



THE FUTURE OF WORK – ARTIFICIAL INTELLIGENCE AND LABOUR LAW

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Abstract

Artificial intelligence (AI) is fundamentally shaping everyday life – the world of work is no exception. While the application of AI in the workplace does have many possibilities, it challenges employees’ (fundamental) rights. The article’s objective is to provide a “glimpse” into the (possible future) use of AI in employment and to overview and identify possible legal challenges and solutions. The research is conducted using a desk-based legal analysis of relevant literature and legal documents. It focuses on the EU legal order and mentions several examples from Hungary. As a result, the paper highlights possible solutions to the challenges, especially new legal initiatives, as well as outlines the main potential guidelines for amending existing regulations. To conclude, in order to harness AI’s potential, a solid legal framework is necessary, as AI raises old questions with new intensity.

Keywords

Artificial Intelligence, Labour Law, Algorithmic Management, Technological Unemployment

I. Introduction

We are living in an era where technological revolution – including the “rise” of artificial intelligence (hereinafter referred to as: AI) – will exercise a fundamental effect on how individuals live and work. (Allen and Masters, 2021, 9.) Although it does not seem possible to exhaustively list all the already used and possible applications of AI in employment, it can be said that AI is already used on many occasions in the employment context. (De Stefano and Wouters, 2022) AI can be beneficial to society but to harness its advantages, potential risks must be assessed early in, before the more advanced “science-fiction-like” forms of AI would gain ground. The research question that the paper aims to answer is how the rise of AI can affect existing labour law regulations? How employee rights are challenged by AI? The objective of the article is to contribute to the academic discussion of the topic by providing a “glimpse” into the (possible future) use of AI in employment and to overview and identify possible risks and solutions.

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Although the examined phenomenon is universal in developed countries, the paper focuses on the European legal order, as EU law becomes part of the legal system of each Member State, including the V4 countries. Among the V4 countries, the article will include examples from the Hungarian legal system. The research is conducted using a desk-based legal analysis of relevant literature and legal documents. As De Stefano (2019, 15–16.) and Aloisi and De Stefano (2022, 9.) noted, discussions about AI and employment usually focus on automation and the loss of jobs as its consequence. However, he stresses that besides the quantity of jobs, AI also exercises a fundamental effect on the quality of jobs – which often seems to be overlooked in the discussion about AI and the world of work. The paper builds on this logic, and first addresses the quality of work, followed by the quantity of work – in both parts first discussing employees’ rights at stake, then addressing how AI can be used and how AI exercises an impact on existing employee rights.

II. Quality of Work

AI has a fundamental impact on how and in what environment employees will perform work. Notably, this includes the appearance of AI in workplace management, as well as in the work environment. (De Stefano, 2019, 16.) Regarding the quality of work, the right to data protection, the right to equal treatment and the right to safe working conditions will be discussed – all already regulated both at the international and at the EU level. Among the already present use-cases, algorithmic management, digital discrimination in connection with automated decisions and robo-colleagues and -bosses will be highlighted, as they exercise a fundamental effect on the above-mentioned employee rights.

The right to data protection, right to equal treatment and right to safe working conditions

As AI – and notably algorithmic management – is based on the processing of personal data, increased attention should be paid to the *right to data protection*. Data protection can be comprehended as “*the regulation and organisation of the conditions under which personal data can be lawfully processed.*” (Gellert and Gutwirth, 2013, 525.) The right to data protection has a close connection to privacy and has the aim to protect the individual from the unlawful processing of his/her personal data.² The employment relationship necessarily comes with the processing of personal data, let it be the conclusion, the fulfillment or the termination of the employment relationship. However, the application of AI in the employment context raises the “old” questions with new intensity, as AI monitoring systems run automatically and collect a huge amount of personal data on (almost) every aspect of employee behavior. (Aloisi and Gramano, 2019, 105–106.)

When it comes to data protection, the requirements laid down in the General Data Protection Regulation (hereinafter referred to as: GDPR) are to be applied.³ Art. 88 of the GDPR allows Member States to adopt more specific rules when it comes to employment.

² See more on the relations between privacy and data protection in: Lukács, 2021, 57–60.

³ Besides the EU, other international organisations (e.g. United Nation, Council of Europe) also adopted norms regulating privacy and/or data protection. Specific norms expressively address workplace privacy/data protection such as: ILO code of practice on the protection of workers’ personal data (ILO, 1996); Recommendation on the

In Hungary these more specific rules are to be found in Act I of 2012 on the Labour Code: Sect. 9 regulates personality rights, Sect. 10 regulates what kind of personal data can be requested from employees, Sect. 11 regulates the processing of biometric data and criminal records and Sect. 11/A regulates employee monitoring.⁴

Besides Art. 88, Art. 22 of the GDPR explicitly regulates the question of automated individual decision-making,⁵ guaranteeing the right not to be subject to a decision based solely on automated processing, including profiling, which produces legal effects concerning the data subject or similarly significantly affects him/her by such decision-making, unless further requirements are met. These requirements include human overview, the right to contest and to express opinion regarding such measures. However, the GDPR also provides exceptions from this prohibitions, thus Art. 22 might be insufficient to provide meaningful protection for employees against such practices. (De Stefano, 2019, 38–39.) As in the frame of algorithmic management automated decisions are likely to gain more ground as well, the role of these provisions will become increasingly important.

Although the *right to equal treatment* has a considerable history, changes in society have not left this area of law untouched, necessitating constant monitoring of legal provisions related to equal treatment. Technological progress is giving rise to new forms of equal treatment violations, such as digital discrimination, which will be discussed later. The right to equal treatment is a fundamental human right acknowledged by several international⁶ and national⁷ legal norms. The right to equal treatment – or, approached from another aspect: the prohibition of discrimination – forbids making unjustified differences between individuals on the basis of their so-called protected characteristics (e.g.: race, age, gender, etc.).

One of the priority areas of equal treatment is employment. It is an essential requirement that equal treatment in the world of work – such as, for example, during recruitment, remuneration, employer decision-making – is effectively enforced. With regard to work's crucial role in income-generating and self-esteem, it is of utmost importance to ensure that the employment opportunities of individuals are not determined by arbitrary and unlawful discrimination.

Among the international standards on equal treatment in the world of work at the universal level, the ILO's Discrimination (Employment and Occupation) Convention, 1958 (No. 111) should be mentioned. Among the EU's labour standards, two directives should

processing of personal data in the context of employment (Council of Europe, 2015) or the former Article 29 Data Protection Working Party's Opinion 2/2017 on data processing at work (EU, 2017).

⁴ See more on Hungarian workplace data protection in: Lukács, 2021.

⁵ This article will not deal in detail with the subject of AI-based automated decision and data protection. On this subject see more in: Lukács and Váradi, 2023.

⁶ Guaranteed by, for example: Art. 1 and 7 of the UDHR; Protocol No. 12 to the ECHR; Title III of the Charter of Fundamental Rights.

⁷ In Hungary, Art. XV of the Fundamental Law defines the constitutional requirements for respecting equal treatment; Act V of 2013 on the Civil Code prescribes the prohibition of discrimination within the framework of personality rights; and Act CXXXV of 2003 on Equal Treatment and the Promotion of Equal Opportunities – Hungary's general anti-discrimination law –, regulates in detail the conditions for the enforcement of the right to equal treatment and equal opportunities. Sect. 12 of Act I of 2012 on the Labour Code deals specifically with equality issues in employment.

be highlighted: Directive 2006/54/EC on the implementation of the principle of equal opportunities and equal treatment of men and women in matters of employment and occupation and Directive 2000/78/EC establishing a general framework for equal treatment in employment and occupation. The European Pillar of Social Rights (2017) also covers equality: Chapter 1 is entitled “Equal opportunities and access to the labour market”.

Robot colleagues or robo-bosses exercise a fundamental impact on the work environment, putting occupational safety and health into new perspective. Employees are entitled to *safe working environment*, which does not endanger their health and safety.⁸ Occupational safety and health regulations aim to ensure the prevention of work-related injuries and the protection and promotion of the health (including not merely the absence of a disease or infirmity but a state of complete physical, mental and social well-being) of workers. (International Labour Office, 1998, 22, 21.) The protection of occupational health and safety imposes obligations on states, the employer and the worker as well, in all branches of economic activity. (ILO, 1981)

From algorithmic management to AI colleagues

Algorithmic management can be defined as: “the use of computer-programmed procedures for the coordination of labour input in an organisation.” (ILO and European Commission, 2022, 5.) It basically means that the exercise of the employer’s managerial powers, such as control, task allocation, work evaluation, employee monitoring, discipline, etc., is increasingly aided or conducted by algorithms. The use of such systems has far-reaching consequences on employees’ rights. The functioning of algorithmic management is based on the processing of personal data, thus collecting data and monitoring employees (both online and offline) are necessary in order to be able to use the system. (De Stefano and Taes, 2021, 3–4.) Even though employee monitoring in itself is nothing new, digital tools transform employee monitoring, as they allow collecting data in an unprecedented quality and quantity. For example, wearable devices (Malteeva, 2020, 494.) are more and more often used in employment: fitness applications (Rowland, 2019) or sleep tracking applications (Lee, 2017) can provide information regarding the health status – and in relation to that the productivity – of an employee. Neuro-surveillance might be approaching as well: big-tech companies are already working on developing devices capable of “reading” a human mind. (Samuel, 2019) Once the technology is there, it is likely that employers will want to use it. Performance monitoring is also increasingly managed by AI, whether it is the detailed monitoring of computer use or monitoring drivers and interacting with them if it is deemed necessary by the algorithm. (Koptelov, 2021) Platform work is intertwined with algorithmic management, where, for example, the algorithm assigns the tasks, determines the payment of platform workers, etc., based on different inputs. (ILO and European Commission, 2022, 8.) All this, combined with the datafication of employment – turning employees’ life into data to an increasing extent – raises serious questions regarding the protection of employees’ right to data protection.

⁸ See, for example: Art. 7 of the International Covenant on Economic, Social and Cultural Rights; Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work; Item 10 of the European Pillar of Social Rights.

Then, based on the collected information, *decisions* can be made by the AI system. These decision-makings might be supported by algorithms (augmented decision-making), or entirely made by algorithms (automated decision-making).⁹ Regarding AI and the right to equal treatment in particular, digital discrimination during AI-based decision-making has received considerable attention. Digital discrimination is understood as “*a form of discrimination in which automated decisions taken by algorithms, increasingly based on Artificial Intelligence techniques like Machine Learning, treat users unfairly, unethically or just differently based on their personal data such as income, education, gender, age, ethnicity, religion.*” (Criado and Such, 2019, 1.) It is often argued that algorithms can improve objectivity and eliminate human bias from the decision-making process. However, despite the mechanical predictability of algorithms, it should not be forgotten that algorithms are designed by humans – who indeed might intentionally or unintentionally introduce bias to the system, seriously questioning the objectivity of the decision-making. (Zuiderveen Borgesius, 2018, 15.)¹⁰ This is increasingly important, as due to automation bias, humans tend to over-rely on machine decision-making, without questioning the validity or legality of such decision. (Zuiderveen Borgesius, 2018, 11–12.) Besides introducing bias to the system, it is also a challenge that it can be more difficult to detect digital discrimination (both by the individual and by the courts and authorities), as – compared to “traditional” discrimination – it is more sophisticated, and due to the black box effect the exact functioning of the system may be hidden even from its developers. Also, it might be based on new types of protected characteristics and proxies, which do not instantly ring the bell – leaving courts and authorities without established methods for identifying and assessing this new type of discrimination. (Wachter et al., 2021, 29.) Besides the numerous possibilities, AI can pose challenges in the field of *occupational safety and health*. If there is direct physical interaction between humans and AI-driven machines, work accidents might occur. The increased use of AI can lead to the “co-existence” of human workforce and AI, transforming work environments as well. On the one hand, this can either appear in the form of AI-driven machines or software used by employees to help and support work processes or working together with AI (e.g. smart factories where industrial robots are operated by AI). On the other hand, robotic or AI workforce might appear next to the human workforce (industrial or social robots), resulting in the application of collaborative robots or co-bots. Collaborative robots were developed to be able to perform a specific task at the same time in a shared workspace with humans. (De Stefano and Taes, 2021, 4.) According to a policy brief, the unexpected fail of an AI system can be traced back to three reasons: failure of robustness, failure of specification and failure of assurance, (Arnold and Toner, 2021, 6.) which might result in workplace accidents. (The Guardian, 2015) However, not only accidents constitute a threat to employee safety, but health might be at stake as well due to growing work pace. It is important to consider the differences between human and AI-driven workforce: as opposed

⁹ However, it should be emphasized that fully automated decision-making does not seem to be prevalent for now. (De Stefano and Wouters, 2022, 18.)

¹⁰ As a notorious example to algorithmic gender discrimination see the case of Amazon described in Asher Hamilton, 2018.

to human workforce, AI does not sleep, rest or get tired, etc. In this regard not only shared work environments can pose a threat to safety and health, but also algorithmic management dictating an increased work pace.¹¹

All of these AI-based solutions can bring valuable changes to the labor market. However, it is crucial to ensure that existing employment safeguards are effectively guaranteed during their implementation. (Aloisi and De Stefano, 2022, 122–123.) Although AI does not necessarily raise new questions, it often amplifies existing ones, making it paramount to address these challenges. These questions concerning the quality of work are prevalent across the EU wherever the technology is adopted. While challenges may not be fundamentally specific to Member States, minor differences can be observed – for example, based on penetration of the technology or the digital skills of labor market participants.

As an overall solution, in order to continue safeguarding employees' rights and to benefit from the opportunities brought by AI, it is crucial not to dehumanize working conditions. (De Stefano, 2019, 44.) Humans need to retain control over AI (human-in-command approach). (Hendrickx, 2019, 170.) In Hungary, the human-in-command approach might connect to an already existing legal instrument. Par. 3 of Sect. (6) of the Labour Code guarantees the principle of equitable assessment. This principle requires employers to take into account the interests of employees: where the mode of performance is defined by unilateral act, it shall be done so as not to cause unreasonable disadvantage to the employee affected. AI and automated decision-making might challenge the application of the principle. As automated decision-making is essentially based on the precise execution of pre-defined rules and programs, it is questioned how and whether the system is able to take into account unique human aspects and circumstances that require consideration. (Mélypataki, 2020, 102.) Trainings on the proper “use” of AI systems are also essential when AI and humans work together. (De Stefano and Wouters, 2022, 44.)

As regards the regulatory aspect, it is crucial to either adapt the existing legal framework and/or to adopt new rules specifically targeting AI.¹² As an example to the former, the rights already defined in Art. 22 of the GDPR (right to human intervention, right to object and right to express his/her opinion) provide a useful starting point for AI and data protection. (Hendrickx, 2019, 166–169.) Also, it might be necessary to review the legal framework itself guaranteeing the right to equal treatment. Such a review might concern strengthening the principles of transparency and/or accountability and reviewing protected characteristics and their proxies. In antidiscrimination law, employers do not have an explicit obligation to inform employees on the use of such a system. This does not mean that employers can secretly rely on the use of such systems: other fields of law, such as data protection (notably Art. 22 of the GDPR) and labour law (e.g. according to Par. 6 of the Hungarian Labour Code the parties shall inform each other of all essential facts

¹¹ See more on the latter in: Dzieza, 2020.

¹² In addition to legislation, other instruments should also be considered. According to Mélypataki, standards can play an important role in regulating the relationship between machines and humans, providing a rapid response to the challenges posed by technological advances (Mélypataki, 2023, 66). According to Aloisi and De Stefano, strengthening collective bargaining might also contribute to the effective enforcement of social and economic rights in an era where algorithms and automation are increasingly present in our labor markets (Aloisi and De Stefano, 2022, 155–164.).

and circumstances) acknowledge such an obligation. Protected characteristics and proxies should be reviewed as well in order to identify new possible forms of discrimination. (Wachter et al., 2021, 29.)

As an example to rules specifically targeting AI, the *EU's AI Act* can be mentioned.¹³ In 2021, the European Commission presented its AI Act proposal (hereinafter referred to as: AI Act), (European Commission, 2021) the first law on AI by a major regulator in the world, followed by the proposal for an AI Liability Directive (European Commission, 2022a)¹⁴ in 2022. On 13 March, 2024 the Parliament approved the AI Act, the Council gave its final approval on May 21, 2024. At the time of finalizing this article, the AI Act is set to be published in the EU's Official Journal. The AI Act is considered as a landmark piece of legislation and a significant milestone for the EU, the first of its kind in a global perspective. (Council of the EU, 2024) The AI Act aims to create a harmonized, but future-proof regulation, which does not hinder the application of AI systems. It adopts a risk-based approach, classifying the application of AI into four categories: unacceptable risk, high risk, limited risk and minimal risk. Different sets of rules are to be applied to the different risk categories. (European Commission, 2021) AI systems used in employment are to be qualified as high risk systems – regarding which, in order to be permitted, providers and/or users of high-risk systems need to comply with several requirements. (Chapter 2 of Title III of the proposed AI Act) Also, even though the AI Act is a significant and welcomed step ahead, several scholars have articulated shortcomings in relation to the proposal. These shortcomings included the proposal's scope (Cefaliello and Kullmann, 2022, 546.), the conformity assessment and enforcement mechanisms (notably, the lack of employees' redress rights and the lack of involvement of third parties in the conformity assessment), (Ebers et al., 2021, 595, 597–599; Veale and Zuiderveen Borgesius, 2021, 106, p. 111; Smuha et al., 2021, 36–48.) its capability to provide substantive and procedural protection to fundamental rights (Smuha et al., 2021, 9.) and its relation to other legislative instruments already guaranteeing individual and collective labour protection. (Veale and Zuiderveen Borgesius, 2021, 108; De Stefano and Taes, 2021, 11.)

III. Quantity of Work

The spread of AI does not only influence how jobs will look like, but also whether there will be enough jobs for human workforce. Technological unemployment can cause large masses of people to lose their livelihoods – which will have a significant impact on job opportunities as well as on income generation capacity and livelihood. Regarding the quantity of work, amongst the already regulated rights challenged by AI, the right to work and the right to social security must be examined.

¹³ Besides the AI Act, several other legal documents have already addressed AI and defined basic requirements that must be respected. As Chesterman pointed out, virtually all of these documents include requirements for human control, transparency, safety, accountability, non-discrimination, and privacy. (Chesterman, 2021, 175–176.)

¹⁴ The AI Liability Directive complements and modernizes the EU's non-contractual civil liability rules, introducing rules specific to damage caused by AI systems. (European Commission, 2022b)

The right to work and the right to social security

Both the right to work and the right to social security belong to the economic, social and cultural rights (also referred to as second generation human rights) – requiring states to take active actions (e.g. allocating funds, initiating government programs, etc.) in order to fulfil their obligations deriving from these human rights. (Lattmann, 2014, 12.) Both rights are acknowledged by major international norms, such as the Universal Declaration of Human Rights (Art. 23, 22 and 25), International Covenant on Economic, Social and Cultural Rights (Art. 6.1. and 9), the European Social Charter and Revised European Social Charter (Art. 1 and 12) or the Charter of Fundamental Rights (Art. 15 and 34).

Each individual has the right to be able to work, allowing him/her to live in dignity. On the one hand, the right to work is necessary for the survival of the individual, as work usually serves as an important means to provide livelihood for the individual and his/her family. On the other hand, work has an important role in the individual's personal development and social role. (Committee on Economic, Social and Cultural Rights, 2005, par. 1.) According to the *right to work*, everyone has the right to the opportunity to gain his/her living by work which he/she freely chooses or accepts, and the state will take appropriate steps to safeguard this right. According to the UN's Committee on Economic, Social and Cultural Rights (hereinafter referred to as: CESCR) – responsible for monitoring the implementation of the International Covenant on Economic, Social and Cultural Rights – the right to work “*affirms the obligation of States parties to assure individuals their right to freely chosen or accepted work, including the right not to be deprived of work unfairly.*” (CESCR, 2005, par. 4.) The right to work is not to be understood as an absolute and unconditional right to obtain employment, but as a right not being forced in exercising or engaging in employment; the right of access to a system of protection, guaranteeing individuals access to employment, as well as the right not to be unfairly deprived of employment. (CESCR, 2005, par. 6.)

In Hungary, the Fundamental Law guarantees the right to work stipulating in Art. XII that “(1) *Everyone shall have the right to freely choose his or her job or profession, and the freedom to conduct a business. Everyone shall have a duty to contribute to the enrichment of the community through his or her work, performed according to his or her abilities and faculties.* (2) *Hungary shall endeavor to ensure the possibility of employment to everyone who is able and willing to work.*” According to the explanatory memorandum of the Fundamental Law, each individual may choose – by acquiring the appropriate knowledge, fulfilling the conditions required for the pursuit of the given profession – the profession he/she wishes to pursue in order to develop his/her abilities and to provide for means of subsistence. It also gives rise to an obligation for individuals, as it is expressed that each individual has an obligation to contribute to the growth of the community. There is also a constitutional reference to the state's positive obligation, as par. 2 sets out as a State objective that the lack of job opportunities should be as little of an obstacle as possible to the achievement of the above. As regards the right to work and AI, in theory, individuals would still be entitled to the right to work, however, in practice their choices are likely to be narrowed down due to the spread of AI and automation decreasing the number of jobs to be filled by human workforce. (Máté, Mélypataki and Rácz, 2020, 4.)

Where the right to work ends, the *right to social security* begins: when individuals are not capable of providing their livelihood – usually through work – social security can ensure it. Social security can be defined as “the protection that a society provides to individuals and households to ensure access to health care and to guarantee income security”. (ILO, no date, 1.) In 2007, the CESCR issued a general comment on the content of the right to social security. (CESCR, 2007) according to which the right to social security “*encompasses the right to access and maintain benefits, whether in cash or in kind, without discrimination in order to secure protection, inter alia, from (a) lack of work-related income caused by sickness, disability, maternity, employment injury, unemployment, old age, or death of a family member; (b) unaffordable access to health care; (c) insufficient family support, particularly for children and adult dependents.*” (CESCR, 2007, par. 2.) Even though the exact characteristics of social security systems can vary in the light of certain conditions, the CESCR identified the major common elements of this right. Among these elements, notably availability should be mentioned: availability requires states to take actions and provide that a system – composed of either a single scheme or a variety of schemes – is available and provides benefits for relevant social risks. (CESCR, 2007, par. 11.) Among the social risks, unemployment deserves special attention with regard to AI-induced unemployment. In the case the individual is unable to obtain or maintain suitable employment, states must endeavor to provide benefits to cover the loss or lack of earnings resulting from unemployment. (CESCR, 2007, par. 16.)

In Hungary, Art. XIX of the Fundamental Law stipulates that “(1) Hungary shall endeavor to provide social security to all of its citizens. Every Hungarian citizen shall be entitled to assistance laid down in the relevant legislation in the case [he or she] loses employment due to circumstances beyond his or her control. (2) For those with special social needs pertaining to the reasons referred to in Paragraph (1), or for other reasons, Hungary shall provide social security through a system of social institutions and measures. (3) The nature and extent of social measures may be determined by an act of Parliament also in accordance with the usefulness to the community of the activity performed by the person who is the beneficiary of the social measure.” According to the Hungarian Constitutional Court, social security does not mean guaranteed income, nor does it mean that citizens’ once-achieved standard of living cannot decrease as a result of unfavorable economic conditions. (Hungarian Constitutional Court, 1991). Máté, Mélypataki and Rácz (2020, 6.) argue that the Fundamental Law reflects that not only the state is obliged to take positive actions: individuals also have an obligation to carry out activities beneficial to the community in order to ensure a sustainable supply system.

In connection with possible mass unemployment due to technological changes, the question is raised: where do the boundaries lie to circumstances beyond a person’s control, and what kind of positive actions can be required from the individual to avoid unemployment (e.g. training, retraining)? These questions are yet to be answered, however, if there really is going to be long-term mass unemployment, it seems contrary to the content of the right to social security to hold individuals fully responsible for their unemployment – especially without further steps taken by the state. Also, as these systems are often financed by contributions based on individuals’ income, mass unemployment would not only increase

the number of individuals receiving assistance, but also decrease contributions to the system, raising serious questions regarding the sustainability of these systems in their current form.

Technological unemployment

It is a frequent – often pretentious – vision that AI or robots will replace human workforce resulting in mass unemployment, described as technological unemployment. Opinions are divided on the subject into the optimistic, pessimistic and polarization perspectives,¹⁵ ranging from the total unemployment of human workforce to a nicer picture where, due to automation, more jobs would be created than lost. According to the polarization perspective, AI will bring both positive and negative tendencies to the labour market, and the number of high-skill and high-paying jobs and low-skill and low-paying jobs will increase drastically, until the mid-skill and middle-paying jobs in between disappear. Different labour market predictions exist on the possible directions of automation in the future. For example, in 2015, in a report addressing the impact of automation at work, it was argued that machines could fill half of today's jobs. This affects not only blue-collar manual workers, but the replacement of white-collar intellectual workers is also on the table. (Frey and Osborne, 2015, 58–61.)

In 2019, PwC published a report entitled “How will AI impact the Hungarian labour market?” The document pointed out that Hungary – like the other V4 countries – is an industrial economy, with major impacts to be experienced in the manufacturing, transportation and construction industries. The report identified three consecutive waves of automation within the coming decades. The first wave (algorithm wave) affects the financial sector, IT-related industries and the clerical workforce until the early 2020s. The second wave (augmentation wave, 2025–2030) will exercise an impact on services, education, public administration and other basic computer-based service providers. The third wave in the 2030s (autonomy wave) will affect both manufacturing-related industries, and therefore the workforce responsible for manual work and also high/complex-responsibility type of work. The report estimates that more than 900,000 jobs (one quarter of the total number of jobs in Hungary) will be affected by automation, touching upon especially craft workers and non-skilled trade workers. (PwC, 2019, 4–5.)

In any way, there is an agreement that AI will exercise a fundamental impact on labour markets, (Jakab, Rácz and Berényi 2020, 64.) where routine, menial and dangerous tasks will be absorbed, while high technical skills will have increased significance. (De Stefano, 2019, 16.) At the same time, there are certain occupations that are likely to be safe from automation. In fact, in some roles, the demand for human labor may even increase. (Hajdú, 2020, 5.) I agree with Adams-Prassl (2019, 124.), according to whom, instead of taking away humans' jobs, AI will rather revolutionize working through the proliferation of algorithmic management.

Even though AI-based solutions have the potential to revolutionize the world of work in several ways, it is still crucial to effectively safeguard the right to work and the right to

¹⁵ Jakab, Rácz and Berényi, 2020, 64–65. referring to Williams, M. et al. (2020). *Mapping Good Work: The Quality of Working Life Across the Occupational Structure*. Bristol: Bristol University Press.

social security. Scholars have pointed out a number of possible solutions which might mitigate the detrimental effects of labour market changes in connection with technology. A working paper (Bürgisser, 2023) extensively presented possible public policies and their potential to mitigate the detrimental consequences of technological change on labour. The working paper differentiated between three categories of public policies:¹⁶ compensation policies, investment policies and steering policies. *Compensation policies* have the aim to *ex post* financially provide for workers displaced by technology. E.g. universal basic income (hereinafter referred to as: UBI) would basically constitute a cash payment granted to individuals without requiring the fulfilment of any conditions. Practical questions as regards the introduction of UBI include the sum of the support, the regularity of disbursement, as well as its financial coverage.¹⁷ Also, UBI might solve the issue of providing livelihood, however, it is not capable of replacing the self-fulfilling role of work. *Investment policies* have the objective to *ex ante* prepare and upskill workers with necessary skills to cope with the changing labour market. It is crucial to prepare (future) labour force for upcoming changes in the labour market. As the labour market is transformed, the skills employees need to have also change. The EU's Council Recommendation of 22 May 2018 on key competences for lifelong learning defines eight key competences, all of which are needed for "[...] *personal fulfilment and development, employability, social inclusion, sustainable lifestyle, successful life in peaceful societies, health-conscious life management and active citizenship.*" Skills such as critical thinking, problem solving, team work, communication and negotiation skills, analytical skills, creativity, and intercultural skills are embedded throughout the key competences. In view of the speed with which new technologies are gaining ground, adaptability and continuous self-education are also necessary, appreciating the role of lifelong learning – parallel to developing appropriate education systems. *Steering policies* include actions to affect the pace and direction of technological change. E.g. robot tax or digital tax could be used to prevent or mitigate the harmful labour market consequences of technology-induced mass unemployment, by taxing firms when they replace a human worker with a robot. Such taxes might also serve as a possible solution to replace the contributions lost as a result of technological unemployment. However, regulatory questions arise regarding, for example, the tax subject: what exactly is considered to be a robot or an AI? Should automation or augmentation be taxed? Should the mere application of the given technology be taxed or only the redundancies it caused? It is also crucial to find the right balance, as adopting a too rigorous tax system might lead to competitive disadvantage, by hindering the application of new technological solutions. (Bürgisser, 2023, 3–8.)

¹⁶ Besides state action, other entities, such as individuals also have responsibility: they must proactively participate in the knowledge-based preparation for changing labour market conditions (e.g. by participating in and promoting trainings, self-education, lifelong learning, etc.).

¹⁷ In the meantime, authors such as Aloisi and De Stefano question the practical feasibility of introducing UBI and suggest focusing instead on creating quality jobs and rethinking welfare systems. (Aloisi and De Stefano, 2022, 152–155.)

IV. Conclusion

AI is already present in the world of work, affecting all aspects of the employment relationship. Even though it is impossible to predict how exactly AI will be used in the future, its application will most likely continue to grow. Based on the current state of AI and on the already existing academic discussion, the article approached the topic from the quality and quantity of current and future work: it addressed *how* the remaining jobs for humans will be affected by AI, and *whether* humans will be able to work.

In connection with these two fields, the article presented the already existing rights aiming to protect employees (particularly the right to data protection, to equal treatment, to safety at work and right to work and to social security) as well as how these already existing rights can be challenged by AI. Notably algorithmic management and data protection, automated decisions and equality, robo-bosses/robo-colleagues and workplace safety and health, as well as the lack of suitable jobs and the right to work and right to social security were addressed. Despite the perennial question of whether law shapes technology, or technology shapes law, it seems certain that in order to harness AI's potential a solid legal framework is needed. To conclude, AI does not arrive into a legislative vacuum: already existing regulations should not be tossed away, however, their review and possible amendment in the light of AI is necessary, as AI raises old questions with new intensity. Besides modernizing existing regulations, it is also crucial to specifically target AI. Consequently, it is welcomed that the EU has taken steps to adopt a legislative framework for AI – in spite of its shortcomings –, specifically regulating AI systems. AI should be used to benefit humankind and the world of work is no exception.

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References

- Adams-Prassl, J. (2019). What If Your Boss Was an Algorithm? Economic Incentives, Legal Challenges, and the Rise of Artificial Intelligence at Work. *Comparative Labor Law & Policy Journal*, 41(1), 123–146.
- Allen, R., Masters, D. (2021). *Technology Managing People – the Legal Implications*. A report for the Trades Union Congress by the AI Law Consultancy. Retrieved August 30, 2023, from https://www.tuc.org.uk/sites/default/files/Technology_Managing_People_2021_Report_AW_0.pdf.
- Aloisi, A., De Stefano, V. (2022). *Your Boss Is an Algorithm. Artificial Intelligence, Platform Work and Labour*. Hart Publishing.
- Aloisi, A., Gramano, E. (2019). Artificial Intelligence Is Watching You at Work: Digital Surveillance, Employee Monitoring, and Regulatory Issues in the EU Context. *Comparative Labor Law & Policy Journal*, 41(1), 101–127.

- Asher Hamilton, I. (2018). *Amazon built an AI tool to hire people but had to shut it down because it was discriminating against women*. Retrieved August 31, 2023, from <https://www.businessinsider.com/amazon-built-ai-to-hire-people-discriminated-against-women-2018-10>.
- Arnold, Z., Toner, H. (2021). *AI Accidents: An Emerging Threat. What Could Happen and What to Do*. CSET Policy Brief. Retrieved August 31, 2023, from <https://cset.georgetown.edu/wp-content/uploads/CSET-AI-Accidents-An-Emerging-Threat.pdf>.
- Bürgisser, R. (2023). *Policy Responses to Technological Change in the Workplace*. Seville: European Commission.
- Cefaliello, A., Kullmann, M. (2022). Offering false security: How the Draft Artificial Intelligence Act Undermines Fundamental Workers Rights. *European Labour Law Journal*, 13(4), 542–562.
- Chesterman, S. (2021). *We, the Robots? Regulating Artificial Intelligence and the Limits of the Law*. Cambridge University Press.
- Committee on Economic, Social and Cultural Rights (2005). *The Right to Work. General comment No. 18*. Geneva: United Nations.
- Committee on Economic, Social and Cultural Rights (2007). *General Comment No. 19 – The right to social security*. United Nations.
- Council of the EU (2024). *Artificial intelligence (AI) act: Council gives final green light to the first worldwide rules on AI*. Retrieved June 17, 2024 from <https://www.consilium.europa.eu/en/press/press-releases/2024/05/21/artificial-intelligence-ai-act-council-gives-final-green-light-to-the-first-worldwide-rules-on-ai>.
- Criado, N., Such, J. M. (2019). *Digital discrimination*. Retrieved August 31, 2023, from https://www.researchgate.net/publication/336792693_Digital_Discrimination.
- De Stefano, V. (2019). “Negotiating the Algorithm”: Automation, Artificial Intelligence, and Labor Protection. *Comparative Labor Law & Policy Journal*, 41(1), 15–46.
- De Stefano, V., Taes, S. (2021). *Algorithmic Management and Collective Bargaining*. ETUI, Foresight Brief.
- De Stefano, V., Wouters, M. (2022). *AI and Digital Tools in Workplace Management and Evaluation. An Assessment of the EU’s Legal Framework*. Retrieved 30 August, 2023, from [https://www.europarl.europa.eu/RegData/etudes/STUD/2022/729516/EPRS_STU-\(2022\)729516_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2022/729516/EPRS_STU-(2022)729516_EN.pdf).
- Dzieza, J. (2020). *How hard will the robots make us work?* Retrieved August 31, 2023 from <https://www.theverge.com/2020/2/27/21155254/automation-robots-unemployment-jobs-vs-human-google-amazon>.
- Ebers, M. et al. (2021). The European Commission’s Proposal for an Artificial Intelligence Act – A Critical Assessment by Members of the Robotics and AI Law Society (RAILS). *J*, 4, 589–603.
- European Commission (2021). *Proposal for a regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain union legislative acts*. COM(2021) 206 final.

European Commission (2022a). *Proposal for a Directive of the European Parliament and of the Council on adapting non-contractual civil liability rules to artificial intelligence (AI Liability Directive)*. COM(2022) 496 final.

European Commission (2022b). *Questions & Answers: AI Liability Directive*. Retrieved August 31, 2023, from https://ec.europa.eu/commission/presscorner/detail/en/QANDA_22_5793.

Frey, C. B., Osborne, M. (2015). *Technology at Work. The Future of Innovation and Employment*. Retrieved August 31, 2023, from https://www.oxfordmartin.ox.ac.uk/downloads/reports/Citi_GPS_Technology_Work.pdf.

Gellert, R., Gutwirth, S. (2013). The legal construction of privacy and data protection. *Computer Law and Security Review*, 29(5), 522–530.

Hajdú, J. (2020). A mesterséges intelligencia hatása a munkaerőpiacra, avagy elveszik-e a robotok az ember munkáját. *Infokommunikáció és Jog*, (2), 3–9.

Hendrickx, F. (2019). Privacy 4.0 at work: regulating employment, technology and automation. *Comparative Labor Law & Policy Journal*, 41(1), 147–172.

Hungarian Constitutional Court (1991). Decision No. 32/1991. (VI. 6.).

ILO (1981). *Occupational Safety and Health Convention*. No. 155.

ILO (no date). *Facts on Social Security*. Retrieved August 31, 2023, from https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_067588.pdf.

ILO, European Commission (2022). *The Algorithmic Management of Work and Its Implications in Different Contexts*. Background paper. Retrieved August 31, 2023, from https://www.ilo.org/wcmsp5/groups/public/---ed_emp/documents/publication/wcms_849220.pdf.

International Labour Office (1998). *Technical and ethical guidelines for workers' health surveillance (OSH No. 72)*. Geneva: International Labour Office.

Jakab, N., Rácz, Zs., Berényi, L. (2020). Az automatizálás munkaerőpiaci és munkajogi kérdései. *Erdélyi Jogélet*, (4), 63–76.

Koptelov, A. (2021). *The Ethics of AI-driven Workforce Surveillance*. Retrieved August 31, 2023, from <https://towardsdatascience.com/the-ethics-of-ai-driven-workforce-surveillance-2bfaa57cc4a5>.

Lattmann, T. (2014). Introduction to international human rights law. In Lattmann, T., Vizi, B. (ed.). *International Protection of Human Rights*, Budapest: National University of Public Service.

Lee, S. M. (2017). *Workplaces Are Tracking Their Employees' Sleep*. Retrieved August 31, 2023, from <https://www.buzzfeednews.com/article/stephaniemlee/work-wellness-program-of-the-future-will-track-your-sleep>.

Lukács, A. (2021). *Employees' Right to Privacy and Right to Data Protection on Social Network Sites: with Special Regard to France and Hungary*. Szeged: Iusperitus Kiadó.

Lukács, A., Váradi, Sz. (2023). GDPR-compliant AI-based automated decision-making in the world of work. *Computer Law & Security Review*, 50, Paper: 10584.

Maltseva, K. (2020). Wearables in the Workplace: The Brave New World of Employee Engagement. *Business Horizons*, 63, 493–505.

Máté, D. A., Mélypataki, G., Rácz, Z. (2020). A mesterséges intelligencia alkalmazásának hatása a munkához és a szociális biztonsághoz való jogra. *Infokommunikáció és Jog*, (1), 3–8.

Mélypataki, G. (2020). A munka digitalizálódása a munkajogi alapelvek tükrében. *Miskolci Jogi Szemle*, 3, 97–104.

Mélypataki, G. (2023). Az Ipar 4.0. és a jog kapcsolata – Problémafelvetések a foglalkoztatás és szociális biztonság témaköre kapcsán. *Jogelméleti Szemle*, (1), 61–74.

PwC (2019). *How will AI impact the Hungarian labour market?*

Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC. *Official Journal of the European Union*, 119, 4.5.2016, 1–88.

Rowland, C. (2019). *With Fitness Trackers in the Workplace, Bosses Can Monitor our Every Step – and Possibly More*. Retrieved 31 August, 2023, from https://www.washingtonpost.com/business/economy/with-fitness-trackers-in-the-workplace-bosses-can-monitor-your-every-step-and-possibly-more/2019/02/15/75ee0848-2a45-11e9-b011-d8500644dc98_story.html.

Samuel, S. (2019). *Brain-reading Tech is Coming. The Law Is Not Ready to Protect Us*. Retrieved 31 August, 2023, from <https://www.vox.com/2019/8/30/20835137/facebook-zuckerberg-elon-musk-brain-mind-reading-neuroethics?smid=nytcare-ios-share>.

Smuha, N. A. et al. (2021). *How the EU Can Achieve Legally Trustworthy AI: A Response to the European Commission's Proposal for an Artificial Intelligence Act*. Retrieved August 31, 2023, from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3899991 [Accessed 28 November 2022].

The Guardian (2015). *Robot kills worker at Volkswagen plant in Germany*. Retrieved August 31, 2023, from <https://www.theguardian.com/world/2015/jul/02/robot-kills-worker-at-volkswagen-plant-in-germany>.

Veale, M., Zuiderveen Borgesius, F. (2021). Demystifying the Draft EU Artificial Intelligence Act. Analysing the Good, the Bad, and the Unclear Elements of the Proposed Approach. *Computer Law Review International*, (4), 97–112.

Wachter, S. et al. (2021). Why fairness cannot be automated: Bridging the gap between EU non-discrimination law and AI. *Computer Law & Security Review*, 41, Paper: 105567.

Zuiderveen Borgesius, F. (2018). *Discrimination, artificial intelligence, and algorithmic decision-making. Council of Europe*. Retrieved August 31, 2023, from <https://rm.coe.int/discrimination-artificial-intelligence-and-algorithmic-decision-making/1680925d73>.