology. With AI, computers can leverage vast quantities of data and apply their acquired knowledge to quickly arrive at the best conclusions and make decisions in a fraction of the time it would take for humans.

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AI in finance is the application of AI, such as machine learning (ML), to simulate human intelligence and decision-making in order to greatly improve the way financial institutions handle, invest, analyze, and safeguard their capital.

AI in healthcare can quite literally be lifesaving, so it's important that we implement it in the medical scene. Because of AI's extensive data processing capabilities, diseases can be identified more quickly and accurately. In addition, it can greatly expedite the medication discovery process and provide patients with virtual nursing care while the real nurses attend to more critical cases.

- *The Impact on Technology*

AI can help improve, create, or automate various different procedures in technology. For instance, in the digital world of coding, once routine and tedious tasks of repeating the same lines of code can be completely automated by AI, due to its ability to analyze patterns inside of code and generate code snippets. This saves time for developers to invent new ways to make innovations and creations. Large tech companies have created new AI powered assistants and gadgets to help everyone from coders to everyday consumers. For example, Amazon has created Alexa, the very popular AI powered device that links to other tech for convenience and does all manner of useful things just by saying "Hey Alexa." Another famous tech giant, Apple, has created their own virtual assistant named Siri. Both of these are well known AIs that exist in our homes and phones, however there is a more recent AI that has taken the world by storm.

The most well-known AI is Chat GPT. The model's ability to generate contextually relevant text has found applications in content creation, writing assistance, and even code generation. It has become a valuable tool for writers, developers, and various professionals seeking assistance with their work. Virtual assistants powered by language models like ChatGPT have become more sophisticated. They can understand complex questions, provide detailed responses, and perform various tasks, enhancing the overall user experience.

- *The Impact on Finance and Banking*

For financial institutions, AI allows companies automate and greatly increase the time it takes to do the tasks. The work that used to be time-consuming and tedious such as market research, scheduling etc. AI has the ability to hastily analyze large amounts of data and information to identify trends and help predict future performance, letting investors have accurate information that assists them in charting investment growth and evaluating potential risk of their investments.

AI can also be used for cybersecurity purposes, specifically fraud, stopping money laundering, and confirming the identity of patrons. By closely monitoring purchase behavior and comparing it to historical data, AI can flag suspicious activity, and automatically alert both the customer and the institution to verify a transfer or purchase in real time, and if necessary, AI can even take action to fix the issue.

For banking customers, AI, specifically machine learning, has the chance to improve the customer experience. The rise of online banking reduces the need for actual in-person banking. However, the switch to virtual has its own problems. Online banking can create more endpoint vulnerabilities, like smartphones, computers, and other types of mobile devices. Fortunately, AI can solve these problems caused by virtual banking by automating many activities like deposits, payments, transfers, customer service requests, and more, all while providing the previously mentioned security to ensure the safety of all transactions. AI can also deal with application processes for loans and credit cards including the ability to accept and reject the applications. Letting AI take care of this provides instant responses, therefore freeing up time for employees of the bank to do more important tasks.

- *The Impact on HealthCare*

AI's impact on Healthcare so has helped doctors and researchers by integrating machine learning. This form of AI is able to analyze vast quantities of inputted medical data to identify repeating trends and make more accurate diagnoses then they ever could before. This is particularly useful for diagnosing diseases such as cancer, which often has subtle symptoms that are challenging for human doctors to recognize. AI is also being used to assist in the development of new drugs and treatments, which can help to save the lives of millions around the world.

According to research from Harvard's School of Public Health, although it's still experimental, AI can make diagnoses that may improve health outcomes by 40% and reduce treatment costs by up to 50%.

In figure 4, data shows that approximately 15% of current work hours will be automated in the Healthcare industry, thus freeing up time for nurses and allowing them to be specialists. For example, there is a 39% increase in all nursing type occupations expected by the year 2030, which even allows for the fact that approximately 10% of nursing activities could be done by AI. This shouldn't be the cause of job loss, since even with the current amount of healthcare workers and the future amount, it still won't be enough to keep up with the demand. That's why virtual nurses, that already exist, will be getting upgraded and used more often. This is good for upcoming nurses, since instead of it simply being a matter of losing their jobs or not, AI mainly decreases their workload and stress and lets them focus on tasks that AI cannot solve by itself.

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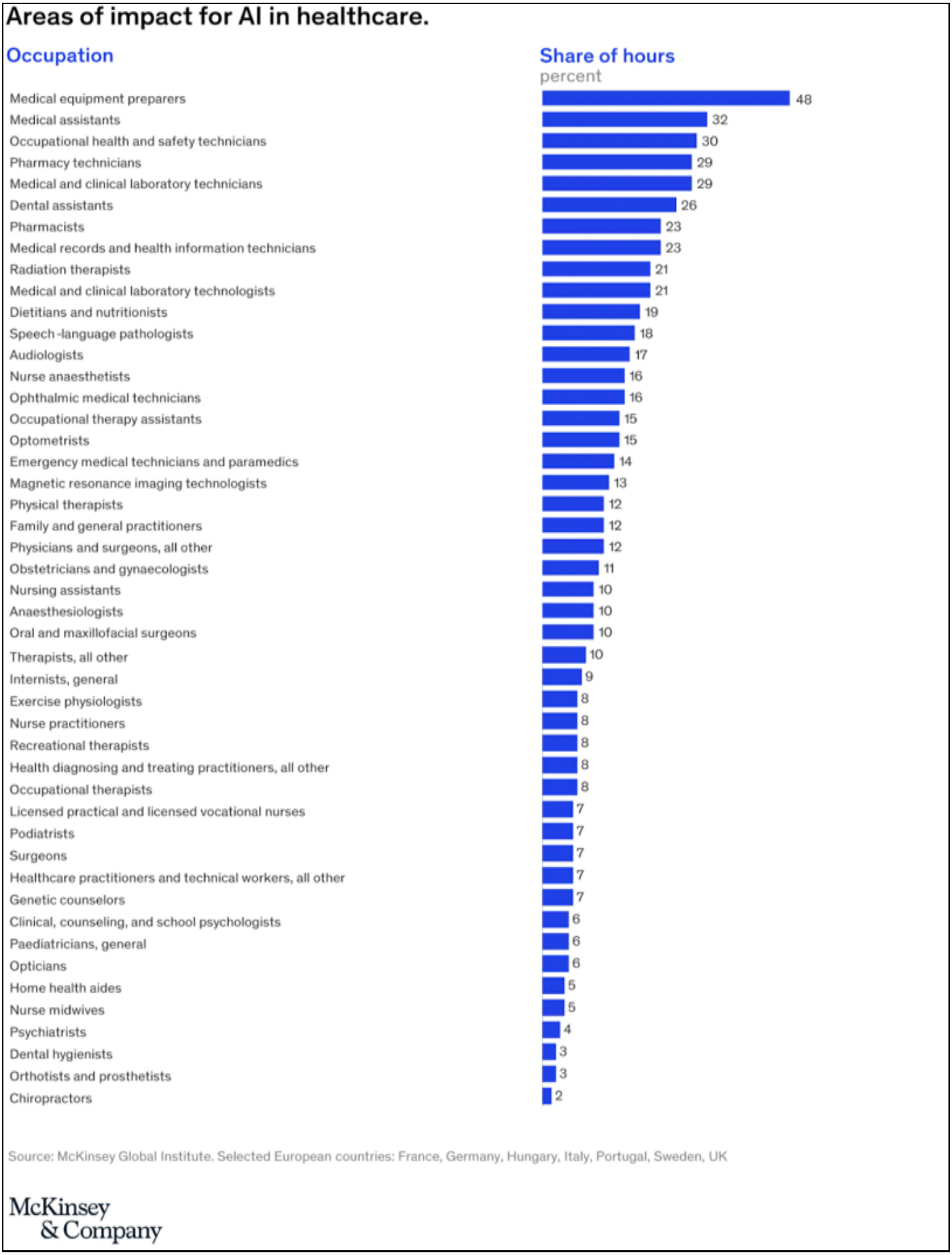

Fig 4 AI's Impact on Health Care

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V. FUTURE PREDICTIONS

If AI can bring so many revolutionary developments in vast fields of human endeavors in the present, just imagine what it can do in the future.

For Technology, AI can analyze code and help coders find bugs and even fix them. This would have taken them a long time to find, and even longer to solve. This lets developers spend less time fixing their problems and more time inventing never before seen technologies that could change the world and how we live in it.

AI in Banking and Finance has been one of if not the most profitable fields AI has entered. From assisting customers to providing stock advice, AI in the form of chatbots and virtual assistants have taken the field of finance by storm.

In HealthCare AI can help solve problems that were impossible to solve before. Such issues include incurable illness and disabilities, like cancer and paralysis while also solving birth problems before babies are even born.

- *The Future of Technology*

The once fictitious world of self-driving cars, and holographic virtual assistants in smart watches straight out of spy movies can one day be a reality.

AI has a large future impact on error debugging and intelligent debugging in the world of coding. Traditionally, fixing the bugs in code using old debugging techniques can be an exhausting and a very time-consuming process. Developers had to manually search for bugs in their code in the past, but now and in the future, they can use AI to debug. These new AI tools can analyze the code and suggest how to solve the problem, greatly speeding up the debugging process. By using AI for debugging in this manner, developers can spend more time on more important tasks rather than wasting all their time fixing bugs. If developers had more time on their hands, they could create things the world has never dreamed of before, and with the assistance of AI.

- *The Future of Finance and Banking*

The future is bright for Finance and Banking especially. For example, blockchain technology combined with smart contracts can enhance security, transparency, and efficiency in financial transactions. AI can complement these technologies by providing.

AI-powered chatbots and virtual assistants are becoming increasingly common in the banking industry. They can provide instant customer support, answer queries, and assist with transactions, improving the overall customer experience. AI-powered chatbots and virtual assistants are becoming increasingly common in the banking industry. They can provide instant customer support, answer queries, and assist with transactions, improving the overall customer experience.

The global market for AI in banking and finance is predicted to reach about $64 billion by 2030, and helped banks save $447 billion by the end of 2023. Armed with this knowledge, it’s no wonder why everyone is flocking to use AI to help earn and save their money.

With AI being able to personalize experiences, from everywhere to customer service chatbots to investment managers. AI can predict stock market changes and encourage its users to invest accordingly. We don’t have to look too far into the future to see the amazing benefits of AI in the finance world. 78 percent of people claim to have faith in AI’s investment advice, since it has proven itself to be reliable. Even banks are getting involved, with 8/10 banks using AI and investing in its revolutionizing abilities.

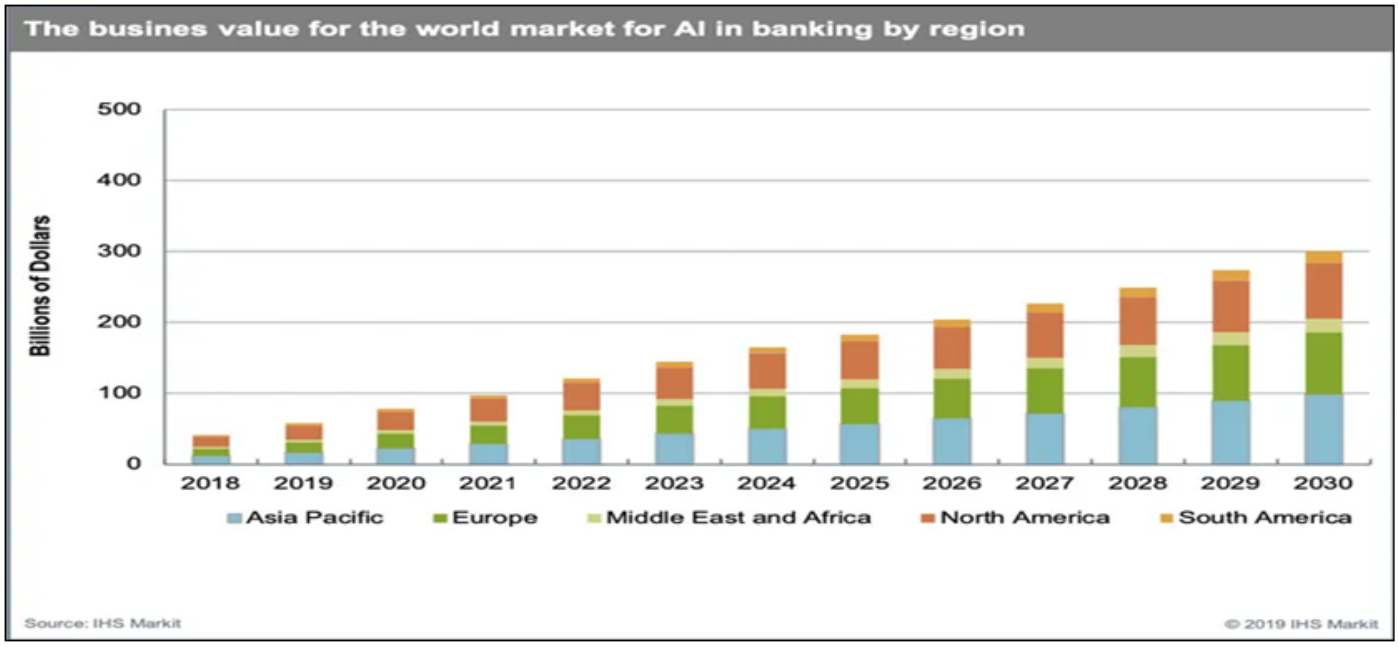

Fig 5 AI's Impact on Banking in the World

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➢ *The Future of Health Care*

The future of AI in Health Care can create opportunities for people with injuries and disabilities that were impossible before. The most revolutionary thing they can do is fix incurable diseases and disabilities. One recently fascinating case involves Gert-Jan Oskam, a 46-year-old man who was left paralyzed in a bicycle accident 12 years ago. Gert-Jan Oskam was told that he would never be able to walk again, until he was told that AI could help. Professor Jocelyne Bloch, of Lausanne University, is the neuroscientist who carried out the operation to insert the electronic implants. Oskam has two implants in his body; one in his brain and one in his spine. The electronic implant in his brain uses AI to read his thoughts and wirelessly transfers them to the second implant in his spine, stimulating the right muscles to move, resulting in him regaining control of his body.

Fixing the unfixable isn't the only thing AI can achieve in the future. Currently, human embryologists work to identify different stages of child development, however, due to the nature of humans, there is bound to be a mistake. This is where AI can help to minimize mistakes. AI can be able to identify features that cannot be seen by the human eye, and take the data from other sources and provide a professional outcome with more accuracy than any human embryologist.

Over 250,000 people in the United States alone suffer from paralysis. Through the case of Gert-Jan Oskam, it has become possible to help people walk again. This technology is still in its experimental phase, so it won't be available to the public for some time. Solving crucial birth problems before the child is even born will be more efficient and accurate. However, the future looks very bright, with time, resources, and brilliant minds, the possibility to solve once incurable disabilities, may just become reality.

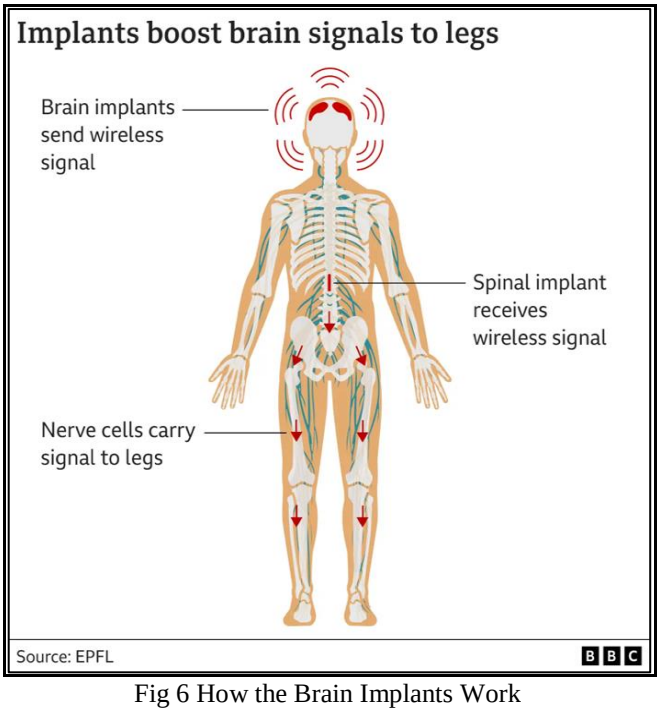

Fig 6 How the Brain Implants Work

VI. CONCLUSION

As we venture into the future, the potential of AI is as vast as the amount of uses it has. AI has proven to have the power to revamp industries, improve productivity and change the world for the better.

However, it is important to strike a balance between AI and the world that we already have. As the famous saying goes, "If it's not broken you don't have to fix it." While it is nice to incorporate AI into any manner we could think of, we need to remember to incorporate AI into our world and not replace our world.

Hopefully this paper has brought some valuable insight into the world of AI, what exactly it is, what it can do, and where it can go in the not so far future.

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