

AI, Job Displacement, and Support for Workers

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Abstract. AI develops at an extraordinary pace and would be capable of outrace human worker in a wide variety of fields. Those affected by this are not limited to workers who hold middle class jobs. In fact, high-salaried professionals would also be impacted by AI considerably despite their education and training. This prompted policymakers to formulate relevant policies to support the affected workers. In the United States, the federal government and some state governments have passed acts to support workers, while union organizations have protected their members through self-regulation and collective bargaining, among other means. What some unions have achieved so far with collective bargaining could serve as a paradigm for safeguarding workers against the impacts of AI.

Keywords: AI, automation, executive order, legislation, unions, collective bargaining.

1. Introduction

1.1. Background

Artificial intelligence technology has developed rapidly in recent years, empowering many industries while also demonstrating a trend of potentially replacing existing jobs in many fields at a fast pace. One can feel the pulse of AI's rapid expansion as well as the chill of its potential to replace human workers on an unprecedented scale by simply examining the development of autonomous vehicles.

Currently, Waymo, a subsidiary of Google, has commenced operating driverless taxis, while Tesla introduced its own model of autonomous taxi this autumn. In China, Baidu is operating driverless taxis named "Luobo Kuaipao" in Wuhan. In the future, as autonomous driving technology becomes increasingly sophisticated and driverless taxis undergo gradual improvements, the experience of riding in a driverless taxi is likely to surpass that of a traditional taxi. If people end up preferring to take driverless taxis, it will inevitably lead to the downfall of traditional taxis, causing a significant number of taxi drivers to lose their jobs and potentially even leading to the disappearance of this profession.

Should this scenario come into being, at that time, the majority of these unemployed drivers would have no source of income, and they would have difficulty in getting a new job due to the lack of skills, educational credentials, and resources. These are social issues that countries whose tech companies are developing and applying autonomous driving technology need to address.

In fact, an increasing number of industries will be impacted by artificial intelligence, with jobs in these sectors facing the challenge of being fully replaced by AI. Workers from those industries will encounter the same predicament as taxi drivers. For instance, this autumn, along with the launch of Tesla's autonomous taxi, Tesla also introduced its humanoid robots capable of communicating with humans and performing various actions. It is imaginable that in the near future, jobs such as waiters, bartenders, and butlers are likely to be carried out by humanoid robots, which traditionally belong to middle-class occupations. High-paying and creative jobs are not immune to replacement by AI, despite the fact that there may be professional barriers to entry in such jobs. This is going to be discussed in detail later in this essay.

1.2. Purpose

This essay aims to summarize and analyze existing literature on how artificial intelligence (AI) impacts workers' jobs, confirming the rationale and necessity of supporting workers affected by AI.

Additionally, taking the situation in the United States as an example, this paper will summarize the measures already implemented in the US to address unemployment caused by AI or violations of workers' rights, particularly those of reducing workers to assistive roles in their current positions. This provides a foundation for further research and analysis to identify effective practices and offers insights for other countries that are developing or implementing AI but have yet to adopt measures to protect workers affected by AI, which hopefully could facilitate a smoother and more harmonious integration of AI into the economies and production systems of these countries.

2. Methods

2.1. Source of literature

2.1.1. Selection of database

Google scholar was used as the academic database. As the topic of this essay deals with a cutting-edge issue, Google search engine is also utilized in search of latest policies, reports, and so on.

2.1.2. Keywords

job displacement, AI, support workers

2.1.3. Time Range

from 2023 onward

2.2. Screening criteria

Inclusion and exclusion criteria: The literature that contains discussion or analysis on AI's impacts on job displacement or how workers affected by AI are or will be supported is included. The types of literature included contain those from academic sources as well as accredited articles from recognized consulting company and media sources, since it was these institutions that first reported and analyzed the frontier issues related to AI discussed in this article.

2.3. Literature Classification

The literature is classified on the basis of its topic. As such, there are three major categories. The first is about how AI has and would influence work. The second is about legislation attempting to support workers impacted by AI on both federal and state level. The last one is associated with what unions have done to address AI.

3. Results

3.1. AI and Job Displacement

As the technology of generative AI keeps advancing, many high salary jobs, which usually require professional training provided by higher education or involve a great deal of creative work, will be at risk of being displaced by the technology altogether or reduced to only supplemental or complementary roles in terms of importance as all or most of the positions' responsibilities are automated by AI [1]. Generative AI has developed to a stage where it is capable of not only completing routine tasks and sorting data [1], but also generating texts and images [2], creating digital art, and even composing music [1]. While still being a fledgling technology, generative AI holds great potential for commercial applications [3]. It is foreseeable that the technology could be applied to analyze legal documents, write code, and boost scientific inquiry [3]. As a consequence, people currently holding such high-income jobs whose job responsibilities could be fully or partly fulfilled by AI or those who are now being trained to become proficient in them will probably have to reorient themselves career-wise to adapt to the upcoming turbulence.

It is not just those traditional high-paying careers that are faced with the threat of extinction or the loss of relevance. Various potential applications of generative AI may well eat the lunch of those whom we associate with having middle class jobs. One prediction is there might be a drop in relation to the demand for retail sales and administration roles in corporations [3]. In fact, how automation has and will eliminate lower-income jobs provides insight into the chilling threat to the middle class posed by generative AI and AI technologies in general.

AI and automation are two different things according to their concepts. Automation refers to software or hardware that are capable of completing tasks on their own without human's manual operation or intervention, whereas AI system is defined by the OECD's AI Expert Group AIGO in broad sense as a "machine-based system that can, for a given set of human-defined objectives, make predictions, recommendations or decisions influencing real or virtual environments" [4]. Furthermore, one significant difference between the two concepts is that the machines created for automation are not designed to mimic human behaviors or outrace human intelligence as artificial intelligence is [5]. Despite these differences, the two share one crucial similarity, which is they can perform tasks that could only be done by human more efficiently [1]. In other words, they both have great potentials for displacing human labor to different extent. Thus, what have happened or will happen in shifting towards automation are great predictors for the consequences of implementing AI in workplaces.

The development and application of automation technologies can certainly improve production efficiency, but the explicit purpose of doing so is to replace workers' labor with cheaper capital [6], enabling the owners of the technologies to maximize their profits. Numerous studies have proposed that the application of automation technology is accompanied by a decrease in demand for low wage workers [1], whose work features a fixed procedure and repetitive tasks, rendering them the major victim of automation [1]. A prime example of this is how automation will impact workers in Texas making less than \$65,000 a year at the moment. It is predicted that 20% of them will experience job displacement in the following five years because of the development of automation technology [7]. So, automation puts low-income workers at the risk of unemployment and require them to upskill or reskill for reemployment. Similar scenarios will certainly occur after the widespread application of AI and generative AI tools at the workplace.

By 2030, the amount of work hours which AI could automate from both high-income jobs and middle-class jobs is forecast to reach 30% of the total work hours of 2023 [3]. According to Pew Research Center, approximately 20% of all jobs in 2022 are susceptible to Artificial Intelligence [8]. Here are some examples of the jobs which AI could potentially replace. Specifically, bartenders and security guards will definitely confront existential crisis someday [9]. The coming forth of humanoid robots created by Tesla that are capable of small talk and carrying out a range of human movements this October, as reported on social media platforms, make this day seem closer. Besides, job displacement predicaments can befall upon workers in manufacturing industry with most of the work on the assembly lines being assigned to the more efficient AI [10]. In fact, the whole industries could become fully automated, leaving no place for human labors [10]. The entertainment industry was at the frontline of the defense against the ever-powerful, omnipresent encroachment of AI as well. Writers' work could be replaced by generative AI software like ChatGPT altogether or reduced to just polishing the writings created by it [9]. Actors, meanwhile, could face a similar plight where the simulations of them generated by AI could take their place [9]. How could people who are now in these trades make a living in a future dominated by AI? Where could they possibly go should the forecast regarding AI's potential to replace jobs come into being? These are some of the questions that policy makers should take into account regardless of which country they serve, since the fourth industrial revolution driven by AI-related technologies that is unlike anything else that came before affects virtually every worker on Earth.

3.2. Attempts to Address Job Risks Induced by AI

3.2.1. Legislative Efforts

Now that there is the risk for employers to widely replace workers with AI, the current federal government of the United States has reacted to it with a range of regulatory responses in defense of jobs [11]. Particularly, the Biden administration has made it a priority to address AI technologies when being employed for replacing workers whether on purpose or unintentionally [12]. The primary way to regulate AI has been through executive orders [11]. President Biden in 2023 issued a consequential executive order aimed at regulating AI titled Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence [12]. The executive order contains broad instructions on addressing AI for a wide range of federal agencies [12]. Furthermore, the order required that agencies should take the voice of workers and labor unions into account during the decision-making process [12].

The fact sheet going with the order confirms the risk with regard to job replacement [13]. Then it explained, to alleviate the risk, it is imperative to strengthen workers' capacity of collective bargaining [13]. The following statement is a brief excerpt from the order, and it demonstrates the executive branch's intent to not only support workers, enabling them to get their share of benefits from this AI revolution, but also include all workers in making decisions with regard to AI: "The responsible development and use of AI require a commitment to supporting American workers. As AI creates new jobs and industries, all workers need a seat at the table, including through collective bargaining, to ensure that they benefit from these opportunities [14]."

The legislative efforts to direct AI to a path equally beneficial to workers also include those at the state level, most of which focus on job replacement induced by AI [11]. New Jersey, for example, is thinking over a bill which would ask its Department of Labor and Workforce Development to track and stay informed of job loss situation resulting from automation [15]. Furthermore, the proposal would require the department to confirm what industries or jobs will be automated by AI and to render resources to workers whose jobs are to be displaced as well as to those who are capable of switching jobs, whether the new positions need other experience, training, or education or not [15].

So far, several states have passed bills that deal with the influence of new technologies associated with AI on labor [11]. For instance, Colorado enacted a law in 2023 mandating the state's Office of Future of Work to engage a third-party entity to investigate the transitions in the workforce in Colorado's economy, especially those in the workforce of the oil and gas industry, involving whether the skills among workers in occupations most heavily impacted by automation-induced disruptions are transferrable [16]. The law mandates that the third party should advise on policies and programs necessary for readying employers and workers for any potential changes [11]. The laws already passed in Colorado and those being considered by New Jersey reflect the states' resolve and efforts to address the issue of job displacement caused by AI through legislation. In addition to the federal government and states enacting laws to support workers, unions are also taking various measures to support workers affected by AI.

3.2.2. Unions' Measures Against Job Displacement Induced by AI

Due to the growing prevalence and commercial potential of AI, some unions have resorted to self-regulation as well as collective bargaining to manage AI-related risks [11]. Unions have also implemented additional measures, such as incorporating completely fresh safeguards for employees into their labor contracts and revising existing contract terms to address the impact of AI [11].

In terms of self-regulation, major unions have taken steps towards it in recent years by establishing AI commissions and institutes, and creating and publishing their own AI principles, which have become the standard practice among the unions [17]. As an example, the IATSE issued "Core Principles for the Application of Artificial Intelligence (AI) and Machine Learning (ML) technologies in the entertainment industry" in 2023 [18]. The principles encompass conducting research, working together with partners and stakeholders, providing education, advocating for political and legislative support, and engaging in collective bargaining [11], and they purport to ensure the "fruits of increased

productivity through AI are shared equitably among all stakeholders [19]." The principles also champion the idea of collective bargaining, emphasizing that it "is the primary way to ensure workers do not have to wait for government regulation through legislation, which could take years or may never come at all [19]."

Turning to collective bargaining, as for its definition, it refers to the process of negotiation between two parties-unions representing their members and organizations who employ the members-whose purpose is to determine the terms of the employment contracts, which invariably encompass wages, working hours, workers' welfare, and so forth [11]. The objective of this negotiation is to achieve a collective agreement that seeks to equally consider the interests of both the employees (represented by the union) and the employer [11]. As for the function of collective bargaining, according to union leaders, it should play a role in deciding whether to introduce new technologies in the workplace, minimizing any negative influences on employees, and streamlining the implementation of technologies [17].

Collective bargaining has successfully helped Hollywood writers safeguard their interests from the impacts of AI. The Writers Guild of America (WGA) came to an agreement with major production studios based in Hollywood on the terms of a new contract in October 2023 [11]. The contract ensured that AI couldn't be utilized to demise a writer's credit and mandated that Hollywood studios inform writers if any material given to them was created by AI [11]. Additionally, writers have the option to use AI tools on a personal basis at their will, as long as they observe studios' policies [11].

According to the agreement, AI system, its developers, or its deployers cannot take credit for an idea for a new movie generated with AI tools [11]. The agreement "shows that collective bargaining can be an effective means for workers to advance their interests when automation threatens their livelihoods", and it could be a model to emulate for future labor contract bargaining concerning generative AI and broader automation technologies [20].

In the WGA case, the union tried to incorporate completely new protections into the labor contracts in order to tackle the issue of AI [11]. There are also other unions that have concentrated on enhancing and revising the current language of labor contracts to take into account advancements in technology [11]. A typical example of this is the Culinary Union, which speaks for service and hospitality workers in Las Vegas, has come to an accord with three major casinos [21]. This agreement stipulates that the casinos involved must inform the union prior to introducing or making changes to any new technology, encompassing artificial intelligence and robotics [21]. What's more, the agreement provides safeguards for workers who lose their jobs, such as new wage rates, employee benefits, and the right to be recalled to their previous positions [11].

4. Discussion

Due to length constraints, this article only summarizes and analyzes existing research that supports the rationale and necessity of assisting workers impacted by AI. In reality, however, there are also diametrically opposed viewpoints that argue that supporting AI-affected workers is unnecessary, as the impact of AI on work is not significantly different from that of previous industrial revolutions in history. Although American policymakers seem to lean more towards the former perspective, as evidenced by bills introduced at the federal and state levels, it is still important to consider all existing viewpoints in order to investigate the precise impact of AI on work.

5. Conclusion

The rapid development of artificial intelligence (AI) and its potential for application in various fields have placed both middle-class jobs and high-paying positions at risk of being replaced. How automation takes over workers' tasks also provides insights into the impact of AI on employment. In response to the challenges posed by AI, the United States has implemented legislation at both the federal and state levels to protect workers' rights, while unions have also taken extensive actions.

Indeed, we cannot artificially halt the development of AI, as doing so would stifle innovative spirit and hinder advancements in human technology and civilization. However, it remains questionable whether AI should be widely and indiscriminately applied to the extent of outcompeting human workers. Perhaps the most fundamental solution to support workers lies in guiding the direction of AI technology's application.

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