

UNIVERSITÀ DEGLI STUDI DI PADOVA

DEPARTMENT OF POLITICAL SCIENCE, LAW
AND INTERNATIONAL STUDIES

**Master's degree in
European and Global Studies**



**A Comprehensive Analysis of The Exploitative Nature of
Microwork:**

**The Case of OpenAI's Microworkers and the Issues Related to
Data Protection**

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A.Y. 2023/2024

Abstract: As an exponentially growing industry, Artificial Intelligence (AI) has become an essential part of our lives in the different forms such as virtual assistants, chatbots, and self-driven cars. While humanity witnesses the unstoppable growth of the sector, repetitive discussions about whether machines can replace human labor have also gained momentum along with this transformative technology one more time. However, there is an important detail that gets lost in the heat of these discussions is that the artificial intelligence industry needs not only high-quality engineers to design algorithms. Human labor that produces, improves, and categorizes data at a more basic level is also an indispensable part of the process. Microworkers, as workers who meet this basic level need of the AI industry, are workers who generally work remotely and perform tasks such as data labeling and detecting inappropriate content during the AI training process. Those workers are often associated with poorly paid, precarious, and lacking job security with intensive and sometimes toxic working conditions. ChatGPT (Chat Generative Pre-trained Transformer) by OpenAI is the most famous large language model-based chatbot that requires intensive microworker labor in the field. Despite the rapid growth of this dynamic and promising sector, authorities and academics are lagging behind in addressing the problems possessed by this relatively new sector. This thesis conducts a comprehensive examination of the exploitative aspects embedded in microwork, with a specific focus on ethical considerations in data collection of microworkers. The study aims to explore the complex dynamics of microwork, highlighting ethical concerns surrounding AI-driven data collection. Finally, this research aims to enhance the attractiveness of the sector by contributing to the discourse on creating ethical frameworks that prioritize and protect the rights of those involved in micro-tasks within the field of artificial intelligence.

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1. Introduction:

As an industry experiencing exponential growth, Artificial Intelligence has become deeply integrated into our daily lives, playing important roles in various applications. From the ubiquity of virtual assistants that aid task management and information retrieval to the sophisticated capabilities of language models that facilitate the understanding and creation of natural language, the influence of artificial intelligence is permeating various aspects of modern existence. Moreover, advances in artificial intelligence have led to the development of driverless cars, revolutionizing transportation and promising increased safety and efficiency on the roads. Beyond these examples, AI continues to innovate and shape countless other fields, demonstrating its profound impact and relevance in contemporary society. Especially after the launch of OpenAI's advanced language model, ChatGPT, has again intensified conversations regarding the potential replacement of human labor by machines. However, history, particularly the valuable inferences from the Industrial Revolution demonstrates that while technological developments may lead to the obsolescence of certain types of sectors, innovations open gates for new industries and opportunities. Contrary to popular belief, the need for human labor in the artificial intelligence sector is not limited to high-quality engineers advancing algorithms or entrepreneurs. The sector also requires human labor plays a crucial role in training AI systems in more fundamental level. Microwork industry stands out as a sector that satisfies that need for the AI sector. Microworkers who meet this basic level demand of the AI industry, are workers who generally work remotely and perform tasks such as data labeling and detecting inappropriate content during the artificial intelligence training process. Microworkers mostly take on tasks on crowdsourcing platforms such as Amazon Mechanical Turk and Clickworker, where the workers earn money by piece, as well as workers can be hired by outsourcing firms.

Microworkers are often characterized by low wages, precarity, and lacking job security. Digital labor platforms often define the relationship between workers and requesters as independent contracting, avoiding categorizing it as a legally protected employment relationship. These independent contracts are intentionally designed as temporary as possible, often spanning mere minutes or even seconds, on these platforms. At the same time, on most microwork platforms, a mechanism is in place where requesters retain the

authority to reject tasks submitted by workers, frequently offering minimal or no feedback, in this case, workers are facing the possibility of working without remuneration. Furthermore, platforms collect data classified as highly sensitive, which frequently includes, IDs, recordings, biometric data, and details regarding nationality, and. The collection of such sensitive data gives rise to considerable security concerns for workers. In today's landscape, data has emerged as a valuable commodity with a substantial market worth. Sharing this data with third parties, who may have varied motivations or fall victim to cyber-attacks perpetrated by attackers, presents a considerable threat to workers' well-being and privacy. To attain optimal requester-worker harmony, platforms play a pivotal role in monitoring workers by meticulously recording detailed data about their activities.

Upon evaluating these sensitive points, critical issues stand out that may capture the interest of disciplines associated with fundamental rights, including labor rights and work ethics. Although various research and investigations address those problems, a noticeable gap in regulatory response is observable. Among companies that use microwork, there is a tendency to conceal the labor employed from the public eye. In addition to companies' motivation to avoid their fundamental responsibilities as employers, the covert approach by the companies is driven by the motivation to enhance their attractiveness to potential investors and clients. This approach is mainly driven by the desire to attract additional investment capital by presenting themselves as purely technological entities that depend entirely on highly skilled engineers.

As neoliberalism, characterized by market-oriented solutions, deregulation, and reduced state influence in economic relations, establishes itself as the prevailing economic model, significant shifts have occurred in employment relations and unionization trends across various sectors. Moreover, deindustrialization has played a role in the rise of some kinds of contradictory working configurations to traditional arrangements such as microwork by reshaping the composition of industries. The capital-labor contract, transforming greater flexibility, aligns with the nature of microwork arrangements, where individuals may take on multiple micro tasks for different employers or platforms without the constraints of traditional employment relationships.

Microworkers are often characterized by precarity, low wages, and protection and perform tasks in isolation from each other. Also microworkers often work geographically dispersed and are characterized by workers working in isolation from each other. This isolation from fellow workers, employers, and end customers poses a unique challenge for organizing collective bargaining efforts. In the absence of a tangible union presence, microworkers often find it challenging to advocate for their rights or negotiate for improved working conditions. The decentralized and dispersed nature of their interactions makes it difficult to build solidarity and coordinate collective action. The challenging working conditions arising from technological advancements, automation, and digitalization prompt concerns regarding the reversal of expected improvements in working hours and worker welfare. There is apprehension that workers may increasingly become servants to technology, particularly artificial intelligence, rather than benefitting from reduced working hours and enhanced welfare. Additionally, the collection of data from workers' private lives and undistributed income from it contributes to the growing discourse surrounding digital slavery.

Following consecutive years of annual double-digit growth rates, microwork has already evolved into a multibillion-dollar industry since its inception in the early 2000. The trajectory of the microwork industry indicates a strong expansion in its market value. Considering that modern artificial intelligence solutions are mostly known for their appetite for big data and that microworkers are the actors that meet this need, it is expected that this sector will show similar growth patterns in the future. At the same time, in the aftermath of the COVID-19 pandemic, remote work has become increasingly popular among both employers and employees. This trend offers flexible working opportunities and helps to mitigate costs associated with traditional physical workplace setups and this tendency has a potential for making the sector. Finally, some real-life experiences demonstrate that the microwork employment model can be effectively employed in both humanitarian aid and emergency situations.

By observing those indicators, it becomes clear that the microwork sector is poised for gradual growth. At this point, ensuring that microworkers are treated with dignity and have access to the rights afforded to all workers is not only a matter of social justice but also aligns with the principles of sustainable and equitable development of the sector. Considering the ongoing growth trajectory of the sector and the myriad advantages it

affords, humanity finds itself at a crossroads with two discernible paths ahead. On one hand, there exists the option to overlook the sector's challenges and postpone addressing them, thereby deferring the consequences to the future. Alternatively, there is the opportunity to proactively confront the sector's issues at present and endeavor to rectify them, thereby striving to cultivate an environment where the sector becomes increasingly attractive and sustainable.

This study aims to point out the concrete problems of the sector by choosing the second crossroads mentioned. While the criticisms outlined in the literature examine diverse aspects of microwork, they often fail to adequately address data privacy and the associated ethical concerns. Given the intimate connection between microwork and public personal space, it is evident that a thorough examination of data protection and surveillance practices is promising to enrich the existing literature on the subject.

To achieve this goal, this study aims to review existing studies that shed light on the insight of microwork. The objective of this study is to point out numerous shortcomings within the sector, utilizing the example of OpenAI case as a concrete example of the criticisms directed at it. In this study, the initial focus will be on demonstrating the historical progression leading to the present state of Artificial Intelligence, elucidating the pivotal role of human labor within the artificial intelligence sector, and prognosticating the future trajectory of the microwork sector and its determining factors. Subsequently, attention will be directed towards elucidating the principal transformative factors shaping the contemporary employment landscape and gaining insights into the realm of digital labor. Following this, an in-depth exploration will be conducted into the ethical considerations pertinent to AI data collection and surveillance practices, along with an analysis of the decisions rendered by the Italian Data Protection Authority. Finally, drawing upon the case study of OpenAI's microworkers, the study will delve into the nexus between the microwork sector and Marx's theory of alienation, as well as the phenomenon of digital slavery.

2. Historical Context and Evolution:

2.1 Development of Generative Artificial Intelligence and The Emergence of the Need for Micro-workers in the Field

Given an array of interpretations offered by diverse scholars and researchers, a general consensus is yet to be established regarding the definition of Artificial Intelligence (AI). The absence of a singular, widely embraced definition stems from its interdisciplinary nature and its continual evolution. Marvin Minsky (1972, p. 17) offers one of the most popular definitions of AI, noting that it is “the science of making machines do things that would require intelligence if done by men”. The Stanford University report (2015, p. 4) defines AI as “a science and a set of computational technologies that are inspired by – but typically operate quite differently from – the ways the people use their nervous systems and bodies to sense, learn, reason and take action”.

Significant advancements in neuroscience occurring between the early 1930s and 1940s contributed heavily to a better understanding of the cerebral architecture of the human brain. Indeed, such investigations led to the revelation that the brain is comprised of an intricate electronic network of neurons. As a result, progress in various disciplines such as mathematics and engineering emphasized the possibility of constructing an electronic brain. Another well-known contribution to the field was from Alan Turing, introduced the Turing test which implies a test of a machine's ability to exhibit intelligent behavior equivalent to, or indistinguishable from, that of a human in 1950, initially known as the "imitation game" (Turing, 1950, p. 15).

The Dartmouth Workshop in 1956 stands as a milestone in the historical trajectory of the AI sector. A gathering of eminent scientists and experts in their fields, it is widely regarded as the founding event of AI as a field. Considered a pioneering meeting, the Dartmouth Workshop is, therefore, often attributed to laying the foundation for the field of AI. Following the acknowledgment of AI as a new discipline, ethical debates emerged concerning on the potential consequences of developing artificial entities endowed with human-like intelligence. Those issues have been explored since antiquity by myth, fiction and philosophy (Newquist, 1994, p. 4).

In the early 1970s, Harold Cohen took a milestone step in the context of generative AI. Specifically, Cohen developed a computer program known as AARON, with the specific purpose of generating paintings (Bergen et al. 2023, p. 4).

The development of deep learning in the early 2000s led to progress and continued research in the areas of image classification, speech recognition and natural language

processing. Deep learning, which is characterized by its reliance on artificial neural networks integrated with representation learning, constitutes a subset of machine learning methodologies; those that 'teach' computers to find solutions from data without each step requiring explicit programming (Alpaydm, 2014, p. 3). In the domain of machine learning, representation learning (also known as feature learning) encompasses a set of techniques that enable a system to autonomously unearth the essential representations required for tasks such as feature detection or classification directly from raw data. The descriptor "deep" in the context of deep learning refers to the utilization of multiple layers within the network. The employed methods can be used for various learning approaches, including supervised, semi-supervised, or unsupervised methodologies (Lecun et al., 2015 p. 3).

In 2017, the transformer architecture, which is a machine-learning model, was introduced and distinguished itself by demanding less training time compared to preceding neural architectures. This efficiency in training became a vital feature that led to advancements extending beyond the realm of natural language processing, with applications also in the domain of computer vision (Hochreiter, 1997 ; Wolf et al. 2020, p. 38). Indeed, before the advent of transformer-based architectures, neural natural language processing (NLP) models mostly utilized supervised learning with extensive manually labeled datasets. This dependency on supervised learning constrained their applicability to datasets lacking robust annotations, rendering it economically and temporally impractical to train exceedingly large language models (Radford et al. 2018, p. 12).

As a result of developments in the field of transformer architecture technology, the first Generative Pretrained Transformers (GPTs) were introduced by OpenAI in 2018. A GPT is a type of large language model (LLM) that uses deep learning to generate human-like text. These models are called "generative" because of their ability to generate new text based on the input they receive, and "pretrained" because they undergo training on an extensive dataset of text before undergoing fine-tuning for particular tasks. Moreover, the term "transformers" is used because they employ a neural network architecture rooted in transformers, facilitating the processing of input text and the generation of corresponding output text (Larsen & Narayan, 2022).

Contrary to popular belief, the term "GPT" is also used in the names and descriptions of models developed by others, including EinsteinGPT, BloombergGPT, EleutherAI, and many others. However, the "GPT-n" series, systematically numbered by OpenAI, stands out as the most widely recognized and acclaimed series among users, academia, and researchers. ChatGPT, for example, is a chatbot developed by OpenAI and was released on November 30, 2022. This sophisticated language model empowers users to shape and guide conversations according to their preferences, allowing control over aspects such as length, format, style, level of detail, and language (Lock, 2022). ChatGPT amassed an estimated 100 million monthly active users in just two months after its November 2022 launch, solidifying its status as the fastest-growing consumer application in history (Hu, 2023).

Reinforcement Learning (RL) is a framework in which an agent or robot system can learn how to perform a sequential decision task online by interacting with the environment; that is, by observing it, selecting actions, receiving rewards based on its actions, and transitioning to new states. The agent's objective is to learn an optimal strategy for selecting actions in each state, such that it can maximize cumulative rewards over time. RL has found success in various applications, particularly in robot learning, by enabling agents to autonomously learn and adapt to different task domains (Kober et al., 2013). Standard RL agents often learn slowly, however, and require extended trial and error exploration, creating challenges for real-world applications where initial failures can be costly. To address this, reward shaping has been invented to enhance the learning performance of agents in complex tasks by providing additional guidance and accelerating the learning process (Ng, 1999, p. 2).

While the ultimate objective of machine learning is to develop systems capable of being trained or guided interactively by non-expert end-users (Griffith et al. 2013, p. 1), the current state of technology mostly relies on human labor (Guangliang et al., 2019, p. 1). Indeed, rapid advances and increasing demand for personalized and service robots have led to a close interaction between humans and autonomous agents. In real world scenarios, agents need to not only learn task performance, but also interactively adapt their optimal behavior and allow humans to influence and teach them according to individual preferences. In this case, standard RL can not be applied in real-world agents that learn from human beings, since the optimal behavior is usually preprogrammed

thanks to a reward function and most human users are laymen in agent designing (Guangliang et al. 2019, p. 1). Building upon the concept of reward shaping, the development of Reinforcement Learning From Human Feedback appears to be an effective method, delegating ordinary individuals to intuitively teach agents. Reinforcement Learning From Human Feedback in machine learning is a method that directly trains a "reward model" based on human feedback. Human feedback is most commonly collected by asking humans to rank given instances of the agent's behavior (Ouyang et al., 2022). In other terms, Reinforcement Learning From Human Feedback is a method which an agent learns how to perform a task from evaluative feedback delivered by a human observer. This method enables ordinary individuals, without programming knowledge to play an active role in teaching agents by providing evaluative feedback by their intuitions. By directly training a "reward model" based on human feedback, this approach accelerates the learning process, reduces exploration time, and adapts the agent's behavior according to individual preferences, thus fostering a more humankind and user-friendly AI.

The above summary implies that AI companies rely needs on data resources, encompassing not just raw data but also annotations that strengthen the significance of each data point. These annotations involve associating attributes, like relevant tags, with elements such as images, and texts (Tubaro, 2020, p. 3). This important need necessitates human intervention during the correction and enrichment of data in the AI preparation phase. The role of "micro-workers" fulfills this specific need in the AI preparation process (Irani, 2013, p. 3). Microwork addresses precisely these unmet data needs: it contributes to AI preparation in terms of data generation and data explanation (Tubaro, 2020, p. 4). These inconspicuous and low-paid participants work remotely via their computers or smartphones to carry out parts of large data projects. Micro-workers contribute to reducing both the cost and time associated with the AI preparation process. Indeed, given that AI projects require large datasets and extensive annotation, microworkers play a crucial role, contributing to both efficiency and cost-effectiveness. While this ensures the accuracy and quality of the data and also accelerates the overall preparation process, such individuals must engage in activities such as identifying inappropriate web content, assigning labels to images, and transcribing or translating text segments. Moreover, such workers are not formally employed; they are contracted

for individual tasks and compensated based on their output, with their work subject to algorithmic control from the platform (Tubaro, 2020, p. 1).

2.2 The Integral Role of Human Labor and Microwork in AI Development

In advanced economies worldwide, significant transformations are reshaping the nature of working life. Over the past three decades, the deindustrialization of major Western economies, the rise of new economic powerhouses, the widespread global impact of neo-liberalism and the subsequent restructuring of the capital-labour contract have collectively and fundamentally changed the employment and work environment on a global scale (Webster, 2016). Within the realm of capitalism, work is undergoing a significant transformation. A variety of jobs and tasks are now shifting to online platforms, made possible by the widespread use of mobile digital devices and easily accessible, low-cost Internet connection.

Similar to various manifestations of digital labor, microwork is emerging as a result of the proliferation of platforms that serve as mechanisms for coordinating economic transactions between service providers and customers. In this context, these entities are conceptualized as independent entities engaging in distinct transactions, as opposed to participants in enduring employer–employee relationships. The shift toward platform-based interactions represents a departure from traditional, long-term employment arrangements. Platforms enable client companies to easily access a flexible on-demand workforce, often at a considerably lower cost compared to maintaining salaried staff, and typically with significantly faster turnaround times. These platforms position themselves to clients as providers of AI services while presenting favorable opportunities to earn.

Digital platform work is considered as a multifaceted domain that includes a wide range of activities, and within this expansive landscape, micro work stands out as a distinctive subset. Freelancing, which focuses on creative work such as design and software development, is a form of digital platform work that engages skilled professionals for entire projects rather than individual tasks. Gig work, another type of digital platform work, involves platform-mediated services that tend to be location-specific like food delivery (Graham, 2017). On the other hand, microwork, alternatively referred to as

"clickwork" or "microtasking," represents a rapidly growing category of online employment where the internet serves as the channel for pushing traditional principles of work segmentation to new extremes. Individuals interested in performing specific tasks place bids, offering to undertake them at specified prices. This process operates without the framework of a traditional employment relationship, as the arrangement between the employer and the worker, known as the "requester", is temporary and exists only for the time needed to complete the assigned task (Webster, 2016).

Data generation and annotation services hold significant importance for artificial intelligence companies. Companies meet this demand, which is an indispensable part of the process, by collaborating with microwork platforms. These markets facilitate remote employment by connecting businesses with a dispersed workforce, often referred to as "microworkers". These individuals are deployed to undertake specific on-demand tasks that currently eschew cost-effective automation by computers. Employers are using these platforms to publish Human Intelligence Tasks (HITs), ranging from complex tasks such as algorithm development to simpler activities such as identifying image or video content, creating product descriptions and compiling survey responses. The compensation structure on these platforms is determined by the employer, with payments often amounting to nominal sums for each completed task, frequently measured in pennies or cents. Mainly, microtasking services are employed for data processing, particularly in the online domain. Such applications involve directing traffic to websites, aggregating data such as email addresses, and annotating or categorizing online data. Those platforms are also effective in tasks that require human cognitive skills, such as precise translation or transcription of audio clips and image descriptions. Applications extend beyond practical data transformation to include efforts to improve and evaluate the effectiveness of machine learning algorithms. The most well-known microtasking platforms in this domain are CrowdFlower, Amazon Mechanical Turk, Lionbridge Clickworkers, and Appen. These enterprises have the option to engage with international corporations or avail services from local businesses to fulfill their operational requirements. Platforms present data annotation as their core offer to clients.

The tasks performed by microworkers related to the AI preparation process on these tasks can be classified into three distinct categories: "AI training," "AI validation," and "AI impersonation" (Tubaro, 2020, p. 3).

AI Training

Microworkers are crucial in supporting AI by generating "training" datasets for machine-learning algorithms. For instance, a company specializing in the production of voice assistants needs access to a wide range of data covering different linguistic elements such as multiple languages, accents and colloquial expressions. In this case, with sound or text data, microworkers propose services such as categorization of topics in a conversation, determination of emotions behind a statement, classification of intents and identification of parts of speech. Another AI training method is when the service entails categorizing and analyzing images and videos, assigning images to specific categories, detecting objects through tools like bounding boxes, cuboids, or polygons, and adding in-image tags to each object. Additionally, sometimes the service includes labeling anatomical or structural points of interest, such as eyes in faces, using 'landmark annotation'. Although these tasks may seem trivial to humans, they are necessary to improve artificial intelligence capabilities.

AI Validation

While the initial application of microwork in the machine-learning supply chain involves tasks at the input level, such as generating or enriching training datasets, another use occurs at the output level, where microworkers review the results. Microworkers are tasked with various responsibilities in the AI Validation process, such as evaluating the accuracy of virtual assistants by comparing short audio recordings of user input with the automatically generated transcriptions. They are required to correct any inconsistencies identified during this process. Additionally, their job is to review automated transcriptions of scanned receipts and invoices and make any necessary corrections.

AI Impersonation

In some cases, microwork not only contributes to data generation or algorithmic quality assurance processes, but replaces (impersonates) them when they fall short of standards. This occurs when humans are more effective in performing the task or cost-efficiency compared to computers. Most microwork platforms, including notable ones like

Amazon Mechanical Turk or Lionbridge, fulfill the critical need of companies to cut down on costs associated with machine learning. The costs in machine learning are large and include powerful hardware requirements, the expertise of highly skilled computer scientists, and the acquisition of high-quality data. For instance, semantic segmentation can cost a few dollars per image, while bounding boxes are priced at less than a dime, and simple categorizations are available for one or two cents. Costs rise further when seeking heightened accuracy in results.

The role of human labor in the development and advancement of artificial intelligence is very important in various aspects. First, highly skilled engineers and computer scientists contribute to the development by developing algorithms, while the underlying datasets vital for AI training and validation are created, curated and curated by microworkers. The emergence of microwork as a result of platform-based interactions reveals a shift in economic coordination. Digital platforms facilitate the coordination of economic transactions between service providers and customers, leading to a departure from traditional, long-term employment arrangements. The cost-effectiveness of microwork platforms is highlighted as a key factor in the overall landscape of AI development.

2.3 Future Trend and Evolution of Microwork

Crowd working has evolved into a multi-billion-dollar industry since its inception in the early 2000s, following years of annual double-digit growth (International Labour Organization, 2018). The appeal to crowd working is grounded in its business model, which eases the global pairing of workers and requesters through online labor market platforms. Since technological advancements continue to redefine the way we approach work, microwork is becoming vital in the landscape of employment. Indeed, as society increasingly engages with digital platforms and witnesses the growing drive of the digital economy, a significant increase in demand for micro-tasking services seems inevitable. The evolution of work dynamics, characterized by a shift towards decentralized and flexible employment models, positions microwork as a pivotal player in meeting the needs of businesses and workers alike. This expected surge is propelled not only by the convenience and efficiency that micro-tasking services bring to enterprises but also by the changing preferences of a workforce seeking diversified, on-

demand opportunities. The unique nature of the tasks undertaken by microworkers, from data processing to the development of machine learning algorithms, exemplifies a wide range of applications, highlighting the sector's potential for sustainable growth. In a landscape where adaptability is principal, the increasing market demand for micro-tasking services is destined to become a defining feature of the contemporary workforce paradigm. As businesses seek agile solutions and employees pursue non-traditional employment models, the expanding market value of the microworking industry appears to be an inevitable defining feature of the future of work. For these reasons, the growth momentum of microwork is accelerating and future forecasters predict that this sector will continue to grow.

The World Bank's 2015 report titled "The Global Opportunity in Online Sourcing" reveals that the industry demonstrates noteworthy financial performance, generating a substantial revenue bracket estimated between \$1.5 billion to \$2.5 billion in the year 2020, and mentions the economic importance and growth potential of the sector. The growth rate has also been predicted to continue to advance at a compound annual growth rate (CAGR) of 19% from 2023 to 2032, which underlines the dynamic and transformative nature of the AI sector.

The rapid growth of the artificial intelligence industry extends far beyond personal applications such as virtual assistants and self-driving cars. In recent years, the artificial intelligence industry has become an efficient and cost-effective alternative for businesses looking to transform their operations and increase their efficiency. Firms are increasingly using AI solutions to adopt more dynamic and effective methods across various facets of their operations. From optimizing supply chain management to personalized customer service through advanced chatbots, AI has proven its potential as instrumental in maximizing productivity and, consequently, profit margins for companies in various domains. The accessibility and versatility of AI applications enable businesses to automate routine tasks, easily analyze large data sets for strategic decision-making, and innovate quickly and effectively in previously unimaginable ways. As a result, the growing importance of AI in business settings signifies a paradigm shift, where organizations recognize the transformative potential of AI in optimizing processes and driving financial success.

At the same time, there is a noticeable change occurring in the job market as Generation Z plays an active role in the labor market and becomes more influential. Generation Z, known for its proficiency with digital technologies and preference for innovative work approaches, is shaping the way work is done. In particular, their mastery of digital tools and adaptation to different working approaches make them important contributions to shaping current perspectives on employment. Furthermore, the impact of the COVID-19 pandemic, for example, triggered change, starting a collective realization among both employee and employer sides regarding the various advantages offered by remote or hybrid work models. Beyond the direct benefit of allowing individuals to work from the comfort of their homes, these models provide cost efficiencies, easing the financial burdens of traditional physical workplaces on employers (Baudot, 2020, p. 21). Traditional notions of the workplace and the 9-to-5 office routine are increasingly being replaced by flexibility and the ability to work from anywhere. Employees, in increasing numbers, now arrange a work environment that aligns with their lifestyle, recognizing the importance of a healthy work-life balance. The desire for flexibility extends beyond remote work. It includes the freedom to choose when and where to work and allows individuals to tailor their schedules to their personal commitments and hours of maximum productivity. The rise of remote and hybrid work models is a direct response to this changing pattern of employee preferences. Remote work, once considered a temporary solution during unprecedented times, has transformed into a permanent method for many organizations (Ozimek, 2020, p. 1). The ability to work from anywhere meets the demands of a workforce seeking geographic flexibility while also taking advantage of a global talent pool (Priyanka, 2022, p. 8). The adoption of remote working has led to a shift in the traditional workplace and has provided companies with significant cost efficiencies in various aspects of their operations (Kajanová, 2022, p. 6). The costs associated with maintaining a physical office, including rent, utilities, and maintenance, represent a significant portion of a company's expenditures. Remote work eliminates the need for expansive office spaces, and allowing businesses to redirect those funds towards other strategic plans. The reduction in these costs contributes directly to the bottom line, promoting financial sustainability. Additionally, the decreased reliance on physical offices diminishes the need for on-site staff and services, further eliminating operational costs. Moreover, remote work setting often corresponds

with a minimal need for physical assets and equipment. Companies can avoid spending on office furniture, equipment, and supplies, as employees leverage their own resources. This decentralized approach to work minimizes the financial burden on companies to provide and maintain these assets, contributing to additional cost saving and allowing them to allocate their funds elsewhere.

In this context, it would be more appropriate to see microwork as a temporary working model that is not only a practical response to contemporary challenges, but also compatible with the preferences and capabilities of the modern workforce. The appeal of microworking is assured to extend beyond its inherent flexibility, offering an ideal junction with the digital insight and adaptive mindset of the younger generation. As societal and regulatory frameworks adapt to accommodate these transformative trends, the microwork sector is destined for sustainable and exponential growth. This represents a shift in approach to how work is conceptualized and carried out in the rapidly evolving environment of the modern workplace.

However, predicting the future of microwork is a complex matter that cannot be reduced solely to the habits of employees and employers or growth trends. The current landscape of the workers, demographics, and regulations in the field will also be crucial determinants in understanding the future of the sector.

While microwork is commonly perceived as inherently 'placeless' due to its design and aims, characterized by platforms establishing extensive international labor alternatives, it can be contended that, in practical terms, the execution of microwork is undertaken by individuals residing in specific geographic locations rather than existing in a metaphorical cloud (Lehdonvirta, 2016, p. 4). This observation aligns with the conclusions pointed out by Berg et al. (2018), representing that microwork occurs mostly in urban environments, with 80% of global microworkers originating from urban or suburban areas. Furthermore, research conducted by the COLLEEM studies mentions the urban-centric nature of microwork in Europe, emphasizing its prevalence in the larger economies of Western Europe. Nevertheless, an interesting perspective occurs from the analysis of data derived from 14 surveys conducted across 13 EU countries by Huws et al. (2019). Contrary to the prevailing notion of Western Europe as the epicenter of platform work Contrary to the prevailing notion that Western Europe is the epicenter

of platform work, the research highlights the importance of central, eastern and southern European countries such as the Czech Republic, Slovenia, Italy and Spain, where online revenue generation is highest. The researchers attribute this phenomenon to factors such as poverty, distinguishing between absolute and relative national averages. Morgan et al. (2023) have provided a noteworthy contribution to the field by delineating the demographic landscape of microwork in Europe. The study identifies, in order of population size, the top five countries engaged in microwork in Germany, France, Italy, Spain, and Poland. However, when considering the density of microworking, a different landscape emerges, with the top five countries being Portugal, Croatia, Latvia, Germany, and Bulgaria. Interestingly, the geographical distribution of microworkers across Europe does not mirror the general population distribution, such that countries with comparatively smaller populations, such as Portugal and Croatia, exhibit higher density in microwork representation than countries with significantly larger populations. This finding is in line with previous research conducted by Berg et al. 2018 discusses the importance of the determining spatial dynamics that characterize the prevalence of microworking in various European countries. Hence, while microwork may be perceived as placeless, its actual implementation reveals a concentration in particular geographic regions. Central and Southern European countries, for instance, emerging as significant contributors to online revenue generation within the microwork sector. This phenomenon is likely influenced by various factors, including economic conditions such as poverty rates, which motivate individuals in these regions to engage in microwork opportunities as a means of supplementing income and accessing employment alternatives.

Unique patterns are emerging in the European microwork landscape revealing a distribution that deviates from traditional expectations. However, on a global scale, a noticeable concentration of microwork density can be observed in certain regions. Considering the data from Information Geographics (2014), data on the geographical distribution of microwork labor can be observed. Data indicate a significant concentration in the Asian region. The Philippines, Bangladesh, India, and Pakistan in particular emerge as focal points, collectively accounting for a significant portion of the microwork workforce. Specifically, approximately one-third of active microworkers are situated in India, followed by approximately one-quarter in the Philippines, with the

United States hosting around one-tenth of the workforce. Moreover, the study mentions that a remarkable 85% of digitally mediated workers are concentrated within seven countries, suggesting a notable concentration of microwork activities in select global regions. In light of these data, one might argue that the microwork that is claimed to be placeless is actually concentrated in predictable areas.

Undoubtedly, another area that determines the future of this field is related to the hourly wages of workers. Microwork workflow structure is typically characterized by pay per task immediately upon completion of tasks. Indeed, microtasks are typically assignments that are of short duration, taking mere seconds or a few minutes to complete, and generally require minimal prerequisite knowledge or basic academic qualifications. Upon encountering a task they wish to complete, workers have the option to accept the task and commence work immediately or initiate additional tasks. This preventive action ensures that the currently running task remains private to the worker who started it, preventing it from being assigned to another participant. A prevalent practice among crowdworkers is to concurrently engage in multiple jobs; a strategy employed to secure high-paying assignments. However, it is imperative for crowdworkers to fulfill the specified deadlines associated with each accepted task, as failure to do so results in the task becoming available once again for all workers (Toxtli, 2021, p. 2). When a task is completed, workers wait for the requester to accept their work to receive the promised payment. In the majority of microwork platforms, there exists a mechanism whereby requesters keep the right to reject tasks submitted by workers, often providing minimal or no feedback (Lascău, 2022, p. 6), leading to more instability in the already precarious microwork business model. The capacity for requesters to decline completed tasks without substantive feedback amplifies the perception of insecurity among workers, contributing to a heightened sense of vulnerability within this mode of employment.

Further investigation of the socio-economic impacts for individuals engaged in microworking will also affect the future of the sector. A comprehensive review of the compensation structure in microwork will reveal several factors, such as the motivations that drive individuals to participate in microwork and the potential challenges associated with unfair compensation. Considering the reported hourly wages and rate differences between different platforms will reveal whether microworking can be a sustainable

source of income. Although there is no clear definition of the question of what a fair wage is and it varies regionally, studies should focus on finding the answer to this question. Moreover, the impact of rejection and minimal feedback mechanisms on microworkers' psychological health and job satisfaction is an area that requires more attention. Understanding how task acceptance, rejection, and the unstable nature of providing feedback affect the overall work experience is crucial to understanding the socio-psychological dynamics in the microwork sector, as these factors are directly related to the future of the sector.

The discourse surrounding concern about the potential for humans to be replaced by machines or technological advances existed even before the modern era, but it is in the post-industrial period that we observe the first examples of a more formalized debate. This important discussion, shaped by significant improvements in automation and computerization, has led to debates concerning the plausible ramifications of these technological innovations on the workforce and the broader society. The post-industrial era, characterized by increased mechanization and the onset of intense interest in computer-based technologies, required a comprehensive re-evaluation of the relationship between human labor and these emerging automated systems. As industries adopted automation to enhance efficiency and productivity, concerns regarding the potential displacement of human workers by machines escalated. The discussions that followed, shaped by the tension between technological progress and its impact on society, set the stage for a more organized debate on whether machines could replace humans in various professional fields. With the rapid advancement of technological reality, concerns have increased, particularly regarding job displacement, economic inequalities, and the broader trajectory of labor. This has sparked a detailed conversation among scholars in academia, economics and social commentary, experts who have carefully studied the effects of increased automation and how it could impact industries. (Acemoglu, 2019 ; Chui et al. 2016)

The fact that the dream of artificial intelligence has become a reality today has rightly caused these concerns and discussions to flare up. Artificial intelligence has entered our lives as a reality powered by advances in various fields such as big data and machine learning. The convergence of significant advances in these fields has fueled the

emergence and spread of artificial intelligence, which has become a transformative force in the technological landscape in areas ranging from economics to politics.

However, scientists and experts do not have a consensus on the possible effects of artificial intelligence within the economic and social landscape. One group argues that the advancement of artificial intelligence can lead to layoffs and irreversible job displacements. Supporters of this perspective present arguments suggesting a growing apprehension among employees regarding AI, and cite a reported increase in such concerns (Vorobeva et al. 2022, p. 3). Additionally, they argue that AI has already had a dehumanizing impact on several sectors, including but not limited to, the service and finance industries (Max et al. 2021). On the other hand, there exists an opposing perspective among certain experts, asserting that these advancements should be perceived not merely as a mechanism for job replacement but rather as an integral phase in the transformative evolution phase of employment. From this perspective, ongoing advances in technology, especially artificial intelligence, are seen as heralding a fundamental change in the nature of jobs rather than a direct replacement for workers.

These opposing viewpoints each present valid and important arguments. In a recent study, it has been demonstrated that existing technologies currently in use have the potential to automate 45 percent of the tasks for which individuals receive compensation. Additionally, around 60 percent of all professions may witness automation of 30 percent or more of their core activities by leveraging technologies already available in the current context (Chui, 2016). From this angle, employers have the opportunity to concurrently increase operational efficiency and decrease expenditures within certain sectors through the integration of AI. In particular, in sectors characterized by tasks that require parallel execution by multiple workers, AI stands as a magical tool, affording opportunities for both efficiency increment and cost reduction (Golding, 2019, p. 1). Considered from this perspective, companies, which are characterized as entities that aim for profit maximization, may replace the large workforce they currently employ with artificial intelligence because it offers significantly lower costs.

Simultaneously, as previously mentioned, the AI industry continues to maintain a dependency on human labor. Microworkers, in particular, constitute a sector pivotal to

the advancement of AI, the sector offers employment opportunities and creates a multi-billion worth market. However, the broad discourse about machines replacing human labor finds a place among the public and influences the agenda-setting process. Consequently, concerns about the possible consequences of automation and the potential displacement of jobs have become increasingly common (Wang, 2019, p. 10). Despite what appears to be a delayed response from states to this relatively new technology, the public, particularly those within the European Union, advocating for regulatory measures in this domain are exerting pressure on governments. According to the European Tech Insights 2023 report representing 3,000 Europeans, 68% express a desire for their respective governments to enact regulations aimed at safeguarding jobs amidst the escalating automation facilitated by AI. The prevailing desire among the majority of Europeans is to support government intervention to reduce the risks of job losses attributed to artificial intelligence. It can be understood that this desire has been met by governments by looking at the increasing trend of artificial intelligence regulations among governments. One of the important steps towards this direction was taken by the European Commission in April 2021. The commission took a pioneering step by proposing the first EU regulatory framework for artificial intelligence. This framework involves the analysis and classification of AI systems based on the diverse risks they pose to users, thereby advocating a risk-based approach. The legislation, the AI Act, aims to establish different levels of regulation based on the assessed risks associated with different applications of AI technology within the European Union. The enactment of the Artificial Intelligence Law and the increasing public vote supporting government intervention to address layoff concerns illustrates that the decisions taken by the governmental bodies, the beliefs of the public, and the pressures they put on the governments will also affect the field of artificial intelligence and therefore the future of the microwork sector.

As a result, the evolution of microwork is the result of a series of political, technological and economic developments and transformations. The sector's ability to adapt to technological advances and its role as a major player in the changing employment landscape is an indicator of its potential for sustainable expansion. The surge in demand for micro-tasking services aligns with the changing preferences of a flexible and decentralized workforce, emphasizing the industry's convenience and cost-effectiveness

for businesses. Additionally, the nature of microwork compatible with the digital competencies of Generation Z indicates its high future potential. However, the future trajectory of microwork is subject to multifaceted and complex determinants beyond growth trends, including the socio-economic implications for workers, demographic considerations, and regulatory frameworks. Addressing challenges such as the examination of compensation structures and the psychological well-being of microworkers is crucial for shaping the ethical dimensions and regulatory frameworks that will govern the sector. Likewise, changes in the remuneration structure in the sector also demand attention as a factor, potentially the most influential, that will affect the future of this sector, characterized by evident growth prospects. Finally, there is no doubt that the perception of AI replacing human labor within the public will closely affect the future of microwork. The ethical, political, educational and socioeconomic actions taken by the authorities are also important determinants when we predict the future of artificial intelligence sector and therefore microworkers.

3. Microwork and the Dark Side of Digital Labor: Unveiling Exploitative Practices in AI Crowdsourcing Platforms

3.1 Neoliberalism and deindustrialisation: Employment relations in the context of Microwork.

Over the past several decades, the dynamics of working life in developed economies have experienced a remarkable transformation. A complex interaction of various factors played an important role in shaping this transformation. One of the most prominent factors among these is the dominant position of neoliberalism which has emerged as the primary economic model shaping policies and practices across nations (Webster, 2016). Neoliberal principles are often characterized by market-oriented solutions, deregulation, and a reduced role for the state in economic affairs. This ideological shift has deeply influenced the current landscape of labor markets and employment relationships. Furthermore, in addition to neoliberalism, deindustrialization emerges as a significant factor influencing employment relations in this process. This restructuring has some serious implications for the workforce and, therefore for broader societal structures.

This radical transformation is raising questions about income inequality, social mobility, and the overall well-being of individuals within these transformed economies.

The transformative forces that shaped modern economies also paved the way for the emergence of microworking. Microwork is a unique way of work that incorporates the principles of flexibility and decentralization and meets the expectations of contemporary labor markets. In essence, microwork reflects the principles of adaptability demanded by the contemporary economic environment where the dynamics of labor are increasingly characterized by the ability to adapt quickly and responsiveness to the dynamically changing needs of the digital age. Moreover, deindustrialization is an important cornerstone in the emergence of microwork by reshaping the demands and compositions of industries. Traditional manufacturing jobs experienced a decline, and therefore remote, digitally mediated work opportunities have gained momentum. The capital-labor contract that translates into greater flexibility is in line with the nature of microwork arrangements, where individuals can undertake multiple micro-tasks simultaneously through different employers or platforms without the limitations of traditional employment relationships.

Neoliberalism is today's dominant ideology. It is widely accepted among nations. Nowadays, governments actively promote neoliberal economic doctrines and stick to liberal market principles. This widespread acceptance causes a weakened position of labor while simultaneously strengthening the influence of employers (Howell, 2020). Workers find themselves weakened on both individual and collective forms within various sectors. Following the acceptance of neoliberal policies, the diminished role of the state in regulating employment relations has left workers with reduced bargaining power and weakened collective action capacity. Simultaneously, deindustrialization redefined the nature of the workplace, dismantling traditional structures and contributing to a sense of disempowerment among workers. The spread of these two phenomena has manifested itself in almost every sector. While employers have become more powerful in the employment relations equation, workers' capacity for collective action has diminished.

In the context of microwork and the contemporary employee-employer relationship, neoliberalism and deindustrialization, often regarded as transformative concepts,

contribute to a situation that is disadvantageous for microworkers. The combined impact of the transformative concepts shows us a detrimental scenario for workers especially when considering the specialized nature of microwork and the developing nature of employee-employer relationship.

The traditionally accepted term of employment relations represents the complex interactions between employers and employees, labor/trade unions, employer organizations, and the state (Ackers, 2008, p. 2). The term "Industrial Relations" which historically referred to the interrelated relationships between employers and employees in industrial settings is currently transforming its usage and scope. Deindustrialization is the phenomenon that triggered this change. As societies adopt structural changes different than traditional manufacturing the perception of workplace relations has expanded to refer to a wider spectrum of economic sectors. Consequently, the conventional boundaries of "Industrial Relations" have become less applicable in capturing the details of contemporary work environments. The emergence of non-industrial relations has demanded a more inclusive and expansive term to describe the landscape of employment dynamics. In response to this change, the use of the concept of "Employment Relations" spread. This term reflects the evolving nature of working life and the diversified structure of industries (Lewis et al. 2003, p. 3). The declining influence of industrial relations is closely tied to the decline of trade unions and collective bargaining power, as traditional industrial sectors decline, resulting in a weakened strength of organized labor. This diminishing influence of unions results in a shift away from the historic model of robust negotiations, impacting the ability to shape employment terms and protect workers' interests in the evolving economic landscape. The overarching decline in unionization and collective bargaining power is a prevalent trend cutting across diverse sectors.

A triangular employment relationship is defined as a scenario in which an employer enters into an arrangement with a third party, such as a staffing firm, temporary services agency, consulting firm, or leasing firm, to secure labor services (Parks et al. 1998, p. 19). This arrangement is becoming more popular across diverse sectors and industries. Organizations are happily welcoming these arrangements to attain heightened flexibility and reduced employment costs (Ashford, 2007). In parallel with most sectors, microwork and crowdsourcing industries are also sectors that have adapted to this

change. Crowdsourcing is becoming a more common trend observed in companies. Companies that want to benefit from the various advantages provided by digital technologies are quickly adapting to changes in this direction and going beyond traditional employment relations patterns (Webster, 2016). Microwork platforms present the association between the worker and the employer within the framework of independent contracting, explicitly avoiding the characterization of legally protected employment (Cherry, 2010, p. 4). This depiction takes place in the standard contract terms of the microwork platforms, wherein the requester (referred to as a 'contractor') holds the full right to negotiate. Furthermore, certain microwork platforms are structured in a manner that avoids meeting statutory definitions of employment, such as by imposing limitations on a worker's ability to work continuously for a single client.

Microwork is symbolic of precarious work, based on labor contracts that are as temporary as it is possible for them to be (Webster, 2016). Tasks are completed in extremely short-term arrangements, sometimes lasting only minutes. Workers receive compensation for each task, and pay rates tend to be low. The microwork landscape is marked by intense competition among workers bidding to offer their services. Unlike the conventional approach, this employment contract denies workers the ability to select their employers. Requesters retain the authority to evaluate employees through assessments of CVs, ratings, or performance metrics, while employees lack the equal opportunity to screen potential employers similarly.

Microworkers find themselves without certain rights typically enjoyed by traditional workers, as a result of the terms outlined in their employment contracts. The eradication of these rights, achieved through laborious and demanding struggles, amplifies the challenges inherent in the precarious working model experienced by microworkers. When we look at this disparity it is notable to see the unique difficulties faced by individuals engaged in microwork, where the absence of established rights can contribute to a less secure and more uncertain employment environment. Microworkers face a notable absence of job security, in-work benefits, and labor rights, leaving them highly susceptible to the discretionary decisions of their employers. Even within Europe, where workers' rights are safeguarded by EU labor laws, there exists no legal or collectively established framework specifically addressing the unique challenges of crowd employment. Operating essentially as self-employed entities, these workers

sacrifice the protective measures associated with traditional employment, such as safeguards against termination, minimum wage assurances, paid annual leave, and sickness benefits (Webster, 2016). For instance, Amazon Mechanical Turk explicitly states that workers do not have access to the benefits provided to the requester's or MTurk's own employees, including holiday pay, sick leave, health insurance, retirement benefits, and compensation for injuries. Both workers and requesters are expected to take personal responsibility for determining the applicability of taxes and are accountable for the collection, reporting, and payment of any taxes arising from their transactions (Kareborn, 2014, p. 6). Workers who sign up on those platforms operate as self-employed individuals and must agree that their services are classified as 'work made for hire,' exclusively benefiting the requester. In other words, the requester retains all ownership and intellectual property rights associated with the work performed by the worker.

At the same time, when we consider the mutual obligations of employees and employers, we notice a natural responsibility of the employer side. Employers must pay employees the wages they deserve in return for their labor, in full and on time (Moss, 2000, p. 13). The reason is rooted in the fundamental principle of fair compensation for the services rendered by employees and the ethical obligation of employers to fulfill their contractual commitment. However, crowdsourcing platforms have structured contracts in a way that disregards this fundamental ethical principle. On most microwork platforms, a mechanism is in place where requesters hold the authority to reject tasks submitted by workers, frequently offering minimal or no feedback (Lascau, 2022, p. 4).

Although there is a deep break from traditional employer-employee relations in the world, the field of microwork seems to be one of the areas where this shift is observable harshest. The relationship between microworkers and requesters is an extreme example of contemporary employment relations. This type of employment relations opposes even the fundamental principles of traditional employment relations gained by workers throughout history. Employers as participants in the business environment seek to maximize profits for business purposes. Through the historical struggles that workers have endured, they have collectively developed methods to protect their rights and counter exploitation resulting from the profit-seeking impulses of capital. However, in

the contemporary era, despite the development of prevention systems and methodologies to protect workers from exploitation, there is a noticeable trend towards the gradual decline of those acquired rights. It appears that microworkers have had to give up even their most fundamental rights such as job security, benefits, and the right to be paid on time and in full. The principles of neoliberalism have significantly disempowered workers within the context of capital-labor contracts. This ideology that advocates a laissez-faire approach to economic policies, has led to the redefining of power dynamics in favor of the employer. The wide adoption of the ideology of free market forces leads to a reduced bargaining position for workers, affecting their ability to secure favorable terms and conditions in contractual agreements with capital institutions.

Microworkers have lost their ability to be part of the contract-creating process. Mainly characterized by short-term, task-focused engagements, the microwork environment represents a break from the traditional contract-creating process in which workers play a more participatory role in shaping the terms and conditions of employment contracts. Minimal or no communication between each other is observable. This isolated community of workers is incapable of representing themselves collectively. Lack of representation inevitably leads to a powerless position of workers against the capitalist. The absence of a cohesive collective identity or shared awareness among these workers reduces their capacity to effectively negotiate or collaborate and leaves them at a distinct disadvantage in their interactions with employers who have more consolidated influence or negotiating power.

Interestingly, this situation is not observable just in third-world countries where the prevalence of microwork is substantial. It also takes place in Europe a region that traditionally prides itself on the importance it places on upholding and safeguarding the rights of workers. The surprising reality is that, even with Europe's reputation for being a stronghold of workers' rights, the challenges associated with individualized, decentralized microwork arrangements persist within the European borders. This contradiction shows us that problems related to labor dynamics go beyond geographical borders.

3.2 Low Paid High Precarity

As previously mentioned, microwork exhibits a significant degree of deflection both administratively and in comparison to traditional employment relationships. However, this disembeddedness was deliberate rather than coincidental. The main objective of microwork platforms is to offer human labor as a flexible, on-demand service accessible through the internet, comparable to the labor equivalent of cloud computing. To achieve this goal, the working conditions of microworkers, central in both the preparation of AI and processes involving incomplete AI have transformed to eliminate the necessity for workers to establish connections with one another, the end customer, and the employer. The predominant group among microwork "requesters" comprises multinational corporations or intermediary firms specializing in consultancy services. Platforms act as intermediaries between large enterprises and workers, facilitating project support and workforce management. This involvement encompasses the segmentation of jobs into microtasks suitable for completion by workers and the implementation of automated solutions for hiring and managing the workforce (Webster, 2016). The primary mechanism used by these platforms to attract companies is the provision of cheap labor.

Indeed, upon conducting a detailed examination, it becomes apparent that a substantial portion of tasks available on these platforms commit to compensating workers at markedly low wage levels. According to recent data, 25 percent of these tasks offer a mere \$0.01, while an overwhelming 70 percent provide compensation of \$0.05 or even less. Moreover, a big proportion of the tasks, 90 percent of these tasks pay workers with less than 0.10 cents (Ipeirotis, 2010, p. 18). It is worth noting that despite lacking the conventional features associated with "standard work" microworking stands out as the primary source of income for a considerable number of workers (Ipeirotis, 2010, p. 3).

The term "precarious work" is used by critics to define forms of employment in non-standard or temporary arrangements, often marked by unfair compensation, insecurity, absence of protection, of workers, and an inability to adequately support a household. This form of work symbolizes the break from standard employment relations. It is the result of complex factors, including deindustrialization, increased importance given to information technologies, and the transition from the production sector to the service sector (Vosko, 2011). The standard employment relationship encompasses full-time,

continuous employment, with the employee working either at the employer's premises or under direct supervision. This traditional commitment between sides is characterized by an employment contract, standardized working hours, and inclusive social benefits like pensions, unemployment benefits, and medical coverage. On the contrary, critics use the term "precarious" with a more specific meaning for describing a type of work that is characterized by uncertainty, unpredictability, and limited control over working hours or conditions. Non-traditional, less secure forms of work that lack the stability and benefits associated with the standard employment model have become increasingly common (Kalleberg et al. 2000, p. 18).

Microwork has many features that are parallel to precarity, encompassing characteristics synonymous with instability and vulnerability in employment. Rooted in the transformative influences of neoliberalism and deindustrialization, microwork platforms represent a departure from conventional employment structures by deliberately embracing a decentralized and flexible approach to task completion. Workers engaged in microwork deal with a distinct lack of job security, benefits, and established labor rights and diverge significantly from the stability traditionally associated with employment. The underlying reason why multinational companies and intermediary firms are "requesters" for microwork labor is that the working model allows these organizations to hide their identities and transfer the associated risks with minimal compensation. Viewed through this angle, the critiques discussed by scholars regarding the challenges posed by precarious business models resonate distinctly within the sector of microwork. When the intersections of microwork and precarity are carefully analyzed, various parallels stand out. Much like the concerns raised in academic circles, microwork exemplifies a form of employment that deals with issues of insecurity, lack of protections, and insufficient support for individuals trying to sustain themselves through this unconventional mode of work.

3.3 The Eradication of Traditional Workplace and Importance of Trade Unions

A combination of several internal and external factors influenced the apparent decline in unions (Frege, 2003, p. 7). Scholars have studied this phenomenon in depth, attributing the decline to the outcome of a combination of economic, political, and social changes

that have collectively contributed to the apparent decline in the influence of trade unions. Globalization is a phenomenon that plays a vital role in determining this decline. Market integration and the dominant position of multinational companies are recognized as indicators of the well-known phenomenon called globalization. The trend towards globalization has moved the process away from the traditional, local context in which unions were once successful and moved it to an international level (Slaughter, 2007, p. 1). Business outsourcing, moving production across local borders and the rise of the gig economy have redefined the nature of work, posing challenges to the traditional methods of collective bargaining employed by trade unions. Internally, technological advancements, particularly in automation have transformed industries, rendering certain types of labor roles obsolete and reconfiguring the skills demanded by the job market. This has necessitated a recalibration of the strategies used by trade unions to address the changing nature of work and the emerging skill sets required.

From a political perspective, changes in management structures and ideologies have further affected the effectiveness of unions. Unsurprisingly, changing political discourses marked by the rise or fall of labor-friendly policies, alter the regulatory environment in which trade unions operate (Wallerstein, 2020, p. 17). Additionally, political discourse and attitudes surrounding the government's role in regulating labor markets and protecting workers' rights have a direct impact on the ability to influence policy decisions affecting unions. Societal and cultural changes and evolving perceptions of collective bargaining and solidarity also contribute to the observable decline in the prevalence of unions. The individualization of labor relationships, coupled with a greater emphasis on personal agency and entrepreneurship, has reshaped the narrative around collective action.

Although we observe a general decline in unionization, the rates of decline in unionization and the strength of unions vary on a country basis. Indeed, unionization rates manifest significant variations globally, and these disparities can be attributed to multiple factors. These factors may be at a personal level, for example, personality and attitudinal differences among the populations in different countries (Parkes et al. 2004, p. 2), or they may be attributed to broader political, cultural and geographical reasons (Sarkar, 2012, p. 4). Undoubtedly, this diversity affects the structures of organizations by affecting the perspective of both employees and employers on unionization.

Consequently, these factors exert an influence on the trends of decline or ascent in unionization at both a national and regional level. For example, enterprise-level bargaining, in which wages and working conditions are negotiated at the level of individual organizations, has been adopted as an accepted method in the US which has experienced a significant decrease in the rate of unionization in the last fifty years. At the same time, in the majority of European countries, unions engage in bargaining at the sector level, negotiating for all workers within an entire industry, rather than exclusively at the company level or workplace. This difference in approach directly affects the preferences and attractiveness of unionization or non-unionization in countries (Matthews, 2017). On the other hand, the rate of unionization is not the only indicator of the impact of unions on worker well-being. Collective agreement coverage is also an indicator that shows if trade unionization is influential within the system. The term in question pertains to the percentage of individuals in a nation's populace whose work-related terms and conditions are established through the process of collective bargaining. The coverage rate is articulated as the proportion of employees subject to a collective agreement, determined by dividing this figure by the total count of wage and salary earners (Wolfgang, 2001, p. 2). As exemplified by OECD's 2016 data, France exhibited a unionization density of 10.8% which is significantly lower than the 24% EU average, denoting the percentage of the workforce affiliated with labor unions. Simultaneously, collective bargaining arrangements extended their coverage to 98.5% of the total workforce during the same year. This indicates that instead of individuals with limited bargaining power negotiating independently, there is a collective organization wherein individuals join forces to collectively advocate for improved wages and working conditions during negotiations at their workplace.

Microworkers often lack interaction with one another, the employer, and the end customer which sets an obstacle to the establishment of a collective voice. In contrast to traditional workplaces where employees interact with each other and their employer in a physical setting, microworkers often conduct their work online with minimal direct contact with both their colleagues and the end consumers. This isolated structure of microworkers significantly limits their unionization and collective bargaining options, compared to employees who are in constant communication with each other in the traditional employment structure. Microworkers may, thus, find it difficult to advocate

for their rights or negotiate improved working conditions in the absence of a concrete collective presence, with the decentralized and dispersed nature of their interactions making it near impossible to build solidarity and coordinate cooperative action.

The prediction of an imminent increase in remote work has been predicted by various academics and experts since the 1970s. This prediction came true as we approached the present day. With the undoubted impact of the pandemic, remote working was widely accepted as a permanent way of working in the first months of 2020. Undoubtedly remote working offers many advantages for some workers by greater flexibility, an improved work/life balance, time savings resulting from the elimination of commutes, and greater autonomy in their professional pursuits (Predotova, 2021). However, despite the undeniable advantages associated with remote work, a host of significant challenges and risks threaten trade unions, workers, and the broader workplace environment (Lodovici, 2021, p. 38). In the absence of robust social dialogue and collective bargaining, the ostensibly beneficial 'flexibility' of remote work could inadvertently translate into increased pressure on workers to extend their working hours beyond the traditional office timeframe. In contexts lacking robust social dialogue and collective bargaining structures, the seemingly beneficial aspect of the flexibility inherent in remote working arrangements can lead to a subtle but important consequence. Specifically, this flexibility may indirectly put pressure on workers to extend their working hours and beyond the traditional boundaries of the traditional office schedule. Without established mechanisms to work around workload boundaries or clearly set expectations for remote work, employees may feel compelled to blur the lines between their professional responsibilities and personal time to meet perceived demands or demonstrate productivity. The development of novel working relationships has not been without its share of concerns, as underscored by Irani and Silberman (2014). Their critical examination of microworker dynamics, particularly from the perspective of labor rights, has ignited calls for collective action by crowd workers. Within this context, prevalent conflicts encompass issues such as rejected work, delayed or unfair payments, a dearth of transparency, and technical problems (Irani, 2010, p. 20).

The necessity of effective collective bargaining at various levels becomes evident, serving as a central factor to translate principles into concrete and applicable measures. Only through the establishment of such mechanisms can remote work truly unlock its

potential benefits for both workers and employers alike. While the advent of the collaborative economy has introduced an abundance of new work opportunities, there exists a critical imperative to safeguard against the inadvertent emergence of an online platform economy. Such an evolution might give rise to a separate labor market characterized by diminished social and fundamental rights, ultimately posing a risk to the erosion of Europe's esteemed social model.

4. Ethical Considerations in AI Data Collection and Surveillance Practices

The emergence of digital platforms is a response to the desire to meet the evolving needs of the rapidly developing global digital economy. Particularly in the field of microwork, these digital platforms have become widespread and in high demand due to their unique ability to reduce both costs and liabilities of large international technology firms, as well as outsourcing companies. The combination of advances in the digital economy and rising unemployment rates, especially exacerbated by the COVID-19 epidemic in 2019, has been a turning point in meeting the sector's employment needs. This crucial turning point has led to the integration of the unemployed workforce struggling with the consequences of the pandemic and those actively seeking flexible work schedules into the pool of microworking domain. The digital economy's ability to provide remote and decentralized opportunities has become a lifeline for individuals navigating the challenges of unemployment, offering a pathway for them to contribute to the workforce in a manner that supports their preferences and circumstances (ILO, 2022). The rapid development of the digital economy is transforming the economic world at an unprecedented pace, while also significantly affecting the ethical research standards that govern various sectors (Srnicek, 2017, p. 5). At the heart of this transformative change is the ubiquity of data-driven processes that shape the way societies operate, businesses operate, and individuals interact. Data analysis obtained from companies' data sets helps businesses maximize their operational efficiency by changing their marketing strategies. However on the other hand, this data-driven approach is subject to criticism from various circles. In this section, we'll look at two key concerns arising from the digitalization trend: data protection and surveillance.

As the first concentration point of these criticisms is "monitoring" and "surveillance". Although these two terms contain similar features, they also perform differences. While employee monitoring represents more work-related activities, surveillance practices are referring more broadly to cover work and non-work areas, including personal information such as personality traits (Riso, 2020, p.3). The utilization of technology for the surveillance of workers' performance is a practice with historical roots and precedents (Ajunwa & Schultz, 2017, p. 6). In conventional work environments, employers engage in monitoring activities that generally begin during the hiring process such as interviews, drug tests, and credit checks. Subsequently, on-the-job surveillance, including performance monitoring, is also commonplace. Such practices inevitably causes to the rise of privacy considerations, including the appropriateness of data collection or monitoring, the responsible management and sharing of workers' data, and the implications of using such data to form judgments about employees. While employee monitoring and surveillance are not new concepts, technological advances have increased their prevalence and ubiquity, potentially increasing their intrusiveness. This increase in their use is impacting traditional boundaries of acceptability and introducing new complications for legislators and policymakers.

The second concentration point is understandable when considering today's companies' appetite for data. This appetite justifies concerns about the importance of data protection within the authorities. This need for big data results in systematically creating complex profiles of individuals' online activities, preferences, and behaviors. It involves using extensive datasets and combining sources like social media interactions, online searches, and purchasing behaviors to create detailed user profiles. These profiles are then used for purposes such as targeted advertising and personalized content delivery. This important and valuable position of data today leads companies to store data not only from customers but also from their own employees for commercial purpose. This scenario raises two important privacy concerns. Firstly, the entity collecting the data may sell it to a third party for financial gain and secondly, there is a risk of the data falling into the hands of unauthorized parties dor instance potential cyberattacks.

Microwork and digital platforms, within this context, have found themselves under criticism in this context. Indeed when we consider the fact that workers who work on digital platforms and crowdsourcing often use their personal mobile phones, computers

and gadgets for their work, and this process often requires the installation of applications provided by the platforms. This intertwining of personal and work-related devices emphasizes the risk of intolerable monitoring of workers and the potential violation of their personal boundaries. The blurring of the lines separating work and private life is a defining phenomenon of the microwork industry. This blurred line poses challenges that require deep consideration. Taking this perspective into account, it becomes important to take a close look at the data collected by digital platforms and outsourcing companies from microworkers.

However, it should be noted that the part of the literature that examines the data collection and surveillance practices of digital platforms seems to be underdeveloped compared to the part that pays attention to other aspects. Only limited research and analysis has been conducted to understand potential privacy threats and the extent of surveillance embedded in these platforms' operations (Mangold, 2023, p. 2). Our aim in this part of the study is to examine this emerging paradox. Despite its close relationship with data and its tendency towards surveillance, the notable gap in the literature addressing these microwork related issues stands out and creates a paradoxical scenario. An in-depth analysis is needed to understand the extent to which prevailing regulations effectively safeguard the privacy rights of microworkers in the face of evolving data practices. Such an evaluative undertaking assumes significance not only for the purpose of contributing to the existing, albeit incomplete, body of literature on the subject but also for illuminating insights that can inform and shape future regulations in the dynamic landscape of digital labor and data governance.

4.1 Examination of the Data Collected by Digital Platforms and Outsourcing Companies from Microworkers

The terms "information privacy", "data privacy" and "data protection" can be used interchangeably. Pointing to a common conceptual framework focused on the protection of sensitive information, these terminologies encompass the complex interplay between the collection and dissemination of data, technological advances, societal expectations of privacy, contextual information norms, and the complex legal and policy issues surrounding them. In essence, these terms encompass a multifaceted understanding of

the dynamics involved in managing and securing data, reflecting the evolving landscape where technological, social, and regulatory dimensions meet.

Workplace privacy revolves around the various methods employed by employers to profile and monitor their workers. In conventional work environments, employers engage in surveillance and gather information about employees, encompassing both the hiring process (such as interviews, drug tests, and credit checks) and ongoing job performance monitoring. These practices lead to several privacy considerations such as the appropriateness of data collection and monitoring, the proper management and sharing of workers' data, and the implications of using such data to form judgments about individual employees (Decker, 1987, p. 3). The phenomenon of workplace privacy has changed dramatically with the integration of digital technologies. This transformation causes employers to collect significant amounts of information about the workforce, subjecting employees to constant scrutiny and reinforcing imbalances in the power dynamics between employers and workers. In the digital economy, the work process is ultimately shaped by digital technologies, which define the hiring process and oversee how tasks are assigned, executed, and appraised.

The development and evaluation of user and personality profiles for administrative purposes pose a significant obstacle to ensuring data protection in the digital economy. This challenge involves systematically creating detailed profiles based on individuals' online activities, preferences, and behavior, utilizing extensive datasets for detailed analysis. Typically, this procedure involves the application of advanced Big Data techniques. Profiling serves the purpose of enhancing service provision by gaining comprehensive insights into user behaviors and preferences. On the other hand, it becomes a powerful tool for targeted advertising and marketing purposes, allowing businesses to adapt their strategies based on the detailed profiles they have gained by applying the Big Data techniques. In the digital economy, where personal data is highly valuable, the creation and utilization of these profiles raise ethical and privacy concerns. A noteworthy concern arises regarding the potential exploitation of personal information embedded within these user profiles for financial gain, for instance. There is a noticeable apprehension that such sensitive data may be sold to third-party entities, creating a scenario where individuals' personal information becomes a commodity in the commercial landscape (Hasan et al. 2013, p. 25). It can be inferred that profiling holds

potential for improved services, but also raises ethical and privacy concerns. It may not be easy to achieve the balance between data-based advantages and the obligation to protect users' privacy rights.

In the case of microwork, the necessity of establishing this delicate balance is visible. Digital platforms and outsourcing companies are known to use microworker data for various purposes. Digital platforms and outsourcing companies are known to use microworker data for various purposes. The data procured from employees serves a dual purpose within the organizational framework. Firstly, companies employ the collected data in a manner similar to conventional online services, extensively exploiting mechanisms such as cookie tracking and customer profiling for targeted marketing efforts. Secondly, another clear objective pursued by companies in the acquisition of employee data is the careful monitoring and surveillance of workers' activities. In adopting this approach, companies and digital platforms systematically record a plenty of metrics, including but not limited to; job completion rates, availability patterns, performance indicators, and rejection rates. Moreover, the platforms, facilitated by the wealth of data at their disposal, deploy sophisticated AI-based management algorithms. This strategic use of advanced algorithms is particularly evident in the area of task allocation, where the principal objective is to optimize the alignment between customers and employees. The ultimate goal is to achieve optimal cooperation between customers and employees, enhancing overall satisfaction and efficiency in the digital work ecosystem.

While many platforms commonly seek comprehensive consent and gather data from workers, however not all platform work is uniform. There are distinctive variations in terms of the level of worker-customer interaction, remuneration rates, and the degree of control workers exercise over their tasks. For this purpose, Mangold (2023) reported that a predominant number of digital platforms are actively involved in the processing of an array of personal details of microworkers. These include the collection of e-mail addresses, names, residential addresses, phone numbers, and IP numbers, among others. Importantly, these platforms routinely collect banking information from their clients as a part of their payment processing procedures, an integral part of their operational framework. Furthermore, for payment transactions, employees are required to provide an official identification document (Molina et al. 2023, p. 17). The point to note here is

that within the European Union, the General Data Protection Regulation (GDPR) draws specific provisions, particularly in Article 9, to impose additional safeguards for the protection of sensitive data. This category refers to information such as racial or ethnic origin, political opinions, sexual orientation, biometric data, or health data. The processing of such sensitive data is permissible only under exceptional circumstances. On the contrary to this legal framework, digital platforms find themselves collecting information classified as highly sensitive, which frequently includes user photos, conversation recordings, biometric data, and details regarding nationality. Notably, under the GDPR, user photos or voice recordings are construed as "biometric data". Moreover, these platforms explicitly disclose their collection of applicant data, encompassing curriculum vitae, educational background, qualifications, certificates, and related information from workers. Additionally, these platforms accept that they forward the curriculum vitae and resumes of crowd workers to potential clients as part of their operational procedures. Another privacy concern during the preparation process for AI voice assistants relates to the AI preparation phase. Microworkers record their own voices to train the device. Data about the worker, including details such as location, skills, and preferences, may also be recorded during this process, although the majority of the information provided by workers is innocuous and serves the purpose of training the AI.

As a result of the inherent characteristics of microwork, the tasks undertaken by workers demand meticulous quality control mechanisms to ensure the prediction of dependable results. However, ensuring task quality often faces challenges arising from insufficient competence of employees to perform assigned tasks or deficiencies in the design of tasks. Digital platforms and companies have increasingly embraced the integration of AI-based managerial algorithms are mostly inspired by this approach encompassing task matching, surveillance, and the evaluation of worker behavior. These advanced algorithms leverage large data sets, mining the intricate details of microworkers' skills, preferences, and past performance. The overarching objective is to engineer optimal pairings between workers and tasks, thereby maximizing efficiency and productivity in the microwork ecosystem (Kajino, 2014, p. 2). Providing a solution to the desire to improve the quality of the completed task, these AI-powered algorithms lead to continuous monitoring and evaluation of employee behavior. By tracking metrics such

as task completion rates, availability patterns, rejection rates, and even behavioral cues these algorithms operate within a data-driven paradigm. The insights derived from this approach offer valuable information that facilitates the identification of both the strengths and areas for improvement among microworkers. However, this comprehensive monitoring provokes ethical concerns regarding the extent of surveillance, the potential subjectivity in judgment, and the consequences on worker autonomy and well-being. The integration of AI-based algorithms into microwork platforms necessitates the systematic collection and analysis of substantial volumes of personal data. This includes information pertaining to the location, skills, preferences, and even biometric details of microworkers. While the aim is to optimize task allocation and enhance overall efficiency, the access to such extensive personal data raises significant privacy concerns. There is a tangible risk of this sensitive information being subject to misuse or unauthorized access, thereby compromising the confidentiality and privacy of the microworkers. Although the requesters have access to this information, the employees do not have any information about the requesters.

Furthermore, the blurring of lines between personal and work devices adds another layer of complexity to the ethical considerations surrounding AI-driven microwork management. The merging of personal and work-related data increases the likelihood of intrusive tracking practices and possibly leads to violations of employee privacy. As microworkers use their own cell phones, computers, and other personal devices for work-related activities, the potential for overreach in monitoring becomes marked, necessitating a careful balance between operational efficiency and the preservation of individual privacy rights.

Despite platforms and companies requiring workers to acknowledge and accept terms and conditions, it seems that the average time that should be spent reading these documents is quite long, often more than 15 minutes (Mangold, 2023, p. 4). This observation raises concerns about the level of attention and understanding that users and employees can devote to understanding privacy statements. It suggests that a significant portion of the user base may be neglecting to thoroughly read or adequately inform themselves of the details of the job description and the consequences of consenting to data use.

4.2 How Sensitive Is the Data Collected from Workers and What To Do With It?

In the contemporary realm of digital interactions; the reality of real-world attacks, instances of data misuse or theft, and the unauthorized interrogating of sensitive information have collectively gained attention on the importance of prioritizing privacy considerations when individuals contribute their data to online services. The growing prevalence of incidents related to profiling, data misuse, and re-identification reminds us of the critical importance of prioritizing robust measures to safeguard privacy in the realm of online data sharing. These occurrences underscore the inherent risks associated with the proliferation of personal information in digital environments and emphasize the need for proactive efforts to mitigate vulnerabilities and protect individuals' privacy rights. In an era marked by increasing digital interconnectedness addressing these challenges is vital to fostering trust, security, and accountability in online interactions and data management practices. As articulated by Kandappu et al. in their 2015 study, the tangible examples of these privacy breaches have brought to light the pressing need for a comprehensive approach to data protection. Primarily, it has been shown through rigorous analysis that having even a small amount of background information on an individual can significantly increase the effectiveness of re-identifying that individual within seemingly well-anonymized data sets. To illustrate, in 2008, Netflix initiated a competition offering a \$1 million prize to develop the best movie recommendation algorithm. They shared an anonymized dataset containing user ratings for over 100 million movie ratings given by more than 480,000 users across 17,700 movies. Despite the attempt to anonymize the data, Narayanan and Shmatikov demonstrated that several users could be identified by correlating the anonymized Netflix ratings with publicly available, non-anonymous movie ratings on the Internet Movie Database (IMDb) website. In other words, even though users willingly shared their movie ratings on IMDb public platform, the cross-referencing of this information with the supposedly anonymous Netflix dataset led to the identification of users and exposed their private ratings on Netflix (Bennett J, 2007, p. 2).

Another aspect of the problem, as discussed by Kandappu in 2015, relates to the cumulatively increasing amount of information collected about individuals being used for profiling and subsequent user targeting purposes. This phenomenon is notably observable in the widespread use of loyalty and rewards cards by retailers. These cards

serve as channels for the collection of elaborate details regarding users' consumption patterns, allowing retailers to meticulously track their shopping habits. Subsequently, retailers leverage this trove of data to conduct extensive analyses, discerning users' interests and needs. In a compelling illustration of customer data utilization, Hill (2012) demonstrated how Target, a prominent retailer, effectively determined the pregnancy of a teenage girl even before her own father was aware. The methodology employed by Target, as reported in Forbes, involves the assignment of a Guest ID number to each customer, linked to their credit card, name, or email address. This ID becomes a repository for a comprehensive history of the customer's purchases, as well as demographic information derived from their interactions or obtained from external sources. Target uses this combined data to employ a scoring system for every female customer, aiming to gauge the likelihood of her being pregnant. In particular, the system goes beyond mere prediction and extends to predicting the due date so that the timing of promotional coupons can be aligned to specific stages of the customer's pregnancy. While these instances represent just a fraction of the myriad ways in which companies leverage data to forecast user behavior, the proliferation of personal data is poised to catalyze a substantial upswing in predictive analytics. As user movements, browsing patterns, purchase history, and social media interactions become increasingly recorded, an expanding array of companies is likely to discover innovative means to profile users and exploit this knowledge for financial gain.

Given the sensitivity of the data collected from workers, as explored in the preceding section, an extensive body of literature has highlighted the multifaceted dangers faced by employees engaged in digital platforms. This extends beyond the previously discussed risks of Re-Identification, Profiling, and Data Misuse (Lease et al., 2013, p. 3; Kandappu, 2013, p. 2). The existing literature demonstrates that digital platform employees are subject to an array of hazards, with privacy and surveillance concerns emerging as the most prominent. The literature digs into the diverse privacy and surveillance threats perceived by workers participating in various forms of digital labor. Because these threats pervade across all categories of digital work, it has become a broad and systemic challenge rather than a restricted issue. It is evident that the implications of privacy breaches extend beyond the realm of data mishandling to encompass the very work environments in which digital labor is conducted. A number

of risks are intricately linked to the level of autonomy that workers possess in selecting tasks and customers, the balance between the appropriateness and intrusiveness of information requests and surveillance, the degree to which platforms disclose information to both customers and third parties, and the utilization of collected data in the evaluation processes determining how workers are assessed. The inherent nature of crowdwork and microwork accentuates the privacy risks associated with the exposure of workers' personal information, and this is particularly evident in crowdwork platforms where certain tasks necessitate workers to divulge substantial amounts of their personal data.

In addition to the theoretical discussions surrounding issues like data misuse, theft, and the erosion of privacy, a number of studies provide concrete evidence of the real-life implications associated with these concerns. The gradual release of personal information, and opinions even in small increments can accumulate over time, either by the requesters or the platform, resulting in the profiling of individuals. This gradual and slow loss of privacy prove to be undesirable for workers and, in some instances, may lead to actual harm, whether it can be in social, financial, or legal dimensions. There is also the possibility that the platform may choose to share such profiles with other entities, introducing a dimension of potential harm or misuse that can impact individuals in numerous ways.

Lease et al. (2013) have extensively examined the topic of worker anonymity on Amazon Mechanical Turk (AMT) in the section dedicated to Safeguarding Worker Privacy. Within the AMT framework both requesters and workers are anonymized by a 14-character alphanumeric code. However, Lease et al. discovered that where the very string used to identify a worker on AMT serves as the unique identifier for that individual's account across all Amazon services. This interconnectedness demonstrates the direct challenge that is posed to worker anonymity. As any public information associated with an Amazon account, including the user's name, profile picture, product reviews and ratings become easily accessible through that account's web URL. Furthermore, Lease et al. (2013) highlighted a critical observation that the term "anonymous" has never been explicitly employed on AMT's website or in its policies. Although AMT's policies articulate Amazon's concern for workers' privacy, they fall short of explicitly guaranteeing anonymity for workers.

Kandappu et al. (2013) also reported that the previously discussed privacy risks are not merely theoretical but can readily be generalized to current crowdsourcing platforms. Specifically, their study demonstrated that de-anonymizing workers and acquiring sensitive private information on these platforms can be achieved efficiently within a brief timeframe and at a low cost level. The inference attack designed to expose and address privacy loss in crowdsourced platforms involved a systematic approach implemented on Amazon Mechanical Turk (AMT). The method consisted of a series of tasks initiated by a series of surveys. In the first survey, workers were asked about their opinions on astrology services, yielding information on their star sign and day/month of birth. Subsequently, the second survey supposedly focused on market research for online match-making services, obtained details pertaining to the workers' gender and year of birth. The third survey centered on mobile phone coverage and allowed researchers to gather information about the workers' zip codes. To enhance the effectiveness of the privacy inference attack, the surveys were deliberately designed with redundancy such that workers who provided random or inconsistent responses were identified and excluded. Moreover, these surveys were administered independently over several days, creating a situation that workers were unlikely to realize that they were being conducted by the same entity. The researchers successfully linked workers who participated in all three surveys. This linkage facilitated the aggregation of their personal details, including their date of birth and zip code, and thereby exposed the potential privacy vulnerabilities intrinsic to crowdsourced platforms.

The significance of the data collected from microworkers in the described scenarios goes beyond concerns related to requesters, cyber attackers, or data thieves. The potential risks to workers' privacy are not always related to external threats. Another layer of complexity to the issue arises when considering that digital platforms and companies also play a role in the safety and privacy of workers. The academic discourse addressing this facet of the problem typically expresses criticism toward the practice of companies monetizing the data generated through microwork or crowdsourcing for commercial purposes. As discussed in earlier sections, microwork and crowdsourcing, in their broader context, represent domains prolific in data production. The individuals engaged in these fields contribute to the creation of substantial datasets, which can serve both as a target for marketing initiatives and as subjects of surveillance. Examining this

issue from such a perspective reveals that companies possessing this voluminous data may choose to sell it to third parties, not solely for the purpose of maximizing their commercial profits, but also potentially for other undisclosed objectives. This dual role of microworkers as data producers and the subsequent commercialization of their generated data introduces complex ethical considerations regarding the commodification of personal information in the digital labor landscape. While sharing employee data is commonly considered a routine practice, there is a lack of clarity regarding the procedures and the specific information involved in this process. Given that employee data that is shared with third-party record management firms and data brokers becomes accessible to others, there is a heightened necessity for transparency.

A comprehensive analysis of data processing by third parties by Hornuf and colleagues (2018) has shown that nearly half of the crowdsourcing platform companies in the United States shares the personal data. In comparison, the corresponding figure was 38% in Germany, and notably, the majority of crowdsourcing platforms in China did not incorporate relevant information in their privacy statements across all three countries. Similarly, Simon (2023) explores the practices of employers, highlighting the mandatory and frequent reporting of updates to employment status. The lack of explicit consent of employees before their personal data is shared raises concerns. This includes sharing sensitive information such as social security numbers, salary details and parental leave status with data broker. The consequences of this practice are significant, as the interception of such sensitive personal information can lead to malicious activities such as identity theft or phishing scams. Moreover, the possibility that employers may transmit data on their employees to data brokers through insecure or unencrypted channels is also another risk factor. The possibility of not taking appropriate security measures by the platforms when storing data further increases the vulnerability of individuals to unauthorized access and misuse of their personal data. However, it's essential to recognize that some certain data can also be accessed from the internet, subsequently transferred, and processed without the user's explicit knowledge or consent (Hornuf et al. 2023, p. 55). For example marketing agencies or researchers may employ sophisticated techniques such as programming web crawlers or bots to systematically traverse the public sections of websites. By doing so, they can gather a

wealth of user data, potentially without the awareness of the individuals whose information is being accessed.

This covert capture of data through web crawling or similar methods presents challenges user consent as well as ethical considerations.

4.3 Analysis of 2023 Decisions by the Italian Data Protection Authority Regarding ChatGPT: Implications and Findings

The Italian Data Protection Authority, also known as Garante per la protezione dei dati personali is an administrative authority established in 1997. The Garante exhibits an important role in safeguarding individuals' privacy rights and ensuring compliance with data protection laws. Its functions covers a diverse range of responsibilities. The most important functions of authority are but are not limited to; monitoring the processing of personal data to ensure obedience to the law and regulatory frameworks, exercising authority to ban or restrict the processing of personal data when its necessary to protect data subjects, providing expert consultation to legislative bodies and governmental entities on matters on data protection (The Italian Data Protection Authority: Who We Are - Garante Privacy En, n.d.). Furthermore, the authority is also responsible for supervising and enforcing compliance with the General Data Protection Regulation (GDPR) in Italy.

On Friday, March 30, 2023, Garante Privacy issued an order directing OpenAI to temporarily ban the processing of data belonging to Italian users (*Intelligenza Artificiale: Il Garante Blocca ChatGPT. Raccolta Illecita Di Dati Personali. Assenza Di Sistemi per La Verifica Dell'età Dei Minori*, 2023). This decision follows a data breach incident involving ChatGPT and resulting in the unauthorized disclosure of payment information and conversations of approximately 1.2% of ChatGPT Plus users (OpenAI, 2023). This led to the Garante obtaining further information from Open AI and highlighting the following alleged GDPR violations.

When Garante's decisions published on March 31 are examined, it will be seen that the authority based its ban on ChatGPT on 4 reasons. OpenAI was accused of failure to provide the required transparency information about ChatGPT's processing of their personal data to users and other data subjects whose data is collected by ChatGPT; the absence of a legal basis for processing personal data for the purposes of "training" the

algorithms underlying the platform's operations; inaccuracy in ChatGPT's processing of personal data, because the information provided by ChatGPT does not always match the real data; and a failure to verify users' age, meaning that users under 13 years of age may allegedly obtain answers from ChatGPT not appropriate to their degree of development and self-awareness and in contravention of the ChatGPT terms.

Moreover, this is not the first example of the authority's regulatory action regarding artificial intelligence. In February 2023, the regulator issued an injunction banning the Replika app, a chatbot that acts as a "virtual friend" to users, from processing the personal data of individuals residing in Italy. The banning of Replika is based on the application's violation of Articles 5, 6, 8, 9, and 25 of the GDPR which are mostly concerning about concerning underage users (Provvedimento Del 2 Febbraio 2023, 2023).

Although both of the ban decisions emphasize the access of underage users to the applications, the lack of an inadequate age verification mechanism at the account creation stage, and the importance of transparency, it can be observed that the ban of ChatGPT focuses on data breach, concerns about the processing of personal data, and the use of user data in the training process.

These decisions are very important for several reasons. Firstly, the decision is the first action of its kind taken by a data protection authority in the EU regarding data processing by a generative AI tool (Altomani, 2023). On the other hand, the prominent statement in the decision regarding data processing in the context of "training" machine learning software is also a first in its field. Furthermore, Highlighting the impact of the use of user data in machine learning on this decision, Guido Scorza, a member of the Italian Garante, said in an interview that the Authority's concern is mainly about the processing of data used to "train the algorithm" (Flora, 2023). As directly stated in the relevant statement on the official webpage of GPDP, "In its order, the Italian SA highlights that no information is provided to users and data subjects whose data are collected by Open AI; more importantly, there appears to be no legal basis underpinning the massive collection and processing of personal data in order to 'train' the algorithms on which the platform relies." (Intelligenza Artificiale: Il Garante Blocca ChatGPT. Raccolta Illecita Di Dati Personali. Assenza Di System per La Verifica Dell'età Dei

Minori, 2023). It is noteworthy in this context that Italy is the only country among the 27 EU countries covered by the GDPR to ban ChatGPT, citing the regulation.

Contrary to what was initially expected, other GDPR countries did not take any decision to ban ChatGPT after Italy's decision. Behind this inaction seen in other member states, the decisions taken by OpenAI also have an impact. On April 28, 2023, Garante's statements indicate that OpenAI took several corrective forms of actions to address related concerns and ensure compliance with data protection regulations. These measures are drafting and publishing an information notice detailing data processing for algorithm training and providing an opt-out option, expanding the privacy policy, granting all individuals in Europe the right to opt-out from data processing, introducing mechanisms for data erasure and age verification, and clarifying data processing policies for users (ChatGPT: OpenAI Riapre La Piattaforma in Italia Garantendo Più Trasparenza E Più Diritti a Utenti E Non Utenti Europei, 2023).

The remarkable point here is that the corrective power of regulations such as the GDPR extends its power beyond national borders and influences the decisions and actions of companies. OpenAI's corrective actions implemented not only concerned users in Italy but for all EU member states under the GDPR. Therefore, the case of the ban on OpenAI exemplifies how regulatory frameworks can drive companies to adopt comprehensive and uniform compliance measures.

The decisions made by the GPDP regarding OpenAI's ChatGPT are connected to the wider issues of data privacy for microworkers. Microworkers often perform tasks that involve processing sensitive information, such as labeling images, transcribing audio, or annotating datasets, using their own smartphones, tablets, or computers. In the case of ChatGPT, concerns were raised again regarding transparency, and accuracy in data processing practices, calling attention to potential risks faced by microworkers who contribute their data to AI platforms. The emphasis on collecting data from users for machine training, which is noteworthy in the decision and is the main motivation for GPDP in making these decisions, shows us that the data collected in the AI training process is highly sensitive. Although it is important to emphasize user data privacy rights in the decision and to establish a more robust foundation for the protection of data of users in member states, there is no mention in the decision about workers engaged in

microworker and similar sectors. However, after these decisions, it can be predicted that more importance will be given to the data privacy of microworkers living in countries that are members of the GDPR. Nevertheless, it is well-known that the majority of the microworker population is located outside the European continent, outside the scope of GPDP. Microworkers outside the EU may not benefit from the same robust privacy rights and regulatory protections afforded to their colleagues within the EU.

However, when we look at the OpenAI Italy example, it will be seen that Italy's decision affected OpenAI activities in all European countries. In this case, it can be argued that the coordination between the regulatory authorities in this field is also a factor that puts pressure on companies to make corrections. Therefore, there is a need to increase the cooperation efforts of the authorities. In regions where data protection laws are less stringent or inadequately enforced, microworkers face increased risks of privacy breaches and exploitation of their data maybe more than their colleagues located within European Union. Therefore, the regulatory actions taken against ChatGPT serve as a reminder of the pressing need for global standards and regulations to protect the privacy and data rights of all microworkers, regardless of their geographical location. Efforts to establish comprehensive data protection frameworks on a global scale are essential to ensure that microworkers worldwide are afforded equal rights and protections in the digital age.

4.4 Surveillance Practices

Surveillance can be defined as the comprehensive gathering and processing of information, regardless of its personally identifiable nature, with the explicit purpose of influencing and managing individuals whose data has been acquired (Lyon, 2001, p. 2). Surveillance process involves the systematic collection and utilization of data to apply control or influence over the targeted subjects for diverse purposes. The information collected can cover a wide range of details. The overall goal of the process is to shape behaviors, decisions, or outcomes based on information gained from accumulated data. Whether the information belong to individuals or more general, surveillance aims to use the acquired information for purposes of governance, management, or other active efforts. Following the collection of information through surveillance, the next phase

involves systematic analysis of the gathered data. This analytical process is characterized by the rational examination of information obtained using a variety of tools, techniques and methodologies to derive meaningful insights and models. Once the analysis is complete, the results become effective in influencing the behavior of the initial surveillance target.

Surveillance, as a practice, represents an important method of organizational structuring within workplaces. Traditionally, mechanisms such as clocking in systems, output quantification and payment based on piece were early examples of workplace surveillance. When examining the historical evolution of large-scale organizations, it becomes clear that the emergence of information systems have played a crucial role in enabling businesses to gain a competitive advantage by giving them the ability to exercise control over their internal structures and employees (Ball, 2021, p. 10). Later on, a trend emerged in which the collection of such data went beyond the boundaries of the employee's public and private spheres (McDonald, 2016, p. 10). This trend is highly linked to technologic developments. Emerging organizational structures involve the dissolution of conventional external organizational boundaries, with subsequent reconnection facilitated through Information Technology. Examples of this contemporary phenomenon include remote work arrangements and platform-based employment (Anand, 2007, p. 3).

Businesses' integration of technological advances can be cited as the reason why surveillance goes beyond the boundaries of performance management and delves into various aspects of employees' lives. This expanded scope of surveillance deals not only with professional performance but also extends to the general profile and reputation such as thoughts, feelings, behavior, location. As discussed in the first chapter by Ball (2021), fueled by the advancements in new technologies, employers find themselves endowed with the authority to monitor their employees. Employers are justified by a range of reasons. These justifications encompass ensuring the efficient allocation of resources, safeguarding commercial confidentiality, managing organizational risks, ensuring legal compliance, and proactively preventing potential criminal activities within the organizational context. As can be seen, this justification tendency is almost entirely matched by commercial concerns.

However, despite these so-called valid reasons, the practice of employee surveillance has become a matter of controversy in many cases. Primarily, contention arises when surveillance exceeds what is considered proportionate or necessary. The important question to ask at this point is, is surveillance of employees' private lives also within the scope of this justification. Contemporary examples of this extend to real-time tracking of employee devices or the use of technologies like webcams and keystroke monitoring to monitor remote workers. Secondly, concerns emerge when employers seek highly detailed information about a broad spectrum of employee characteristics that can be considered as beyond performance metrics. Examples in the current remote setting include automated monitoring and recognition of employees' facial features and expressions, along with the utilization of biometrics for access control. A recent illustration of this challenge is the monitoring of communications using sentiment analysis, introducing the risk of false positives and potentially disrupting the balance between surveillance and employee autonomy. Achieving comprehensive 'end-to-end' work surveillance involves the usage of six different algorithmically-driven processes. Initially, the platform defines and confines the behaviors expected from workers, and establishing a set framework. Subsequently, it actively encourages and prompts these specified behaviors among workers. The system then meticulously records and evaluates workers' responses in real-time, promptly replacing those who fail to adhere to the prescribed performance standards by withholding further work assignments. Finally, successful performance is reinforced through the incorporation of addictive interfaces and gamification elements, creating a feedback loop that further amplifies the surveillance and performance management dynamics on the platform (Kellogg et al. 2020, p. 3).

A significant body of research probed the nature of digital platform work consistently mentions its surveillance-intensive nature (Jarrahi et al. 2020, p. 5; Newlands, 2021). This expressed concern on surveillance within the platform work sector is primarily attributed to the extensive use of algorithms for the allocation and remuneration of tasks to workers (Ball, 2021, p. 61). More detailed, platform work is considered surveillant intensive for two principal reasons, as Altenried (2020) explores in "Digital Taylorism: Labour in the Digital Factory". Firstly, the surveillance intensity arises from the electronic tracking mechanisms employed to monitor worker performance and their

reputation, behavior, and geographical location. This tracking approach creates a digital profile for each platform worker, providing a real-time and comprehensive view of their activities. Secondly, the embedded algorithmic decision-making processes in the platform's operations is intensifying the surveillance process. These algorithms play a crucial role in the social sorting of workers regarding task distribution and it is exerting control over workers' actions on the platform. Furthermore, these algorithms determine outcomes in terms of compensation and future work opportunities, thereby influencing the overall trajectory of a worker's engagement on the platform. This approach also creates the process of quantification and datafication of the workers profile, and therefore adding pressure in the work environment where employees are expected to be always on. These “new surveillance” methods lead the potential for aggregating big data. The main intention in this approach is the ability to connect the type of activities and the duration spent on tasks for qualitative judgments about a worker's performance. Such information can be used for hiring or termination purposes. In the microwork sector where tasks are frequently performed on personal computing devices, the traditional boundaries between public and private spheres have become increasingly less visible. As individuals engage in work-related activities using their personal devices, the delineation between their public professional roles and private personal lives becomes less distinct. A notable consequence of this technological shift is the embodiment of surveillance practices over workers. Employers, seeking to monitor and optimize productivity in remote settings often implement various surveillance tools. From this point, microwork distinguishes itself from other types of occupations because its nature is directly interrelated with the personal devices. The seamless integration of electronic tracking mechanisms and algorithmic decision-making processes unfolds a unique approach to monitoring that extends well beyond conventional performance evaluations.

5. The Microwork Paradox: Prosperity for Some, Digital Slavery for Others

5.1 The Case of OpenAI, ChatGPT and Sama

OpenAI stands as an AI research organization that was established by a group of scientists and entrepreneurs including some famous figures such as Elon Musk and Sam

Altman and some others. The organization's foundational Charter, as articulated on its official website, mentions a primary mission: the development of "safe and beneficial" Artificial General Intelligence which is defined as highly autonomous systems surpassing humans in most valuable tasks, reflects the organization's commitment to advancing technology for the betterment of humanity. Emphasizing a commitment to the common good, the founders of OpenAI declared that technologies developed during the organization's early stages would be made open source. An early exemplification of this commitment embodied with the release of the public beta version of "OpenAI Gym" in 2015. This platform, initially designed for assessing certain types of AI algorithms, evolved into a collaborative space for individuals to share their findings and results (Gershgorin, 2016). However, the admirable vision of OpenAI which was initially established as a non-profit organization, underwent a significant transformation in 2019 when it transitioned into a for-profit entity with a "limited" structure. After this transition, organization's policies, partnerships and overall approach were also highly affected by this decision. In the same year, OpenAI and Microsoft agreed on a strategic partnership, announcing a substantial \$1 billion investment from Microsoft into the organization. Another important event in OpenAI history was that when the organization experienced a surge in public recognition primarily propelled by the profound impact of ChatGPT. Although there were several language bots in the market prior to ChatGPT, none garnered as much attention by the public. Launched on November 30, 2022, ChatGPT, short for Chat Generative Pre-trained Transformer, is an OpenAI-developed chatbot. Using a robust language model, it offers users the ability to shape and guide conversations according to preferred parameters such as length, format, style, detail, and language (Lock, 2020). The pivotal moment for OpenAI's widespread popularity came with ChatGPT's famous success, surpassing 100 million monthly active users within less than two months of its launch in November 2022. This achievement reshaped ChatGPT's status as the fastest-growing consumer application in history (Hu, 2023).

The foundational training approach employed by the OpenAI Gym platform primarily concentrated on reinforcement learning. In this approach, the algorithm is oriented towards achieving a specific task, and its performance is rewarded through a reward system. Successful execution of the task results in a reward, while failure leads to no

reward. In this method, based on the feedbacks the algorithm to adjust its approach. This conventional reinforcement learning methodology where agents were learning from their own actions based on a predefined "reward function", proved effective for the initial achievements of OpenAI. However, the challenges emerged when attempting to apply this method to natural language processing tasks. The inherent difficulty arises from the complexity of defining or measuring rewards while natural language provesgging, especially in contexts involving intricate tasks intersected with human values and preferences (Guangliang et al., 2019, p. 338). The inadequacy of this approach becomes visible particularly when confronted with detailed and subjective aspects inherent in tasks related to natural language processing. Conversely, adopting Reinforcement Learning from Human Feedback empowers language models to offer responses that align with human values and preferences. This method necessitated essential microworker effort throughout the training phase. Following this change in company policies and dynamics, OpenAI embraced the adoption of the Reinforcement Learning from Human Feedback method. This approach changed the training strategy radically, at the same time increased the reliance on microworker labor of the company.

As previously mentioned, companies rely on microwork or, more broadly, crowdsourcing platforms due to the challenges of workers being unable to physically interact, organize efficiently, and comprehend the nature of the projects they're involved. However, it is not the only reason behind this trend. Also these platforms allow companies to collaborate discreetly without public announcements. It's a common practice for companies to discreetly employ microwork labor by collaborating with the outsourcing companies or platforms. This covert employment often leads to microworkers being called as the "ghost" workers behind artificial intelligence (Bracy & Dark, 2023). Discreetly incorporating outsourcing microworker labor as a corporate strategy provides significant advantages to large technology companies. First of all, this particular form of labor is geographically dispersed and has an inconspicuous nature compared to alternative labor models. Additionally, it operates beyond the confines of numerous labor regulations and legislative frameworks for resolving labor disputes (Altenried, 2020). These two important characteristics of the microwork allow companies to navigate around official responsibilities related to employer roles. In this case, the employer's side becomes less accountable for their actions. Moreover, a

considerable portion of tasks executed on digital platforms is camouflaged as software. Theoretically, companies have the option to adopt the approach of purchasing products or services from another country or relocating production to another country through offshoring. Unlike outsourcing, offshoring entails the third party hired to perform a job being located in another country (Bondareva, 2022). However, in the context of microwork, it is more advantageous for companies to opt for the outsourcing approach. This is because companies seek to evade responsibilities that may arise from formal employment relationships. Despite the common perception that various functions from data categorization and image recognition to content moderation and search engine optimization (SEO) have undergone automation, they persistently rely on invisible human labor. This strategic maneuver serves for company's public image. The common perception in the public eye helps companies to establish their reputation as highly automated and as if the current technology that big tech companies have, does not need basic human labor but only needs high-qualified engineers. Simultaneously, adopting this strategic stance notably boosts their attractiveness to potential investors, drawing in more investment capital (Irani, 2015, p. 9).

For those reasons, one notable technology behemoth that opted not to divulge its affiliations with microworkers was none other than OpenAI. An investigation conducted by TIME magazine in January 2023 brought to light an unnoticed collaboration between OpenAI and Sama. The architect behind the creation of ChatGPT has come under investigation for a controversial outsourcing strategy that involved hiring Kenyan workers at a wage generally less than 2 dollars per hour. The investigation appears as the embodiment of the issues discussed in the previous chapters. Notably, individuals engaged in the AI training process found themselves ensnared in low-paying and precarious employment arrangements. According to reports shared by the investigation, workers faced demanding workloads, with some laboring through 9-hour shifts tasked with reading between 150 to 200 passages of text. The nature of their responsibilities was particularly distressing, as employees were required to label text containing explicit and disturbing content, including graphic descriptions of child sexual abuse, bestiality, murder, suicide, torture, and incest. These disturbing tasks were a crucial element in training the AI application to detect and prevent the production of content containing these highly sensitive and harmful topics in user interactions. Facilitating the conditions

for the exploitation was the microworking entity known as Samasource Impact Sourcing, Inc., previously recognized as Samasource and Sama. Sama employs its workforce in several countries, including Kenya, Uganda and India, and claims its initiatives have played a key role in lifting living standards of more than 50,000 people by lifting them out of poverty (Gadonniex, 2020). Furthermore, the organization claims that the organization played also a pivotal role in providing the data crucial for the development of precise artificial intelligence (AI) and machine-learning models (Stengel, 2021). Sama, with its publicly declared mission to make opportunities accessible for individuals with limited economic means through participation in the digital economy. The company's mission includes not only training employees in basic computer skills, but also ensuring they are paid the equivalent of a local living wage for their labor (Bornstein, 2011).

The examination of documents has revealed that OpenAI entered into three contracts totaling approximately \$200,000 with Sama in late 2021. The primary objective of these contracts was the labeling sensitive and disturbing content, including sexual abuse, hate speech, and violence. The contracts outline an hourly payment arrangement of \$12.50 from OpenAI to Sama for the work. This indicated payment of \$12.50 per hour to Sama, which was significantly higher—ranging between six and nine times more—than what the Sama employees on the project were reportedly receiving per hour.

On the other hand, OpenAI case was not the first scandal involved by Sama. Before the OpenAI case, Sama found itself engaged in a previous controversy. In 2022, a South African person had filed a lawsuit against the owners of Facebook and extended his legal pursuits to challenge the validity of non-disclosure agreements signed by content moderators hired by Sama on behalf of Facebook. He claimed that these agreements were illegitimate as they hindered former content moderators from providing crucial evidence in a court of law regarding the alleged toxic work environment. (Mersie, 2022)

One notable concern at this point stems from the lack of transparency OpenAI exhibits regarding the extent to which its technology relies on the labor of microworkers, its collaborations with other outsourcing organizations, and the onboarding of individuals into short-term contracts through various platforms. This transparency raises questions about the ethical implications and accountability of OpenAI applications within the

broader AI development and deployment ecosystem. Moreover, there is uncertainty about whether OpenAI is established collaboration with other data labeling firms besides Sama in the execution of this project. However when we consider the scalability and size of the company, it is reasonable to claim that there may be other collaborations. The extent of OpenAI's operations and the complexity of its projects suggest the possibility of multiple partnerships with outsourcing companies. When OpenAI's official website examined, a notable emphasis on the utilization of human feedback in various technological endeavors is visible. Several articles on the site explains how the company incorporates human input to achieve tasks such as text summarization and teaching a stick to execute somersaults. The emphasis on human feedback in these articles aligns with the discussions we've had in the preceding sections.

Considering the current state of technology, achieving tasks like text summarization or training objects to perform complex actions without human intervention remains beyond the current capabilities of technology. Building on this analysis, it becomes apparent that OpenAI, similarly to other technology giants, maintains a level of opacity regarding its outsourcing practices. While it is difficult to infer that training ChatGPT, one of the most advanced language models ever released, involved the efforts of three dozen workers employed through Sama alone, the lack of detailed transparency limits further research. This lack of transparency, characteristic of many technology companies, inhibits a fully objective understanding of the circumstances surrounding microworkers in OpenAI's case. However, as elucidated in previous sections, when taking a broader perspective, one can discern common patterns with workers associated with other companies or platforms by considering the investigation by TIME.

5.2 The Intersection of Microwork Sector and Alienation

In his well-known book named *Economic and Philosophic Manuscripts of 1844*, Marx articulates his argument that the conditions of modern industrial societies result in the alienation of wage workers from their products, from their work, and in turn from themselves and from each other. In his book, he likens the human experience in contemporary capitalist society as devoid of meaning or the human individual as devoid of value. The first form of alienation, which we encounter at four main points, is defined as the alienation of workers from the product they produce.

The design of the produced product is in the hand of the capitalist class rather than by the workers who manufacture it or the consumers. In this process, engineers and designers are tasked with shaping the product to satisfy the capitalist's profit-maximizing aims and effectively commodifying the intellectual labor involved. As a core logic of the system, the capitalist transforms the labor into goods and services. Also in the capitalist mode of production, workers are paid the lowest rate possible in order to maximize the capitalist's return on investment. Since workers engage in repetitive and monotonous tasks within a fragmented production process, workers become alienated from the products they produce and perceiving them merely as commodities to be exchanged for money. This separation between the worker and the product reduces their creativity, satisfaction and connection to their work. Workers perceive work only as a means of survival. Lastly this division of labor separates workers from a holistic understanding of the production process, resulting in a loss of fulfillment and a sense of estrangement from their own human nature.

Another form of alienation mentioned in the study is the alienation of the worker from other workers. In capitalist organization the labor of the workers is not considered a socio-economic activity that is integral to collective efforts for personal survival and social advancement. Instead, labor is reduced to a commodity to be traded in the competitive labor market. In a capitalist economy, capitalists establish a competitive labor market intending to extract as much labor value as possible from workers in the form of capital. The capitalist economy's regulation of production relations provokes social conflict by encouraging competition among workers for "higher wages", and therefore alienating workers from their common interests and thus from each other.

Microwork refers to a form of labor where individuals perform small and fragmented tasks such as tagging inappropriate web content, labeling images, transcribing or translating bits of text, or recording voice. The working principle of Microwork is based on dividing a large, holistic project into the smallest pieces possible and distributing these tasks to various workers online. These tasks are characterized by their quick and repetitive nature and often paid on a piecework basis with minimal remuneration, most of the time as low as a few cents. It is possible to observe in microworkers the reflection of exactly the process that Marx meant with the concept of alienation of the worker from the product he produces. One notable aspect of the microwork mentioned by

Tubaro and Casilli (2020) is that the lack of awareness among microworkers regarding how their labor contributes to the AI sector. Most microworkers are unaware that their work is used by engineers to train and refine AI algorithms. Instead, a large majority of microworkers believe that their efforts are somehow contributing an accountancy company or carrying out administrative tasks. This discrepancy between the perceived purpose of their labor and its actual utilization further perpetuates the alienation experienced by microworkers. The fragmented nature of microwork exacerbates this sense of alienation by dividing tasks into small and isolated pieces, workers are not aware of a holistic understanding of the overall process and its significance in the AI preparation process. Often microworkers find themselves while tagging, checking or reading unrelated images, texts and other types of random data. This fragmentation prevents workers from comprehending the broader implications of their labor. At the same time it limits their ability to develop a sense of purpose, mastery, and fulfillment in their work. This lack of purpose and competence, combined with the absence of social and career development opportunities across platforms (Rivera & Lee, 2021, p. 10 ; Wood et al. 2019, p. 4), contributes to a sense of isolation among workers, hampering their ability to develop their skills and advance their career development. As a result, microworkers often feel detached, disengaged, and lacking a meaningful connection to their job, leading to a deepening of their alienation within the capitalist system.

In microwork settings, another form of alienation is observed through the isolation of workers from other workers. Online markets often use reputation systems to eliminate the uncertainties inherent in the hiring process that arise from a lack of objective information about employees' abilities (Lukac & Grow, 2021, p. 1). These systems are not used primarily for worker monitoring purposes, rather they serve to provide potential future employers with necessary information about the worker. Requesters can access feedback and rejection rates the worker has received from previous requesters. As a result, the microwork environment is characterized by increased competition among workers. The highly competitive environment created by microwork platforms escalates the sense of alienation among workers by creating an environment where individuals are constantly competing against one another to gain positive feedback and

secure their future job opportunities. The competitive dynamic may increase the isolation experienced by workers.

5.3 The Unseen Realities of Digital Slavery in Microwork

In his famous essay titled "Economic Possibilities For Our Grandchildren," published in 1930, economist John Maynard Keynes made a bold prediction. He assumed a future where individuals might only need to work 15 hours per week (Keynes, 1930, p. 23). This prediction stemmed from Keynes' belief in the transformative power of advancing technologies, and he hoped that technological progress would lead to unprecedented levels of prosperity.

But when today's realities are examined carefully, it seems that the current trend is exactly the opposite. While working hours are expected to decrease, technological progress appears to be new opportunities for the continued exploitation of both our time and labor. The emergence of the digital age has resulted in an environment where individuals are expected to be constantly connected, available, and productive. Despite the rapid growth in living standards observed in developed Western economies, a trend towards longer working hours is observed, as shown by the discussions initiated by Nicolas Sarkozy in France to abolish the 35-hour work week requirement (Willsher, 2011). As highlighted in Burger 2015, there has been a noticeable increase in working hours across Europe since the early 1990s. At the same time, within the literature, there is considerable discussion regarding the impact of technological advancements on various directions of employment, including job stress, job insecurity, and overall job satisfaction (Ghani et al. 2022, p. 2). As a result, while the development of automation and technology was expected to reduce workload and contribute to employee well-being, this expectation was not fully satisfied and apparently led to the opposite results in the long term.

Similarly to Keynes' optimistic perspective, the modern discourse surrounding Artificial Intelligence systems often portrays humanity as the master of this transformative technology who owns, controls and cares about AI and takes advantage of its labor and products (Chu & Szeto, 2021). This motif reflects the main tendency within contemporary discussions on AI wherein human agency and control are emphasized as

foundational principles guiding the development and deployment of AI systems. In fact, the approach to positioning humanity as the master of artificial intelligence is similar to patterns observed and repeated throughout human history. The aspiration for a life of comfort has been a theme driving innovation and technological advancement. But historical precedents caution against assuming that such advances will lead to unequivocal benefits for all members of society.

As a common motif observed in various eras, the achievement of a privileged lifestyle by a certain group of society was in most cases possible by exploiting the labor of the oppressed lower classes (Dihal, 2020). Undoubtedly, technological developments have the potential to improve the quality of life by increasing productivity and improving valuable services such as health, education and entertainment, but they also contain points that need to be considered. According to Arendt (1958), there is no doubt that humans adapt new the tools they use, as evidenced by the history of techniques invented and employed by mankind. During ages when human society stands on the brink of a new technological frontier, such as the emergence of AI, historical precedent illustrates mankind's capacity to adapt to technical change through a threefold process: the ability to innovate new solutions to emerging challenges, implement these solutions effectively, and subsequently learn from the outcomes to inform future action (Farzaneh & Boyer, 2021, p. 11).

According to Brynjolfsson & McAfee, 2012, Technological advancements, including Artificial Intelligence and Machine Learning give rise to questions regarding technological unemployment, declining average income, and increasing inequality. Given the relatively recent emergence of artificial intelligence and the findings presented throughout this study, humanity is currently in the phase of actively seeking innovative solutions to address the challenges caused by this new technological tool. As one of the most visible challenges caused by the new technological development is the question if the well-being of a comparatively small upper class is built on the labor of a larger lower class.

In the microwork context, challenges exist for workers in both the Global South and North considering the demographic structure of workers, income inequality, prolonged working conditions and the preferences of technology companies. While major

technology companies invest billions of dollars in the artificial intelligence sector and offer products that many people use, unbalanced power structures appear to persist. As discussed, workers in the Global South find themselves engaged in a challenging cycle of exploitation, facing unsafe working conditions that detrimentally impact their psychological well-being. Despite the prevalent belief that the Global South is characterized as "undeveloped" and "lacking scientific advancements" it is essential to recognize that this region plays a significant role in implementing and advancing AI. The reality is that the Global South has been systematically exploited, and enabling the Global North to fully capitalize on the benefits of AI. This exploitation is facilitated by the provision of low-cost labor, abundant resources, and loosely regulated legal safeguards that enable technology companies to maximize profits.

When we look at all these aspects, in the light of concerns about working conditions and workers' rights, the most important question that arises is whether human labor is increasingly taking on a role serving machines. Despite the provided benefits by artificial intelligence and algorithms, enjoyed by a select few individuals the dark reality reveals that a considerably larger portion of the workforce is subjected to tough working conditions in the relentless pursuit of developing these technologies.

The avenues through which these workers can assert their rights are notably restricted. Working in isolation from one another, these individuals face challenges in communication and organization due to the lack of a cohesive structure. The absence of a traditional employment contract further compounds the issue, as it minimizes employers' liability, and in some instances, leaves them with little to no responsibility for the well-being and rights of the workers. The isolation of microworkers, both geographically and in the nature of their tasks, hampers the traditional mechanisms of collective action and communication that are often relied upon by employees in more conventional settings. The absence of a centralized workplace or physical interactions makes it difficult for these workers to come together, share experiences, and collectively address concerns related to their working conditions. Moreover, the unconventional nature of employment arrangements in microwork, often lacking the standard employment contracts prevalent in traditional settings, creates a scenario where employers bear minimal legal responsibilities. This, at times, results in a lack of clear accountability for the welfare of the workers, leaving them vulnerable to exploitation

and with limited recourse to assert their rights. Simultaneously, the foundations of modern AI solutions rest heavily on machine learning algorithms, which exhibit a passionate appetite for data. In meeting the colossal demand for data, the sector not only engages microworkers in the intricate process of data preparation but also subjects these workers to various forms of surveillance practices to procure the necessary data. This demand for data creates a migration route, figuratively flowing from the global south to the north, highlighting the global dynamics at play in the complex landscape of artificial intelligence development.

The term "slavery" carries meaningful implications, describing a reprehensible violation of fundamental human rights, and as such, should not be used casually. There is no clear definition of slavery in traditional usage. Often used in the context of one person owning another person, this term has meanings that change in different and dynamic ways. The phenomenon of slavery can be approached from the perspective of deprivation of rights and freedoms. It can be defined as a person with fewer rights and freedoms than the master. Also, the product of a slave's labor could be claimed by someone else, who also frequently had the right to control his physical production (Ogunsola, 2005, p. 6). As we have frequently discussed in previous sections, microworkers are used as sources that provide data constantly. These workers, who carry out work from their personal devices, are the most important actors that meet the constant data needs of artificial intelligence. In addition to factors such as job insecurity, inhumane working conditions, and constant surveillance, these workers provide their "masters" with data, one of today's most valuable commodities, for free or for very low wages. A study published in the Harvard Business Review (2018) revealed that the data generated by a household of four individuals is estimated to have a value of approximately \$20,000 per year. This data is significant not just for advertising purposes but also as a crucial component for Artificial Intelligence applications. Considering all these factors, some ethical problems arise. Who controls this obtained value?

When examined objectively, it becomes apparent that microworkers are not positioned favorably in this equation. Marked by long and unpredictable working hours, job insecurity, precarity, low wages, and working conditions detrimental to mental well-being, these workers contribute to the enrichment of major tech companies. However, this contribution often comes at the cost of their mental and physical health, as well as

their privacy. In the context of data emerging as a factor of production, the valuation of this resource is intricately linked to considerations of privacy. The determination of its value hinges on individuals' ability to dictate the level of privacy they desire, thus directly influencing the perceived value of their data. In the absence of such agency, individuals risk relinquishing control over the value contained within their data, while others reap the benefits at their own expense. Although the undeniable advancements are observable thanks to AI, it is evident that low-wage workers positioned at the bottom of the AI value chain continue to labor relentlessly with minimal legal protections within this exploitative industry. Nevertheless, these elements contradict with United Nations Sustainable Development Goal No. 8, which unequivocally claims that all individuals possess the right to decent work.

6. Conclusion

Since its inception in the 1930s, Artificial Intelligence has evolved as a synergistic result of advances in various fields such as computer technologies, biology, neuroscience, and machine learning. Collaboration between these various disciplines has resulted in a force that extends its benefits to countless fields from healthcare to education. The results of artificial intelligence development have not only been seen in the fields of science and business, but have also seamlessly affected various aspects of our personal lives, manifested in innovations such as personal assistants and language models.

While humanity is witnessing remarkable progress achieved through artificial intelligence, public concerns are also increasing in various aspects. Among the most common concerns is that artificial intelligence could lead to the displacement of human labor. Although the anxiety regarding on the topic has been a recurring theme since the Industrial Revolution, there are details to consider. History, particularly the lessons from the Industrial Revolution stands as an example of that while technological developments may lead to the obsolescence of certain sectors, they concurrently give rise to new sectors of industries and opportunities. However, historical examples show that as some jobs are automated or phased out, new opportunities and industries emerge, creating a dynamic shift in the employment landscape. In this context, The Industrial Revolution serves as a pertinent historical precedent. However, it simultaneously led the rise of new

industries, ultimately contributing to overall economic growth and creating fresh employment prospects. Similarly, today's discussions around artificial intelligence also find justified gaps. The rapid rise and integration of artificial intelligence technologies are disrupting some employment areas. However, perhaps at the same pace, it also creates new employment opportunities. Microwork appears as one of these relatively new employment opportunities.

Indicators and future predictions strongly suggest that the fields of microwork and crowdsourcing are positioned for sustained growth, extending their multi-billion dollar market value in the coming years. The observed growth trends and future predictions indicate that the potential of this sector to create employment opportunities seems high due to the advantages it provides to companies and technological developments. The need for microwork labor in the preparation process of artificial intelligence indicates the potential of the sector to create employment opportunities. Until humanity creates a new artificial intelligence mechanism equivalent to human intelligence, this sector will need the basic level of human labor to undertake more basic level tasks such as data labeling, as well as high-quality engineer labor. From this perspective, it can be claimed that the sector will remain its rapid growth.

Online platforms, which appear as initiatives that help various sectors meet their need for microwork, are online intermediaries that bring together individuals or institutions in need of microwork labor and workers who are willing to complete tasks. These platforms, offering flexible opportunities for individuals to engage in tasks from anywhere in the world, align with the changing dynamics of the global workforce. Some of the most well-known platforms in this field include CrowdFlower, Amazon Mechanical Turk, Lionbridge Clickworkers, and Appen. These platforms offer the flexibility for enterprises to engage with international corporations or leverage services from local businesses to meet their operational requirements, presenting data annotation as a core offering to clients.

While all these positive indicators point to the development of the microwork field, there are also some ethical and structural problems that need to be taken into consideration. The existing literature presents diverse critics on the microwork sector, critiquing various dimensions based on available information. When the issue is

approached in the context of employment relations, one is confronted with the unprecedented nature of the sector. Digital platforms offer contracts, often lasting only minutes or seconds, to establish short-term relationships between employees and employers. Those contracts are characterized by lacking traditional employment rights such as annual leave, parental leave, retirement benefits, and many others. This situation places workers in a precarious situation where they find themselves without secure jobs and rights that are enjoyed by the traditionally contracted workers. This precarity, combined with the option of cheaper labor than the automation solutions that platforms fundamentally promise to the companies, positions workers as highly vulnerable to exploitation. That's why the literature often uses the definitions "precarity" and "low-wages" when describing microwork conditions.

The spread of neoliberalism and deindustrialization are also factors that worsen the situation of workers. Neoliberalism, which is characterized by market-oriented solutions deregulation, and the diminished role of the state in economic affairs, has become the dominant ideology. At the same time, deindustrialization has diminished the perception of traditional workplace and led to reduced importance of trade unions and collective actions. When the convergence of global factors aligns with the inherent characteristics of microwork, workers find themselves increasingly vulnerable to exploitation.

Microwork's inherent dynamics are also a factor that raises concerns. Primarily, microworkers engaged in platform-based work perform assigned tasks using their personal devices. The practice which almost eradicating the boundary between personal and professional spheres raises concerns regarding the security of employee data. The contemporary conjuncture, defined by an ongoing demand for data, justifies these concerns. As of now, legislators and companies have yet to devise a mechanism that safeguards workers against security vulnerabilities deriving from data sharing with third parties or potential cyber attacks. Another significant concern related to employee data revolves around the surveillance of workers. Although surveillance practices are also widely applied in traditional work environments, the microworking environment is a particularly surveillance-intense area because of the combination of technological advancements and the intertwined nature of microwork with personal space. As a result of the combination of all these criticisms, the industry has been characterized by negative connotations such as precarious, digital slavery, low wages, "digital

sweatshops" by both academia and the media. Even though all these criticisms touch on valid points, the problems of the sector can be solved to a large extent by regulation changes and awareness efforts that can respond to the inevitable development of the sector can be initiated.

The GPD's decisions regarding OpenAI's ChatGPT justify the concerns about data privacy for microworkers. The impact of such decisions, exemplified by OpenAI's case in Italy affecting its operations across Europe shows the importance of interagency cooperation to enforce compliance. In regions with lax data protection laws, microworkers face heightened risks, emphasizing the need for global standards to safeguard their rights.

When all these criticisms are taken into account, ethical conclusions arise that are of concern to multiple actors.

In most cases, microwork is workers' primary source of income. Although the definition of fair remuneration varies depending on subjects and locations, earning income in return for labor in a manner befitting human dignity is one of the fundamental rights. If we start from this point, it is imperative that the remuneration of the workers in question is structured fairly. If the current absence of pressure methods such as regulations and collective actions persists, companies will continue their destructive profit-maximizing behaviors. Historical examples show us that the existence of a state of the absence of regulation has always led to negative consequences for the worker side. It can be anticipated that such an organization, with the capacity to bolster the endeavors of workers deprived of bargaining power regarding pricing, towards securing fairer wages, would also advocate for employees on other pertinent issues detrimental to workers' interests. The existence of such an organization will not only serve the purpose of improving pricing, but will also help prevent the alienation of workers from other workers by enabling communication and solidarity among workers.

In many cases, creating public pressure on companies is also an effective way to regulate unethical actions of companies. As demonstrated by the covert nature of the partnership between OpenAI and Sama, large corporations often follow a strategy of avoiding potential liabilities and compensations by concealing partnership agreements.

In this regard, it is also important for the media and academia to pay more attention to the future potential of the microwork sector while being aware of its future potential.

Data serves as a significant source of revenue for platforms while the workers generating this data do not receive any portion of it. Clear regulations should be established to prevent companies from excessively collecting data from workers and using the data for surveillance practices. These regulations may contain some sort of storage limitations. Workers' collective data rights should be recognized, and information on what type of data is collected and the right to access the data in use should be clearly stated in the consent texts. Moreover, if there is an income obtained from the data collected from the workers, a part of this revenue must be shared with the worker. While the GDPR represents a significant advancement in data privacy legislation, its jurisdiction is limited to member states of the European Union. Although some countries have GDPR-like laws, more comprehensive laws and coordination are also critical to solving the problems that arise, as we see in the example of Italy banning ChatGPT. Also, such laws should recognize the position of microworkers as data resources for companies. Data protection authorities should prioritize international cooperation to establish comprehensive frameworks, ensuring equitable protections for microworkers worldwide. Finally, there is a crucial need for regulations that pressure platforms to protect workers against security risks that may arise if the collected data falls into the hands of third parties.

Regulations are also necessary to protect workers against the harmful effects of the repetitive, monotonous or toxic tasks involved in the artificial intelligence preparation process on workers' well-being. Employers should be obligated to offer psychological support options to workers engaging in toxic content labeling tasks. In order to prevent alienation, it should be clearly stated to the workers what purpose the assigned tasks serve.

Integrating all these regulations and improvements does not solely seek to improve human and labor rights. At the same time, as a precaution against the changes in potential employment dynamics brought about by the ongoing artificial intelligence revolution, which has already significantly influenced the present and undoubtedly will continue to shape the future, regulating the microwork sector is imperative. Such

regulations will shape the sector's evolution into a more desirable industry. Making the microwork sector a more preferable sector will be a factor that increases the economic sustainability of the sector.

7. References

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