Analyzing the Effects of AI on Jobs: Will Humans Compete with AI?

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ANTHR-1H: Biological Anthropology

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November 20, 2022

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For all of human history, tools and technology have aided people in completing tasks, ultimately increasing human productivity. In the past few decades, AI technology has gone from simple Chess simulators to self-driving cars. As AI continues to evolve and improve, it is crucial to understand the positive and negative effects AI could have on human jobs. Before analyzing the effects of AI on jobs, it is equally critical to understand how exactly AI will be implemented throughout society. AI refers to any technology that is capable of performing tasks that only a human can perform. Although AI technology has not reached this level of general intelligence, advancements in technology and algorithms will inevitably allow AI to reach this point. Although it may seem that AI will render humans useless, this is not exactly the case. AI is superior at performing repetitive tasks such as identifying patterns, while humans continue to be superior at performing tasks requiring abstract reasoning and interpersonal communication. For example, advancements in AI within healthcare have proven to be able to find patterns in large datasets and diagnose patients with a high success rate. Despite this, it is equally important for medical patients to have trusted professionals that can explain what the sophisticated AI machines are doing, and be alert to any changes and needs of the patient (Alderman, 2019). Although AI can be largely helpful in making repetitive decisions, it will still be important for human experts to judge these decisions and ensure they are accurate and unbiased. Finding ways that AI and human skills can complement each other within jobs will be critical for implementing AI successfully into jobs. Along with this, understanding the short and long term changes that AI will create in the workforce can help prepare for a more productive future. The applications of AI will bring inevitable changes to most jobs, creating pressures in the short term due to increased competition for jobs, but ultimately allowing humans to rely on their deeper

values (creativity, abstract reasoning, etc.) in the long term as AI can perform repetitive tasks. In the long term, AI will affect collaboration methods within the workplace and even have the potential to influence the human epigenome.

Short Term Effects

One of the most concerning short term effects of AI is how increased competition for jobs will affect the job market. As advances in AI begin to automate repetitive jobs, this will lead to a decreased demand for low-skilled workers. Jobs such as Uber drivers, truck drivers, telemarketers, and store cashiers will be a thing of the past. Studies suggest that automation decreases demand for low-skilled labor and it also increases demand for particular high level skills such as Data Scientists, Machine Learning Experts, Computer Engineers, and Researchers. Consequently, this could create an economic inequality in the short term, making access to high-quality education more important (Lu, & Zhou, Y., 2021). As increased competition puts pressure on those without formal education, this will force workers to adapt by seeking higher education. Although there is no short term solution to solving this economic inequality, prioritizing higher education or learning high-paying skills can remedy this change. Low-skilled workers may begin seeking out the option of going to college or learning new skills by getting an apprenticeship or taking some training courses in order to enter into other skill based jobs that are not likely to be affected by automation.

Understanding which jobs are most likely to be affected by AI is crucial for analyzing its impact on the job market. Most innovations in AI will focus on solving repetitive jobs, such as manufacturing, healthcare, transportation. Although AI systems will be able to reliably carry out tasks, humans are still needed in order to prevent possible problems with safety and accuracy. Within industries such as manufacturing and transportation, humans will need to oversee AI in

order to prevent possible malfunctions that could be dangerous to human workers. In the healthcare industry, humans need to ensure that AI systems are accurately diagnosing patients in order to prevent incorrect diagnoses which could have serious consequences for patients. As machine learning and AI algorithms begin to learn and improve upon themselves within all industries, it will be important for humans to make sure these improvements are accurate. Once AI is able to solve most repetitive jobs, workers will ultimately be forced to use more complex skills, such as Machine Learning algorithms, or Data Science, in order to work in conjunction with AI. As a more advanced set of skills becomes required, people will be inclined to begin learning those skills at a young age. Many of these changes will occur through technical certifications instead of traditional college where students can quickly start their careers into more technical and complex disciplines (such as engineering, machine learning, data science, etc.) to work in conjunction with AI. This is being seen in the field of Software Engineering where students are pursuing technical certifications instead of traditional university degrees. Another impact of AI will be an increase in demand for workers with education that focuses on "deeper" skills that AI is not capable of solving. "If AI reaches a stage of maturity where people no longer need advanced math or programming skills to utilize the technology, that is, the "singularity" in which machines surpass humans and machines produce more machines. At that stage, skills in liberal arts would be in greater demand and the most important skills are likely to be emotional and communication skills (Castelo, & Häubl, G., 2020)." Majors in liberal arts can provide a well-rounded education, allowing workers in client-facing industries such as teaching and healthcare to better understand the technology and provide clarity on issues that AI cannot solve. Education and worker training will focus on creativity and abstract reasoning, allowing people to use their "deeper" human values such as empathy, compassion, or kindness in order to

work in conjunction with AI. For example, professions such as doctors and teachers need to actively interact with humans which can not be easily replaced through automation. In the medical field, doctors have empathy, something that an algorithm or robot is unable to have; In the classroom, teachers are able to assess the students personalities and needs and provide adequate support to students. During my elementary school years, I had a classmate with a severe disability who would frequently feel overwhelmed and have outbursts. Throughout the years I was able to see how teachers would attend to his needs and find ways to calm him down in order to continue teaching the other students in the class. Although AI may bring negative effects for some workers in the short term, this will ultimately allow humans and AI to work together, combining their respective skills to their advantage.

Another short term concern of AI replacing workers is the economic imbalance this could create. Workers that are unable to seize the high-paying opportunities that will come along with AI could potentially be left behind. "Households that are relatively well-off will be able to provide good education to their children, who will then gain skills and capacity to compete in the labor market in the future. If there is strong inequality of opportunity, income inequality could worsen over generations. Policies that aim at reducing inequality of opportunity will help alleviate income inequality (Lu, & Zhou, Y., 2021)." Policymakers will need to place a priority on equal access to education for high-paying technical certifications or traditional university. As the study of economics shows, most businesses will be inclined to pursue automation if it decreases expenses on employee salaries. Governments will play a pivotal role in supporting displaced workers through forms of social assistance such as unemployment insurance. Governments will also need to support basic needs such as transportation, shelter, and healthcare in order to provide equal opportunities for all members of society to thrive. If basic needs are not

met, this can lead to inequality and social unrest which can have negative impacts on individuals and society as a whole. By prioritizing support for basic needs, governments can help create a more equitable and just society. In some cases, employers may also have a responsibility to support workers who are displaced from technological changes within the company through training programs. Governments can also fund skills training programs for all displaced workers and incentivize companies, through tax credits, to provide training for workers. In order to mitigate the economic shift from AI, governments and employers will need to provide support for basic necessities along with equal access to higher education or technical career education opportunities.

Long Term Effects

Over the long term, it is important to consider the effects of replacing human collaboration with AI. For many people, the workplace is an important environment to socialize with others and draw a sense of satisfaction from their work. As AI is incorporated within the workplace, it is important to ensure that workers continue to feel this sense of connection and fulfillment at work. Studies have shown that greater social connection can instill a sense of responsibility and concern for others that can lead individuals to engage in behaviors that protect the health of others, as well as their own health. Supportive interactions with others can enhance mental health and physiological processes by reducing the impact of stress or by fostering a sense of meaning and purpose in life (Umberson, D.,2010). When workers find themselves in an environment of robots and AI, this could decrease the sense of belonging workers feel as human contact in the workplace decreases. Finding ways to ensure this sense of connection and fulfillment will be a critical part of incorporating AI in the workplace. “Policies can reduce the risk of social isolation by enhancing our educational system to impart social-emotional skills,

interests in civic engagement, and ensuring that communities are economically developed and contain public places to safely congregate (Umberson, D.,2010).” Many companies are encouraging their employees to use collaboration tools (such as document sharing tools, video conferencing applications, and messaging apps) to complete their day to day tasks as well as implementing social meetings in order to get people engaged and connected (either in-person or through video conferencing). For example, some companies are offering occasional zoom cooking classes for their employees or host weekly happy hour and trivia meetings.

Another long term effect that is important to analyze is how human adaptations to AI in the workplace can permanently modify the human epigenome. Although the human genome changes slowly over time, the epigenome can change rapidly in response to signals from the environment such as diet or stress. This can cause long-term problems for those who are not able to economically succeed in the new society built on AI. Without equal access to education and economic opportunities, the lower class may experience negative epigenetic modifications from experiences such as stress and malnourishment. Ensuring equal access to education within the workplace and education system is crucial for providing an environment where positive epigenetic modifications can take place. Special emphasis will be needed to provide equal opportunities for all minority groups, inlcuding the BIPOC and LGBTQ+ communities, who may be more vulnerable to job loss and less able to find new employment. This can also help these minority groups break the cycle of poverty and help their future generations. Through epigenetic inheritance, some epigenetic changes from these experiences can pass from parents to future generations. Although many of these changes will not be apparent in the short term, these changes in human genes will occur over the long term. Through the study of epigenetics,

scientists will be able to analyze how these experiences can modify an individual's epigenome, and through proper legislation the government can ensure equal access to these opportunities.

As AI led decision making is integrated throughout society, it is important to make sure these decisions are not only accurate, but also unbiased. Algorithms are being increasingly used to make decisions that profoundly impact lives such as who gets admitted to universities, or who gets hired (Castelo, & Häubl, G, 2020). Although AI algorithms currently have a limited scope on what they can solve, improvements in these algorithms within major industries such as healthcare and insurance will ultimately have an extraordinary amount of influence on people's lives. Experts in the field of AI often consider AI to be a "black box" (a technology where the contents are hidden from the user), which makes it challenging to thoroughly understand the decision making process. A study found that certain AI algorithms such as the ones that unlock mobile phones or identify people in photos can misattribute people of color and often fail to recognize female faces. "This can happen since most programmers are male and white and that's the dataset that was used to train these algorithms. These real-world examples demonstrate a reality of AI: They tend to reflect the biases of the data they are fed (Klugman, 2021)." Biases within the AI can have short term implications within the job market, making it more difficult for misrepresented workers to find equal access to opportunities such as work and medical care. In order to prevent long term implications, experts on AI within all fields will need to verify that the data being analyzed includes all information necessary to make more accurate decisions. In the case of face recognition, adding more data (pictures of diverse people of all colors) will help to eliminate the bias and will ensure the algorithms are functioning properly and do not lead to a lack of diversity. As AI begins to make important decisions throughout society, it is crucial for

these decisions to be unbiased in order to prevent potential economic inequalities for people that are misrepresented.

Conclusion

As advancements in AI begin to change the way individuals live, it is important to analyze what this means for society. With a technology that has the capability of solving tasks that only a human can perform, this will ultimately force people to seek higher education in order to work in conjunction with AI. Ensuring that all people have equal access to basic necessities and education will be a crucial part of preventing economic inequality and social injustices. When people are given equal access to opportunities, this can create a sense of belonging and purpose that can lead to stronger and more resilient communities. Through proper legislation and establishing an appropriate relationship for humans to work in conjunction with AI, most of the effects of AI will ultimately be beneficial towards society as humans and AI use their respective skills to their advantage. Although AI may lead to increased competition unemployment in the short term, many of these problems will be remedied as new methods are created for people to work in conjunction with AI.

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