MYKOLAS ROMERIS UNIVERSITY
LAW SCHOOL
INSTITUTE OF PRIVATE LAW

REHINA SKRYPNYK
(EUROPEAN AND INTERNATIONAL BUSINESS LAW)

# THE ROLE OF ARTIFICIAL INTELLIGENCE IN THE EUROPEAN UNION LABOUR MARKET

Master thesis

Supervisor –
Vilius Mačiulaitis
Doctor of Juridical Sciences,
Professor at the Institute of Private Law at Law School,
Mykolas Romeris University

Vilnius, 2023

**TABLE OF CONTENTS**

## LIST OF ABBREVIATIONS

**AI** – Artificial intelligence.

**UNESCO** – United Nations Educational, Scientific and Cultural Organization.

**EU** – European Union.

**UNDP** – United Nations Development Program.

**ILO** – International Labor Organization.

**GDPR** – General Data Protection Regulation.

**EP** – European Parliament.

**OSH** – Occupational Safety and Health.

**OECD** – Organization for Economic Cooperation and Development.

**DSA** – Digital Services Act.

**EAIB** – European Artificial Intelligence Board.

# INTRODUCTION

**The relevance of the master thesis.** Modern realities are closely related to technologies, digitization, and automation processes increasingly penetrating various spheres of society, changing and simplifying certain aspects. Artificial intelligence (AI) is considered the most promising among today's technologies, which impresses with its functionality and, at the same time, ambiguity. That is why, at the end of 2021, UNESCO member countries adopted the Ethical Guidelines for Artificial Intelligence because the world needs rules for artificial intelligence to be useful to humanity because the deep and dynamic, both positive and negative impact of artificial intelligence on societies is recognized.[1]

However, this document does not cover an essential problem given the rapid technological progress and the deepening of digitalization processes: the machine begins to prevail over the person in the work process. In this way, the possibility of replacing workers with artificial intelligence can lead to mass unemployment, which, in turn, will harm the life prospects of individuals and social groups and, in the long term - all social processes. This issue raises many concerns among people around the world, particularly in the European Union, about job losses and income inequality. That is why there is a growing need to determine the place and role of artificial intelligence in the European labour market in search of answers to whether this technology can still reduce the share of human labour.

On the one hand, artificial intelligence can become the key to implementing the necessary changes in the labour market by optimizing functioning companies and enterprises. On the other hand, the automation of production processes replaces human labour. On a global scale, this strengthens the economic gap between more developed countries and those with some socio-economic issues because the replacement of people by machines is uneven, both with respect to individual societies and concerning individual functions, for example, low-skilled labor. Thus, the study of both positive and negative directions of the impact of artificial intelligence on the functioning of the modern labor market of the European Union and Ukraine as a candidate for EU membership determines the relevance of this study.

In addition, for business in the conditions of today's digital economy, it is important to find the most effective strategies for conducting activities, so European entrepreneurs are increasingly paying attention to artificial intelligence because the automation of work in production helps to optimize costs. Also, employees are becoming more involved in processes

[1] "Recommendation on the Ethics of Artificial Intelligence," UNESCO, accessed 21 October 2022, https://unesdoc.unesco.org/ark:/48223/pf0000381137.

related to social skills, emotional intelligence. However, as not all tasks within an occupation can be performed by AI, this suggests that the impact of artificial intelligence will be to replace workers in certain tasks and lead to the transformation of occupations rather than their disappearance.[2]

It is also worth adding that the work will describe the experience of such countries of the European Union as Poland, Slovakia, Lithuania, Latvia, Estonia, the Czech Republic, Germany, and France. The selected countries are characterized by features inherent in the Romano-Germanic legal family, as they have a similar vision in determining the sources of law and structure of the fields of public and private law, which gives reasons to determine in this work the interrelationships and opportunities for cooperation between these countries regarding the regulation of social relations related to the use of artificial intelligence in the European labor market.

Moreover, these countries actively cooperate in various spheres of activity and have close economic ties with Ukraine, which, as it was mentioned, is a candidate for joining the EU. In view of this, it seems relevant to analyze the Ukrainian vision regarding the use of artificial intelligence in the work process and ways of implementing the experience of certain European countries in the regulation of AI into the Ukrainian legal field for further integration into the European space side by side with the countries mentioned above.

Therefore, the analysis of these aspects will allow us to determine what role artificial intelligence plays in the labor market of the European Union in the conditions of global digitization of all spheres of life, which in turn will contribute to the growth of interest in this topic and the development of further research.

**Scientific research problem.** Analysis of the legal acts and literature indicates some unresolved issues in the field of regulation of AI in the labour market. Therefore, the important question arises: whether artificial intelligence is an object or a subject of the European Union labour market? The current research is aimed at answering such questions.

**Review of the literature.** The general scope of this research includes country-to-country analysis of legal approaches to the regulation of AI, ways of its application in the labour market, ethical aspects of its use, etc. For example, Ukrainian researcher N. Azmuk explores the possibilities of using artificial intelligence in the work process in the digital economy.[3]

[2] M. Lane and A. Saint-Martin, "The impact of Artificial Intelligence on the labour market: What do we know so far?" *OECD Social, Employment and Migration Working Papers* 256, (2021): 25, https://doi.org/10.1787/7c895724-en.

[3] N. Azmuk, "Artificial intelligence in the work process in the digital economy: new challenges and opportunities," *Economic Herald of Donbass* 3, 57, (2020): 137-145, https://doi.org/10.12958/1817-3772-2019-3(57)-137-145.

Some other useful research was made by M. Webb, who examined the impact of artificial intelligence on the labour market and tried to identify the occupations most exposed to AI.[4] Furthermore, M. Brussevych, E. Dabla-Norris E. and S. Khalid consider how the automation of work will affect the employment status of women in the future.[5]

In addition, A. Agrawal, J. Gans, and A. Goldfarb's study is also notable for its analysis of AI's impact on market demand and business productivity should be considered when introducing artificial intelligence into the labour market.[6]

Moreover, some information from OECD working papers will be taken into account. For instance, papers such as M. Lane and A. Saint-Martin's study[7] add to the literature by looking at the advantages and disadvantages of AI application to conclude that AI has not only the potential to destroy jobs but also to complement them, which will be addressed in this master's thesis accordingly.

**Scientific novelty of the master thesis.** Many researchers have focused on the potential of artificial intelligence in the labour market and how the use of technology has affected today's employment levels. However, determining how AI will affect certain occupations and business sectors in the future is a matter of considerable debate, requiring further study of the impact of artificial intelligence on employment, working conditions, labour productivity, and other aspects. In addition, a comparative analysis of the AI strategies in certain countries of the European Union and Ukraine shows that the issue of the legal personality of artificial intelligence in the labour market remains unresolved. Therefore, it seems appropriate to discuss this problem in order to determine the role of AI in the labour market in the near future.

**The aim of the master thesis** – to determine the legal personality of artificial intelligence in the European labour market, as well as the risks and benefits of such technology in the European and Ukrainian legal systems against the background of global digitalization of the economy.

**The objectives of the master thesis.** In order to achieve established aim of this master thesis the following tasks have to be carried out:

1) to analyze the concept of artificial intelligence and the challenges created by its usage to provide arguments for and against the application of AI in the labour market;

---

[4] M. Webb, "The Impact of Artificial Intelligence on the Labor Market," *SSRN*, (2020):61, http://dx.doi.org/10.2139/ssrn.3482150.

[5] M. Brussevich, E. Dabla-Norris and S. Khalid, "Is Technology Widening the Gender Gap? Automation and the Future of Female Employment," *IMF Working Paper*, (2019): 1-37.

[6] Agrawal, J. Gans and A. Goldfarb, "Artificial Intelligence: The Ambiguous Labor Market Impact of Automating Prediction", *The Journal of Economic Perspectives* 33, 2 (2019): 31-50, http://dx.doi.org/10.2307/26621238.

[7] M. Lane and A. Saint-Martin, *op. cit*., 25.

2) to describe the European approach to the regulation of artificial intelligence by studying EU member states AI strategies to find out how they deal with AI challenges;

3) to evaluate the state of AI regulation in Ukraine for further improvement of national legislation and propose possibilities for cooperation between the European Union and Ukraine in this field.

**The practical significance of the master thesis.** The current research will be helpful for the students and scholars studying labor law and the challenges of artificial intelligence who want to deepen their knowledge in such issues as the influence of technologies on workers and their rights, as well as the implications of the AI application for the labor market.

The master thesis can also be valuable for entrepreneurs in various business fields who are introducing innovations into their companies' work processes, namely artificial intelligence, to increase their competitiveness in the market.

In addition, this research may be interesting for European Union and Ukrainian policymakers in terms of possible ways to improve the current EU regulation in the sphere of labor law and artificial intelligence, as well as implementing such provisions into the Ukrainian AI strategy.

**The defended statements.**

1) the transformation of artificial intelligence from an object of the labour market to a full-fledged entity does not seem possible as of today;

2) the cooperation between the European Union and Ukraine in the AI regulation sphere is advantageous for the well-being of the common labour market in Europe.

**Methods used in the master thesis.** For current scientific research, several methods will be used. First of all, the primary methods will be data collection and analysis due to the necessity of searching for information through various legal sources and scientific articles. As a result, the collected data on legal regulation, features, and practical cases of using AI will be analyzed and structured. Based on this, certain conclusions will be drawn regarding the role of AI in the labor market, which is vital for obtaining the complete integrity of the study.

Secondly, due to the purpose of that master thesis, a comparative method will be used as well to analyze and compare different jurisdictions such as Baltic countries, Poland, Czech Republic, Slovakia, Germany, and France as regards of their AI strategy in order to determine the place of AI in the European labor market. In addition, a comparative method will be used to determine the differences and similarities between European and Ukrainian approaches toward the application of AI in the labour process.

Finally, another important one is the historical method, which allows getting a complete vision of the increase over the years in the contribution of AI to labour productivity in the European Union.

**The structure of the master thesis.** It consists of three main parts.

**In the first part** of the master's thesis, the author will focus on the concept of artificial intelligence in labour law based on the growing impact of technologies on employment and the working environment. In addition, arguments for and against the use of AI in the labour market will be presented, and relevant conclusions will be drawn.

**The second part** of the research will be about the legal personality of artificial intelligence in the European Union to find out what role AI plays in the European Union labour market. The strategies of some EU member states that are provided for the regulation of AI will be analyzed.

**The third part** aims to research the Ukrainian approach to applying artificial intelligence in the labour market. Furthermore, possibilities of future cooperation and ways of implementing European practices into the Ukrainian legal system for the more effective regulation of the examined issues will be provided.

## 1. THE CONCEPT OF ARTIFICIAL INTELLIGENCE IN LABOR LAW

### 1.1 Definition and the challenges of artificial intelligence

Humankind cannot imagine the modern world without the technologies and the use of artificial intelligence in a wide range of spheres. AI has transitioned from mere theory to tangible application on an unprecedented scale.[8] Chatbots, self-driving cars, virtual assistants, speech recognition, and other robotic services are examples of AI in our daily lives.

From evaluating extraordinarily large data sets in near real-time, autonomous driving cars and stream history-influenced video viewing recommendations (Netflix, Los Gatos, CA, USA) to online purchase recommendations, advertisements, and fraud detection (Amazon, Seattle, WA, USA), AI has become fundamentally ingrained within many facets of society and often functions invisibly in the background of our personal electronic devices.[9]

However, the question is how to define artificial intelligence; how can we understand the essence of that term? Understanding the meaning of AI will lead us to analyze its social impact on the labour market. Analyzing approaches to defining the concept of "artificial intelligence," it should be noted that this is a complex concept that can be interpreted differently depending on the scope of application and the focus on certain specific properties of AI.

On this score, researchers O.A. Telichko and V.A. Rekun rightly note that the interdisciplinary and multifactorial nature of research in the field of artificial intelligence has come down to different interpretations of this concept by specialists from different scientific fields: biologists associate this category with the processes of higher nervous activity and the possibility of its reproduction; philosophers - with a system capable of creativity; IT specialists – with data processing technology; lawyers - with procedural issues of forming logical connections in solving legal problems.[10]

From this, we can conclude that each specialist defines AI based on his field, which complicates the formation of a commonly used and unambiguous definition but, at the same time, confirms the comprehensiveness of the use of artificial intelligence in various professional fields. Artificial intelligence technologies are of interest not only to computer programmers, as most people tend to think, but also to psychologists and even philosophers.

---

[8] E.J. Topol, "High-performance medicine: the convergence of human and artificial intelligence," *Nature Medicine* 25,1 (2019):44-56, https://doi.org/10.1038/s41591-018-0300-7.

[9] J.M. Helm et al., "Machine Learning and Artificial Intelligence: Definitions, Applications, and Future Directions," *Curr Rev Musculoskelet Med* 13, (2020):69–76, https://doi.org/10.1007/s12178-020-09600-8.

[10] O.A. Telychko et al., "Problems of definition and regulatory confirmation of the concept of "artificial intelligence" in the legislation of foreign countries and Ukraine," *Juridical Scientific and Electronic Journal*, 2, (2021): 311, https://doi.org/10.32782/2524-0374/2021-2/75.

On the other hand, in the literature, there are many definitions of artificial intelligence as a specific field of science, according to which artificial intelligence is a science and technology that is capable of reproducing the thinking processes of the human brain and directing them to the creation and processing of various computer programs, as well as intelligent machines capable of completely replacing and simplifying human work; the field of computer science concerned with the development of intelligent computer systems, that is, systems with capabilities traditionally associated with the human mind.[11]

Some researchers also promote the idea of artificial intelligence as an autonomous system endowed with specific functions. For example, H. Androschuk interprets the concept of artificial intelligence as a manufactured system capable of processing the information that comes to it, connecting it with the knowledge it already possesses, and accordingly forming its idea of the objects of knowledge.[12]

Furthermore, the European Commission also believes that artificial intelligence refers to systems that display intelligent behaviour by analyzing their environment and taking actions – with some degree of autonomy – to achieve specific goals. AI-based systems can be purely software-based, acting in the virtual world (e.g., voice assistants, image analysis software, search engines, speech, and face recognition systems), or AI can be embedded in hardware devices (e.g., advanced robots, autonomous cars, drones or Internet of Things applications).[13]

According to Yu. Sidorchuk, artificial intelligence is a definition that describes the intellectual capabilities of computers when making decisions.[14] Therefore, AI can be interpreted through software that can learn and make decisions in light of the given task and situation almost in the same way as human beings.

Artificial intelligence is a term that describes the capacity of computers or other machines to exhibit or simulate intelligent behaviour.[15] In addition, there are some types of artificial intelligence.

Narrow AI is designed to perform one task or specific tasks but is still complicated.[16] The New York Times noted that even narrow AI tools could be "bafflingly opaque" and "evade

[11] O.I. Pizhuk, "Artificial Intelligence as One of the Key Drivers of the Digital Transformation of the Economy," *Economics, Management and Administration* 3, 89 (2019):43, https://doi.org/10.26642/ema-2019-3(89)-41-46.
[12] G. Androschuk, "Trends in the development of artificial intelligence technologies: economic and legal aspect," *Theory and practice of intellectual property* 3, (2019):85.
[13] "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the Regions, Artificial Intelligence for Europe," EUR-Lex, accessed 24 July 2023, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A237%3AFIN.
[14] Yu. Sydorchuk, "Philosophical and legal problems of using artificial intelligence," *Law and society* 3, 2 (2017):17.
[15] "Artificial Intelligence," Oxford English Dictionaries, accessed 26 July 2023, https://www.oed.com/search/dictionary/?scope=Entries&q=artificial%20intelligence.

understanding because they involve an avalanche of statistical probability".[17] Narrow AI is called weak because it imitates natural intelligence. However, it helps convert huge amounts of data into useful information for specific tasks.

Such technology is quite advantageous for society since it applies to image and video processing, robotics, healthcare, and transportation industries. Examples of weak AI are Google Maps, voice assistants like Siri, spam filters on Email, and cars with self-drive technology.

Particular attention should be paid to a new and viral technology of narrow AI, which is known as ChatGPT. "Generative PreTrained Transformer" is a generative pretrained transformer. ChatGPT, developed in the OpenAI research lab, can now communicate with people. As its capabilities expand, they will redefine human knowledge, accelerate changes in the fabric of our reality, and reorganize politics and society. ChatGPT is an example of a so-called large language model that can be used to generate human text.

GPT is a model that can automatically learn from large volumes of text without human dispatch. The developers of ChatGPT have provided it with a huge amount of textual content from the digital world. The lack of citations in ChatGPT responses makes distinguishing between truth and misinformation difficult.

We already know that attackers are pouring into the Internet – that is, into the current and future ChatGPT training base – a lot of fabricated "facts" and increasingly convincing fake images and videos. Since ChatGPT is designed to answer questions, it sometimes makes up facts to give a seemingly coherent answer. This phenomenon is known among AI researchers as "hallucination" or "stochastic parroting," where an AI strings together phrases that look real to a human reader but have no underlying basis of what causes these errors, leaving the question of how to control them.[18]

General or strong AI is an even more challenging concept. It is the system that is capable of self-learning, choosing its own decisions based on previous experience. General AI refers to a notional future AI system that exhibits apparently intelligent behaviour at least as advanced as a

---

[16] "CIPL AI First Report: Artificial Intelligence and Data Protection in Tension," Centre for Information Policy Leadership, accessed 14 March 2023, https://www.informationpolicycentre.com/uploads/5/7/1/0/57104281/cipl_first_ai_report_-_ai_and_data_protection_in_tension__2_.pdf.

[17] C. Kuang, "Can A.I. Be Taught to Explain Itself?" *The New York Times,* November 21, 2017, accessed 15 December 2022, https://www.nytimes.com/2017/11/21/magazine/can-ai-be-taught-to-explain-itself.html?_r=0.

[18] H. Kissinger, E. Schmidt, and D. Huttenlocher, "ChatGPT Heralds an Intellectual Revolution," *The Wall Street Journal*, February 24, 2023, accessed 15 December 2022, https://www.wsj.com/articles/chatgpt-heralds-an-intellectual-revolution-enlightenment-artificial-intelligence-homo-technicus-technology-cognition-morality-philosophy-774331c6.

person across the full range of cognitive tasks."[19] Therefore, it can use logic, understand thoughts and emotions, and make various actions depending on situations and adapting to new scenarios. Although the thinking of a strong AI differs from that of a human, it is self-aware and capable of reflexive mental activity, so it provokes discussions about the legal personality of AI.

The benefits of strong AI are clearly seen in cyber security, robots with high intellect like the famous robot Sophia. In 2017, the United Nations Development Program (UNDP) Asia Pacific bureau appointed this robot as the first-ever non-human Innovation Champion, who addressed the Industry 4.0 Summit and Expo in Viet Nam on 13 July 2018.[20]

Barely a month before this appointment, Sophia had been the first robot to be awarded citizenship of a country, Saudi Arabia. This award spurred some arguments and polemic discussions on the implication of recognizing a robot as a citizen[21]– can a robot have rights and duties as human beings have? Can artificial intelligence be assimilated to human conscience as a source of these rights and duties?

Already in 2017, the EU Parliament inquired on the possibility of giving robots electronic personality, namely, creating a specific legal status for robots, so that at least the most sophisticated autonomous robots could be established as having the status of electronic persons responsible for making good any damage they may cause, and possibly applying electronic personality to cases where robots make autonomous decisions or otherwise interact with third parties independently.[22]

Recognizing legal rights and obligations to non-human beings, therefore, is not a neutral process; it can prove beneficial, but it can also pave the way to abuses that put other parties in jeopardy. Assigning electronic personality to robots and AI tools could also allow their owners and producers to shed responsibility and could leave other parties, including commercial partners, creditors, customers, and workers that interact with these devices, exposed to the risk of having no meaningful redress in case of damage.[23]

---

[19] Executive Office of the President of the United States, National Science, and Technology Council Committee on Technology. *"Preparing for the Future of Artificial Intelligence".* USA, (2016): 7, https://info.publicintelligence.net/WhiteHouse-ArtificialIntelligencePreparations.pdf.

[20] Nguyen Viet Lan, "Sophia the robot Viet Nam," *United Nations Development Programme*, July 13, 2018, accessed 22 November 2022, https://www.undp.org/vietnam/news/sophia-robot-viet-nam.

[21] J. Vincent, "Pretending to give robot citizenship helps no one," *THE VERGE*, October 30, 2017, accessed 26 November 2022, https://www.theverge.com/2017/10/30/16552006/robot-rights-citizenship-saudi-arabia-sophia.

[22] "European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL))," EUR-Lex, accessed 12 September 2023, https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017IP0051&rid=9.

[23] V. de Stefano, "Negotiating the algorithm: Automation, artificial intelligence and labour protection," *Employment Policy Department Working Paper* 246, (2018):4, https://doi.org/10.1787/7c895724-en.

Thus, specific problems in the aspect of morality and safety in the world society due to fears of establishing the superiority of AI over humans, technology encroachment on privacy, loss of workplace, and others also inhibit the definition of the exact content and legal personality of AI. Many countries have still not established legal regulations for the interaction between humans and artificial intelligence, so an inevitable part of society is rejecting the legal personality of AI. In addition, forming a comprehensive concept of artificial intelligence has been influenced by the fact that the theory constantly lags behind technical progress as technologies develop and change very rapidly.

Regarding the challenges of artificial intelligence, the world should think more not about how to develop artificial intelligence but how to use it safely for society. AI application raises concerns about the protection of personal data. Gergely G. Karácsony highlights the need to protect personal data when using such technologies.[24]

A clear example of the risks of AI to personal data is the case of Samsung, where employees are prohibited from using AI, particularly ChatGPT, for security reasons. The company recently suffered a significant leak of confidential data. Specialists are doing everything to find a way to leak data, and for now, employees have been banned from using technologies that may pose a potential threat. A memo received by the company's employees cites concerns about data received by artificial intelligence and its storage on external servers. There is no question of altogether abandoning AI technology. Samsung is considering returning to using it as soon as it can find a way to do it safely.[25]

Moreover, the developers of labour laws in almost every country in the world face the question of determining the place of artificial intelligence in the labour market and what consequences it will have on the level of employment. Is it still a tool with which humans can optimize and improve production, the object of labour relations, or an employee with a set of rights and obligations, that is, the subject of labour relations?

While AI has enormous benefits for society, it also presents several challenges, including potential discrimination, antitrust issues, and the impact on labour markets.[26] The most prominent global challenge AI has created for labour is the need for large-scale retraining of those workers whose routine jobs will be taken away by AI and those who will be forced to learn to use AI on the job, not to lose their jobs.

---

[24] G. Karácsony, "Managing personal data in a digital environment – did GDPR's concept of informed consent really give us control?" in *Computer law, AI, data protection and the biggest technological trends. Proceedings of an international scientific conference*, (Sládkovicove, Brno: MSD 2019), 3.

[25] Ya. Sivakivskyi, "Dangerous assistant: Samsung banned employees from using artificial intelligence - the reason," *24 Business*, May 3, 2023, accessed 28 September 2023, https://24tv.ua/business/samsung-zaboroniv-shtuchniy-intelekt-yaka-prichina_n2305970.

[26] "CIPL AI First Report: Artificial Intelligence and Data Protection in Tension," *op. cit.*

Many employees and trade unions are hostile towards intelligent IT systems, although AI is a phenomenon without which specific industries and services would be unthinkable. Representatives of the employees are primarily associated with the fear of massive job cutbacks. The machine costs money only once and pays for itself, whereas labour costs are a significant, recurring expenditure for a company. The machine or the algorithm performs its work with precision and reliability that a human cannot achieve. Humans can thus be considered inferior to machines in a competitive situation.

Employers must proceed sensitively and gradually when introducing new systems. They should establish clear rules for handling the machines and specify relevant hierarchies. For example, the machine has only an assistive and not a replacing function, and the power to make decisions still lies with the human being as before and not vice-versa. Employees should be involved in the development and the process of change at an early stage to grow accustomed to the new technology.[27]

All over the world, employee organizations have realized that new challenges are in store for employees from all professional and social classes because of robotics and the computerization of the workplace. In the future, strategic thinking and permanent flexibility will increasingly be expected of employees. Employee representatives are unlikely to stand idly by given the upcoming innovations; they can be expected to demand a balance between eliminating old jobs and creating new ones.

Unions can be expected to pay particular attention to the fact that no "lost generation" is left behind and that change takes place gradually with sufficient options for further training, advanced training, and retraining. This will be difficult because employees must work longer before receiving their pensions. Instead of dismissing existing employees and hiring new employees for more creative jobs, the employee representatives might exert their influence to work towards specific retraining courses being made available.[28]

Instead of a machine-focused development, union representatives might strive for man-machine interaction instead of a machine-focused development. They might support the aim of improving the creation of value by employing humans and machines. This improvement results from lower production costs and better-educated employees. Trade unions emphasize, however, that humans must play the leading part within the processes.[29]

---

[27] "The new robots are coming – humans are staying," IG Metall Robotik-Fachtagung, accessed 2 September 2023, https://www.igmetall.de/politik-und-gesellschaft/zukunft-der-arbeit/industrie-40/die-neuen-roboter-kommen--der-mensch-bleibt.

[28] G. Wisskirchen et al. *Artificial Intelligence and Robotics and Their Impact on the Workplace*, (IBA Global, 2017), 41, https://www.ibanet.org/Article/NewDetail.aspx?ArticleUid=012a3473-007f-4519-827c-7da56d7e3509.

[29] *Ibid*, 42.

Furthermore, it is vital for employees to start exploiting the benefits of AI in their work. The advantage for employees is that they have to do less manual or hard work; autonomous systems can perform repetitive, monotonous work. The same applies to typical back-office activities in the service sector: algorithms will collect data automatically, transfer data from purchasers' to sellers' systems, and find solutions for clients' problems. Once an interface between the sellers' and purchasers' systems has been set up, employees are no longer required to enter data into an IT system manually.[30]

For many organizations, the biggest reason for not replacing manual labour with robots is purely economic. They will begin to ramp up their investment in automation when the cost of employing human labor rises high enough above the cost of owning and operating robotics systems to make human labor less cost-effective. At the same time, robotics systems are becoming an economically viable alternative to human labour in more and more industries.

A human welder today earns around $25 per hour (including benefits), while the equivalent operating cost per hour for a robot is around $8 when installation, maintenance, and the operating costs of all hardware, software, and peripherals are amortized over a five-year depreciation period. Therefore, as economic and technical barriers continue to fall, robots are becoming accessible to more companies. The production efficiencies will spread beyond individual factories through entire supply chains, industries, and national economies.[31]

The Ukrainian researcher, I. Onyshchuk believes that by using artificial intelligence, companies can significantly reduce their dependence on human labor, meaning fewer people will receive income. As a result, the individuals who own the companies where the AI does the work will receive all the profits.[32]

For example, wiring accessory manufacturer ABB Elektro-Praga needed to increase throughput at its factory in the Czech Republic. The company installed several of ABB's IRB 140 robots on a new assembly line linked to a vision system equipped with digital cameras. The vision system enables the robots to orient parts and place them at a cycle time of 2.3 seconds per electrical socket, for example. It takes only 10 minutes to adjust the system to pick and place parts for different products, which are often changed up to 30 times each week. As a result of the

[30] Jens-Uwe Meyer, "Will I soon be digitized away?" *Spiegel*, November 1, 2016, accessed 2 September 2023, https://www.spiegel.de/karriere/roboter-im-job-werde-ich-bald-wegdigitalisiert-a-1119061.html.

[31] M. Zinser, J. Rose, and H. Sirkin, "How Robots Will Redefine Competitiveness," *Boston Consulting Group*, September 23, 2015, accessed 21 May 2023, https://www.bcg.com/publications/2015/lean-manufacturing-innovation-robots-redefine-competitiveness.

[32] I. Onyshchuk, "Legal regulation of artificial intelligence technologies: theoretical, applied and ethical principles," *Scientific notes of the Institute of Legislation of the Verkhovna Rada of Ukraine*, 3, (2020):52, https://doi.org/10.32886/instzak.2020.03.06.

new system, ABB Elektro-Praga says that it has boosted the throughput of each shift by a factor of about nine. Only one worker is required to oversee the entire robotics assembly line.[33]

Robots and intelligent machines can have even lifesaving functions. Examples are robots used in medical diagnostics, which have high accuracy, or for assessing dangerous objects using remote control and integrated camera systems. These make it possible, for example, to defuse a bomb without a human having to come close to it. The 'Robo Gas Inspector' is an inspection robot equipped with remote gas sensing technology that can inspect technical facilities even in hard-to-reach areas without putting humans at risk, for example, to detect leaks in above-ground and underground gas pipelines.[34]

Furthermore, artificial intelligence shows potential to automate physical work in dangerous work environments. AI-enabled smart robots can perform a much wider range of tasks, including physically onerous tasks that less advanced technologies leave to human workers. Second, even when full automation may not be feasible, smart robots can work alongside operators to reduce the health consequences of physical efforts, repetitive movements, or awkward postures, which are key risk factors for musculoskeletal injuries. However, the same technologies may produce psychosocial risks if people are driven to work at the robot's pace, as well as physical risks due to potential collisions.[35]

Also, A. Saint-Martin, H. Inanc, and C. Prinz stated that many people are still exposed to risk factors for physical health at work, even though many tasks have been automated that formerly required hard physical labour.[36]

According to forecasts by Microsoft and The Future Laboratory, 65% of today's pupils and students will occupy positions that do not exist today. Among the potential 141 future professions are robotics lawyer, virtual environment designer, digital cultural commentator, biohacker, IoT data analyst, etc.[37]

Moreover, one-third of current jobs requiring a bachelor's degree can be performed by machines or intelligent software in the future. It must be noted in this regard, however, that no jobs will be lost abruptly. Instead, a gradual transition will take place, which has already commenced and differs from industry to industry and from company to company.[38]

---

[33] M. Zinser, J. Rose, and H. Sirkin, *op.cit.*

[34] G. Wisskirchen et al., *supra note*, 30: 15.

[35] M. Lane and A. Saint-Martin, *op. cit*., 25.

[36] A. Saint-Martin, H. Inanc, and C. Prinz, "Job Quality, Health and Productivity: An evidence-based framework for analysis," *OECD Social, Employment and Migration Working Papers* 221, (2018): 12, https://doi.org/10.1787/a8c84d91-en.

[37] R. Pells, "10 jobs graduates will be applying for from 2026," *Independent*, August 2016, accessed 27 May 2023, https://www.independent.co.uk/news/education/education-news/10-jobs-graduateswill-be-applying-for-from-2026-a7179316.html.

[38] G. Wisskirchen et al., *supra note*, 30: 14.

That is why ordinary people who may lose their jobs, which in the long run may lead to mass unemployment, feel the most distress due to using artificial intelligence in the labour market. However, the use of AI has not become more accessible for small businesses, and for some companies, the use of technology is not necessary given the specifics of their economic activity.

Although recent advances in the capabilities of ML systems are impressive, they are not equally suitable for all tasks. As machines automate some of the human tasks, the remaining non-automatable tasks may become more valuable.[39] For example, F. Levy and D. Remus believe that in legal contexts, AI can perform well in classification tasks, such as sorting large amounts of documents, but cannot replace lawyers in formulating legal strategies.[40] Therefore, artificial intelligence is unable to represent clients in court, but it can help lawyers prepare some legal documents or search for case law.

On the other hand, the growth of the use of robots, bots, and various applications can really not only reduce the amount of income but even replace a particular category of workers. Consequently, many worker functions will be automated over the years.

Similar conclusions are confirmed by statistical studies. For example, the McKinsey Global Institute projects that between 400 and 800 million workers worldwide could lose their jobs to robots and automation between now and 2030. At the same time, from 3 to 14% of the global workforce (75-375 million workers) will have to change their professions and undergo retraining.[41]

For example, Webb M. considers as most exposed to AI high-skilled occupations, including clinical lab technicians, optometrists, and chemical engineers; production jobs involving inspection and quality control. At the same time, he believes that the least exposed are high-skilled occupations requiring

— reasoning about novel situations (e.g., researchers),

— interpersonal skills (e.g., teachers and managers),

— and manual work such as baristas, food preparation workers, or massage therapists.[42]

In contrast, E. Felten, M.Raj, and Seamans R. emphasized white-collar occupations, such as chemical/civil/nuclear engineers, epidemiologists, actuaries, statisticians, credit analysts,

[39] E. Brynjolfsson, and T. Mitchell, "What Can Machine Learning Do? Workforce Implications," *Science*, (2017): 1531, https://doi.org/aap8062.

[40] D. Remus, and L. Frank, "Can Robots Be Lawyers? Computers, Lawyers, and the Practice of Law," *Georgetown Journal of Legal Ethics* 30, 3 (2017): 501, https://link.gale.com/apps/doc/A514460996/AONE?u=googlescholar&sid=googleScholar&xid=1570f4f3.

[41] J. Manyika et al., "Jobs lost, jobs gained: What the future of work will mean for jobs, skills, and wages," *McKinsey & Company*, November 28, 2017, accessed 12 February 2023, https://www.mckinsey.com/featured-insights/future-of-work/jobs-lost-jobs-gainedwhat-the-future-of-work-will-mean-for-jobs-skills-and-wages/.

[42] M. Webb, *supra note*, 4: 40.

accountants, computer programmers, operations research analysts, which are most exposed to AI, whereas physical occupations, including maids and cleaners, cafeteria attendants, dishwashers, hotel porters, slaughterers and meat packers, roofers and painters, massage therapists, fitness instructors are considered as the least exposed to AI.[43]

Mentioned researchers also attempt to identify the features that typify the occupations most exposed to AI. Webb M. points to AI's capabilities to perform non-routine tasks and particularly non-routine cognitive tasks. Felten et al. draw attention to AI's cognitive abilities that influence the acquisition and application of knowledge in problem-solving. Improvements in AI in relation to problem-solving, logical reasoning, and perception may explain why highly skilled technicians and engineers appear to be highly exposed to AI in the studies by Felten et al. and Webb.[44]

Demographic indicators and even gender can also be important for the impact of AI on the labor market. Webb finds that occupations requiring higher skills, judgment, and accumulated experience tend to be more exposed to AI, with the result that more educated workers and workers older than 30 are more exposed. In addition, he found out that male workers are more likely to be exposed to AI, which he attributes to female-dominated occupations tending to require more interpersonal skills and male-dominated occupations tending to require more technical skills.[45]

Therefore, such professions as receptionists and information clerks, notaries, retail salespersons, bank workers, and taxi drivers who are mainly engaged in routine work will be replaced by artificial intelligence. The International Labour Organization (ILO) notes that the risk of being affected by AI is very high among office workers – about 25% of tasks are under the influence of generative AI, and 58% are under medium influence. This applies to such professions as printers, travel consultants, scribes, information support staff, cashiers, and market surveyors.[46] At the same time, doctors, especially surgeons, specialists in work with mental disorders, coaches, artists, choreographers, lawyers, and judges, that is, those who are most involved in the social and creative spheres will not be replaced by AI in the next few years at least.

Studies conclude that the legal profession is at risk to a lower degree than other jobs in the financial sector because of the personal relationships with clients and the creativity needed to

[43] E. Felten et al., "The Occupational Impact of Artificial Intelligence on Labor: The Role of Complementary Skills and Technologies", *NYU Stern School of Business*, 19, 605 (2019): 14, http://dx.doi.org/10.2139/ssrn.3368605.
[44] M. Lane and A. Saint-Martin, *op. cit*., 24.
[45] *Ibid.*
[46] P. Gmyrek, J. Berg, and D. Bescond, *"Generative AI and jobs: A global analysis of potential effects on job quantity and quality,"* (Geneva, ILO), 23, https://doi.org/10.54394/FHEM8239.

draft new legislature and contract clauses.[47] However, an intelligent algorithm went through the European Court of Human Rights decisions and found patterns in the text. Having learned from these cases, the algorithm was able to predict the outcome of other cases with 79 percent accuracy.[48]

AI has the potential to transform our society and the way we work, just as innovations such as the computer and the internet have in recent decades. With its ability to analyze large amounts of data, perceive the world around it, and generate text, AI will be a valuable tool for some workers while displacing others. Although economists generally do not believe that AI will lead to the end of work, they do raise concerns about the impact of AI on wages and employment, the potential for AI to deepen inequalities, and whether the right kinds of AI are being developed and deployed.[49]

That is why companies all over the world should already prepare their employees for this, reorganize work processes, promote the development of technologies or retraining to prevent mass unemployment. However, Ernst et al. make the point that the decision to reorganize tasks will depend in part on workers' ability to adapt to the redesigned jobs.[50]

At the same time, for instance, AI startups suggest that most of their products require only general familiarity with computers within their client companies, claiming that the need for specialized computer skills or specific training among the workers who will use (and be complemented by) AI is modest.[51]

Although the impact of AI on the labor market is likely to be significant, most jobs and industries are only partially exposed to automation, and they are more likely to be complemented rather than substituted by AI.[52] As not all tasks within an occupation can be performed by AI, this suggests that the impact of AI will be to replace workers in certain tasks and lead to the transformation of occupations rather than their disappearance.[53]

---

[47] G. Wisskirchen et al., *supra note*, 30: 35.
[48] M. Boran, "Artificial Intelligence judges court cases with 79% accuracy," *The Irish Times*, October 27 2016, accessed 4 March 2023, www.irishtimes.com/business/technology/artificial-intelligence-judges-court-cases-with-79- accuracy-1.2842492.
[49] "OECD Employment Outlook 2023: Artificial Intelligence and the Labour Market," OECD iLibrary, accessed 18 October 2023, https://doi.org/10.1787/19991266.
[50] E. Ernst, R. Merola and D. Samaan, "The economics of artificial intelligence: Implications for the future of work," *IZA Journal of Labor Policy* 9, 1 (2019): 11, https://doi.org/10.2478/izajolp-2019-0004.
[51] J. Bessen, et al., "The Business of AI Startups," *Law and Economics Research Paper* 18, 28, (2018):42, http://dx.doi.org/10.2139/ssrn.3293275.
[52] P. Gmyrek, J. Berg, and D. Bescond, *op. cit*., 44.
[53] M. Lane and A. Saint-Martin, *supra note*, 2: 25.

Workers in the transformed occupations will thus be predominantly complemented by AI.[54] The affected employees could be transferred to other positions within the company. For example, they might perform distribution, IT, and creative research tasks.[55] Thus, AI technologies help simplify tasks but do not exclude a person from the work process.

At the same time, there are opposing opinions among scientists who support giving AI the status of a labor market entity. For example, N. Azmuk believes that artificial intelligence is already capable of self-learning today, that is, it can perform complex tasks and make non-standard decisions. This allows consideration of the possibility of transforming artificial intelligence from an object of the labor market into a subject, since in certain areas of activity, it can not only completely replace the employee but also interact with other subjects of the labor market, influence the process of production or provision services and improve it.[56]

**To sum up**, artificial intelligence is a technology that was designed to perform different tasks. However, there is no clear definition of AI in science circles or even in legal documents. In addition, there are two types of artificial intelligence: narrow and strong. They differ in abilities and purpose, but both are equally important for the further development of social relations, in particular in the labour market.

The current level of AI development cannot let it become an independent subject of the labor market. Therefore, artificial intelligence is an object of labour relations that can help, and complement work processes but cannot fully replace employees as humans with emotional intelligence. At the same time, there are several tendentions of automatization of manufacturing and some types of routine work, therefore, governments, employers, and ordinary workers have to prepare for that and learn how to use AI beneficially for the well-being of the whole society.

### 1.2 Pros and cons of using artificial intelligence in the labour market

Today, there is much controversy about what impact the use of artificial intelligence will have on the functioning of companies in the market and the level of employment of the population. Given this, it is appropriate to present arguments both in favor and against the introduction of AI in the modern labor market.

Artificial intelligence algorithms can indeed optimize the process of performing repetitive and labor-intensive operations, but when it comes to implementing functions related to

[54] F. Fossen, and A. Sorgner, "New Digital Technologies and Heterogeneous Employment and Wage Dynamics in the United States: Evidence from Individual-Level Data," *IZA Discussion Paper Series* 12242, (2019): 8. https://doi.org/10.1016/j.techfore.2021.121381.
[55] G. Wisskirchen et al., *supra note*, 30: 32.
[56] Azmuk, N. "Employment and work motivation in the information economy: transformation and relationship," *Problems of the economy* 4 (2017): 378.

communication and the social component, does AI always work effectively? As practice shows, even smart technologies can make mistakes.

For instance, in 2015, Amazon launched the Amazon Flex application, where artificial intelligence algorithms are used to monitor the delivery of orders from the warehouse. However, as the former workers of this company stated, this application is not adapted to real working conditions, as it does not consider various life situations that may not be the fault of the drivers who delivered the goods and who were wrongly fired because of it.[57] Such cases harm both the company's reputation and its employees directly.

In addition, Amazon had another incident related to implementing discriminatory AI algorithms. The company tried using artificial intelligence for recruiting, but the tool favored hiring male candidates. Due to such bias in the system, Amazon abandoned it to prevent discrimination based on gender.[58] This case is one of the indicators and has gained wide publicity because the use of AI must be ethical and not harm the public interest.

AI receives prejudices from those who create it. Scientists promise to teach systems to solve such problems. However, the learning process itself may depend on the racial, gender, political, or other prejudices of the developers. Therefore, not only the implementation but also the process of creating and developing innovations must be controlled by the relevant security authorities.[59]

In general, the issue of ensuring gender equality in the context of the development of artificial intelligence is quite sensitive. The study by the International Labor Organization showed that through AI, about 21 million jobs held by women could be automated. The study's findings suggest that the impacts of automation vary greatly by gender, with women potentially affected twice as much as men. 7.8% of jobs held by women are potentially susceptible to automation in high-income countries. According to preliminary estimates, we are talking about 21 million jobs. For men, this is 2.9% or about 9 million jobs.[60]

In addition, in examining the impact of automation on the future employment of women, Brussevich M., Dabla-Norris E., and Khalid S. found that clerical and service workers are, on

[57] S. Soper, "Fired by Bot at Amazon: «It's You Against the Machine»," *Bloomberg*, June 28, 2021, accessed 12 September 2023, https://www.bloomberg.com/news/features/2021-06-28/fired-by-bot-amazon-turns-to-machine-managers-and-workers-are-losing-out.

[58] J. Dastin, "Amazon scraps secret AI recruiting tool that showed bias against women," *Reuters*, October 11, 2018, accesed 5 September 2023, https://www.reuters.com/article/us-amazoncom-jobs-automation-insight-idUSKCN1MK08G.

[59] O. Yara et al., "Legal Regulation of the Use of Artificial Intelligence: Problems and Development Prospects," *European Journal of Sustainable Development* 10, 1 (2021): 286-287, https://doi.org/10.14207/ejsd.2021.v10n1p281.

[60] P. Gmyrek, J. Berg, and D. Bescond, *op. cit*., 34.

average, most at risk of automation and that women in these positions are even more vulnerable to the introduction of artificial intelligence than men.[61]

Moreover, in an official Opinion on artificial intelligence, the European Economic and Social Committee recently observed: "The development of AI is currently taking place within a homogenous environment principally consisting of young, white men, with the result that (whether intentionally or unintentionally) cultural and gender disparities are being embedded in AI, among other things because AI systems learn from training data." The Committee warned against the misconception that data is by definition objective. Data, instead, "is easy to manipulate, may be biased, may reflect cultural, gender and other prejudices and preferences and may contain errors."[62]

The above-mentioned allows us to conclude that the replacement of female workers by robots or other technologies may lead to a decrease in the level of representation of women in various sectors of public life, which is unacceptable because of the requirements of non-discrimination and inexpedient given of the long-term struggle against gender stereotypes.

It is worth adding that artificial intelligence poses a particular threat to labour markets in developed countries, as the state of technological development in them is much higher compared to others, which can lead to the faster replacement of a number of professionals by artificial intelligence, in the industry, in particular. Higher wages are pushing companies in advanced economies to use robotics more, especially when workers are easily replaceable by robots.[63]

As for the developing countries and middle-class workers, in 2016, the Guardian published opinions of Stephen Hawking, a famous physicist who, among other things, noted that automation of factories has already decimated jobs in traditional manufacturing and the rise of artificial intelligence is likely to extend this job destruction deep into the middle classes, with only the most caring, creative or supervisory roles remaining.[64]

Low-skilled and older workers have poorer access to new technologies, curtailing their access to new forms of workplace flexibility.[65] Lower-skilled, lower-paid workers will suffer from relative income underperformance. Nevertheless, middle-income workers who face

---

[61] M. Brussevich, E. Dabla-Norris, and S. Khalid, *supra note*, 5:19.

[62] "European Economic and Social Committee, Artificial intelligence – The consequences of artificial intelligence on the (digital) single market, production, consumption, employment and society (own-initiative opinion)," EUR-Lex, accessed 4 February 2023, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52016IE5369.

[63] C. Alonso, S. Kothari, and S. Rehman, "How Artificial Intelligence Could Widen the Gap Between Rich and Poor Nations," *IMF Blog*, December 2, 2020, accessed 10 February 2023, https://www.imf.org/en/Blogs/Articles/2020/12/02/blog-how-artificial-intelligence-could-widen-the-gap-between-rich-and-poor-nations.

[64] S. Hawking, "This is the most dangerous time for our planet," *The Guardian*, December 1 2016, accessed 15 February 2023, https://www.theguardian.com/commentisfree/2016/dec/01/stephen-hawking-dangerous-time-planet-inequality.

[65] A. Saint-Martin, H. Inanc, and C. Prinz, *op. cit.*, 8.

declining barriers to entry due to extreme automation or who lack the flexibility to be able to change their skills to meet the requirements of extreme connectivity could face a decline in relative standard of living. The resulting increase in inequality risks slowing the progress of extreme automation and connectivity. A threatened middle class may press for restrictive or repressive policies in a futile attempt to hold back the tide of technological change.[66]

At the same time, labor markets in developing countries may suffer the most from replacing workers with algorithms where the automation of production processes will require it since workers often perform work that is not highly paid and does not require high skills. The relative cheapness of their labor, which allows saving "human" jobs, may yield to artificial intelligence, which promises to make production processes even more profitable for companies.

Mere physical strength will be needed less and less. The trend can be seen that high-labour-cost countries will rise even more. Their dependence on cheaper workers from abroad will also continue to decline. This will, in turn. result in an oversupply of cheap workers in the relevant low-labour-cost countries.[67]

Low-labour-cost countries, such as China, India, and Bangladesh, still benefit from their surplus of low-skilled workers, while Western companies are still outsourcing their production to these countries. If, however, these companies decide to produce in their countries of origin in the future, using production robots and only a few workers, the surplus of low-skilled workers might turn into a curse for these developing countries.[68]

However, at the same time, it is impossible to deny the benefits and positive aspects of the introduction of artificial intelligence in the labour market. According to Stetsyuk K., this is already a must-have and not an advantage for many areas since various AI algorithms, chatbots nowadays respond much faster to customer requests, which increases the quality of the service because users will choose the company that supports them they do not transfer from one specialist to another, but immediately give an answer to the question.[69] The speed of response and information processing is an undeniable advantage of algorithms.

Also, as stated in the previous subchapter, economic reasons matter. Analysts from one of the largest investment banks in the world, Goldman Sachs, confirm that generative AI can automate nearly 300 million jobs, but they do not say that this negative trend, as a result of automation, will cause global GDP to grow by 7% over the next 10 years. The combination of

---

[66] B. Baweja et al., *Extreme automation and connectivity: The global, regional, and investment implications of the Fourth Industrial Revolution*, (World Economic Forum, 2016), 22, https://www.ip-watch.org/weblog/wp-content/uploads/2017/09/ubs-vierte-industrielle-revolution-2016-01-21.pdf.

[67] G. Wisskirchen et al., *supra note*, 30: 37.

[68] B. Baweja et al., *op. cit.*, 24.

[69] K. Stetsyuk, "Why managers need to use AI at work now," *Projector Mag*, accessed 18 October 2022, https://prjctrmag.com/ai-for-managers.

significant labour cost savings, new job creation, and higher productivity for non-displaced workers raises the possibility of a productivity boom that raises economic growth substantially.[70]

Many workers who are displaced by AI automation will eventually become reemployed and therefore boost total output — in new occupations that emerge either directly from AI adoption or in response to the higher level of aggregate and labour demand generated by the productivity boost from non-displaced workers. Both of these channels have plenty of historical precedent. For example, information technology innovations introduced new occupations like web page designers, software developers, and digital marketing professionals but also increased aggregate income and indirectly drove demand for service sector workers in industries like health care, education, and food services.[71]

Agrawal et al. note that AI is expected to increase productivity not only by enabling firms to replace labour with cheaper capital but also by complementing workers. While many talk about the impact of AI on labour in terms of potential substitution, complementarity, and demand expansion, very few companies say that they are building unambiguously labour-replacing technologies.[72]

For instance, Davenport, T. and R. Kalakota also believe that AI systems will not replace human clinicians on a large scale but rather will augment their efforts to care for patients. Over time, human clinicians may move toward tasks and job designs that draw on uniquely human skills like empathy, persuasion, and big-picture integration. Perhaps the only healthcare providers who will lose their jobs over time may be those who refuse to work alongside artificial intelligence.[73]

Also, according to an Edelman AI survey of both tech executives and the general population, two-thirds of tech executives surveyed believed AI could increase employment. A minority within the general population surveyed agreed, although a majority agreed that AI could increase employment in the long term.[74]

Moreover, AI skills do appear to attract a pay premium. One analysis suggests that postings demanding AI skills offer, on average, 11% higher salary than job postings with no such

[70] "The Potentially Large Effects of Artificial Intelligence on Economic Growth", Goldman Sachs Economic Research, accessed 10 August 2023, https://www.key4biz.it/wp-content/uploads/2023/03/Global-Economics-Analyst_-The-Potentially-Large-Effects-of-Artificial-Intelligence-on-Economic-Growth-Briggs_Kodnani.pdf.
[71] *Ibid.*
[72] A. Agrawal, J. Gans and A. Goldfarb, *op. cit.,* 34.
[73] T. Davenport and R. Kalakota, "The potential for artificial intelligence in healthcare," *Future Healthcare Journal* 6, 2 (2019): 97-98, http://dx.doi.org/10.7861/futurehosp.6-2-94.
[74] Edelman, *2019 Edelman AI Survey*, USA, 2019, accessed 14 August 2023, https://www.edelman.com/sites/g/files/aatuss191/files/2019-03/2019_Edelman_AI_Survey_Whitepaper.pdf.

demands (and compared to a 6% premium for software skills), even when controlling for unobserved firm characteristics.[75]

AI can also help companies improve product or service quality. At the same time, workers may benefit through improvements in job quality, worker well-being, and job satisfaction. Indeed, AI can potentially eliminate dangerous or tedious tasks and create more complex and interesting ones instead. It can boost worker engagement, give workers greater autonomy, and improve their mental health. Some workers may also benefit from higher wages.[76]

Another strong argument against a high level of threats is that artificial intelligence is still dependent on humans. Machine learning specialists, AI instructors, and its creators are the ones who introduce innovations that develop the potential of artificial intelligence. It follows that the effective use of technology requires people to manage it with skills and abilities that machines cannot.

The constant development of technologies and the emergence of innovative approaches to solving existing problems require the involvement of a significant amount of labour resources in the following directions: technology maintenance and repair in the field of AI; robotics development and learning; ensuring information security; protection of personal data; introduction of AI at enterprises; automation data analytics; control over the observance of human rights and overseeing the ethical use of AI.

The listed directions can be prioritized today. However, the appearance of new ones or a change in the most necessary ones is not excluded in the future. Consequently, there will be a growing need for entirely new specialists and, therefore, new job positions.

However, some professions are unlikely to be replaced by artificial intelligence in the near future. Creativity, management skills, leadership, and social interaction do not require the use of technology. Moreover, creativity is unattainable for artificial intelligence, at least for now.

Creative labour involves the use of human potential to create new forms of products and services. Any type of economic activity involves one or another degree of creativity. Artificial intelligence helps the worker, not replaces him in the work process. An example of this is using augmented reality in work by designers, architects, scientists, engineers, and doctors. Augmented reality technologies improve the interaction of the worker with the machine, facilitate the perception of information, and increase the speed of its processing by a person.[77]

---

[75] L. Alekseeva, et al., "The Demand for AI Skills in the Labour Market," *Labour Economics, Forthcoming* (2019): 19, http://dx.doi.org/10.2139/ssrn.3470610.
[76] "OECD Employment Outlook 2023: Artificial Intelligence and the Labour Market," *op. cit.*
[77] N. Azmuk, *supra note*, 3: 138.

In the process of creative work, artificial intelligence should be considered on two levels: first, artificial intelligence can be integrated into work tools, technologies, and organizations. In this case, the worker interacts with artificial intelligence as an object of work; secondly, at the appropriate level of development of science and technology, artificial intelligence can be implanted in an employee. Then, artificial intelligence becomes part of the subject of work. Implantation of chips into a person can be considered the first attempt in this direction. However, it should be noted that modern chips are not artificial intelligence.[78]

Since no routine is involved, intelligent software can hardly perform creative professions. The same applies to the socio-scientific communicative sector or professions with an emotional component. Communication with other people will always come directly from people.[79]

An example of social interaction importance is Alibaba's AI-powered chatbot, designed to help field customer queries. This chatbot was "trained" by experienced representatives of Taobao merchants. The ability to handle routine queries via a chatbot is very useful, especially on days of high volume or special promotions, but there will always be a need for human customer representatives to deal with complicated or personal issues.[80]

Thus, human abilities are more expansive. Contrary to AI abilities that are only responsive to the data available, humans have the ability to imagine, anticipate, feel, and judge changing situations, which allows them to shift from short-term to long-term concerns. These abilities are unique to humans and do not require a steady flow of externally provided data to work as is the case with artificial intelligence.[81]

Workers may need to re-skill or up-skill to adapt to the reorganization of tasks and the emergence of new tasks, weather potential job loss, and navigate transitions to new jobs. Some may acquire AI-related skills to take advantage of opportunities in AI development and deployment. However, not all jobs where AI is complementary to human labour will require specialized AI skills. Some of these jobs will require skills in areas that AI cannot do so well, such as creative and social intelligence, reasoning skills, and critical thinking.[82]

So, it is true that knowledge in mathematics and sciences is a must-have for the new labour market. However, not every future employee will be an IT programmer, but still required to have basic digital skills. In addition, creativity and flexibility are becoming increasingly

[78] *Ibid.*
[79] G. Wisskirchen et al., *supra note*, 30: 34.
[80] M. Zeng, "Alibaba and the Future of Business," *Harvard Business Review*, 2018, accessed 18 August 2023, https://hbr.org/2018/09/alibaba-and-the-future-of-business.
[81] D. De Cremer and G. Kasparov, "AI Should Augment Human Intelligence, Not Replace It," *Harvard Business Review*, March 18, 2021, accessed 14 August 2023, https://hbr.org/2021/03/ai-should-augment-human-intelligence-not-replace-it.
[82] M. Lane and A. Saint-Martin, *supra note*, 2: 35.

important. In the future, creative and critical thinking, as well as active listening will be the most essential requirements for every job position.

Nevertheless, there are some risks even for the creative sphere. Netflix created an experimental short anime and used AI-generated art in response to labour shortages in the anime industry. These actions received much criticism, as many artists see the tools as unethical due to being trained on masses of human-made art scraped from the internet and cudgels to further cut costs and devalue workers. Netflix Japan's claim that AI was used to fill a supposed labour gap hit the bullseye on these widespread concerns.[83]

Therefore, given the threats of algorithmization, it is crucial to support the creative and social components of such professions methodically. As Azmuk N. notes, the main directions of strengthening the employee's position in the labor market are forming a favorable environment for developing a person's creative potential and implementing the concept of lifelong learning.[84]

**To conclude**, using artificial intelligence in the labour market has advantages and certain drawbacks. Today, artificial intelligence plays the role of a human-dependent labour market object capable of increasing the productivity level of a specific population category, reducing their workload in some routine tasks, and contributing to the economic growth of companies.

However, AI is causing job losses, especially among less skilled workers. Also, with the development of technology, threats are created to reduce the level of employment among women and workers in low-labor-cost countries. Therefore, employees, employers, and trade unions should now think about what they need to change and improve in their activities to prevent mass unemployment.

At the same time, the loss of some jobs will be compensated by the emergence of new professions, therefore, although routine tasks will fall under the control of AI, human creativity and social skills will remain valuable in the labor market worldwide.

The modern digital economy requires creative solutions, an understanding of human needs, and, therefore, a high level of empathy. These qualities are characteristic of people, not artificial intelligence, so they cannot be automated. That is why it is necessary to stimulate their development but simultaneously apply AI in specific work processes to have a resource to stimulate creativity and social interaction.

[83] S. Cole, "Netflix Made an Anime Using AI Due to a 'Labor Shortage,' and Fans Are Pissed," *VICE*, February 1, 2023, accessed 20 August 2023, https://www.vice.com/en/article/bvmqkv/netflix-anime-dog-and-the-boy-ai-generated-art.
[84] N. Azmuk, *supra note*, 3: 137.

## 2. LEGAL PERSONALITY OF ARTIFICIAL INTELLIGENCE IN THE EUROPEAN UNION LABOUR MARKET

### 2.1 The regulation of artificial intelligence in the European Union

All the Member States of the EU are trying to regulate artificial intelligence to determine its impact on social relationships, mainly, on the labour market. According to the World Economic Forum's Future of Jobs Report, they anticipate AI would likely take away 85 million jobs globally by 2025. It would also generate 97 million new jobs in fields ranging from big data and machine learning to information security and digital marketing.[85]

Carriers of intellectual, innovative work become a global resource that goes beyond the borders of the national labour market. Thanks to this, business structures got the opportunity to attract talent from all over the world. The largest consumers of online services are the USA, Australia, Great Britain, Canada, the UAE, Singapore, Israel, Germany, the Netherlands, and New Zealand. The donor countries of such services are the USA, India, Ukraine, Pakistan, Great Britain, Russia, the Philippines, Romania, and China. Consequently, labour resources are redistributed in the virtual digital space.[86]

That is why the EU aims to balance the transforming power of AI, market needs, and respect for fundamental human rights. Thus, at the meeting of the G7 countries in Hiroshima, the leaders pledged to promote international discussions on the governance of artificial intelligence to achieve the common vision and goal of trustworthy AI.[87] Thus, every member state of the EU concerns about the risk of human replacement by artificial intelligence.

For example, the IMF believes such risks are maximal in Japan, Slovakia, Singapore, and Estonia, high in Southeast Europe, and minimum in Scandinavia and Central Europe. This vision is explained by what dominates the GDP: industry or the service sector, the degree of technology penetration, and how flexible the labour market is.

The Organization for Economic Cooperation and Development (OECD) is of roughly the same opinion. Its experts are convinced that jobs are under more significant threat in Eastern and

[85] A. Russo, "Recession and Automation Changes Our Future of Work, But There are Jobs Coming, Report Says," *World Economic Forum*, October 20, 2020, accessed 7 May 2023, https://www.weforum.org/press/2020/10/recession-and-automation-changes-our-future-of-work-but-there-are-jobs-coming-report-says-52c5162fce/.

[86] N. Azmuk, "Strategic directions of balancing the development of the national labor market and the digital economy," (doctoral dissertation, Institute of Industrial Economics, 2020), 174, https://iie.org.ua/wp-content/uploads/2020/08/dysertatsiia_azmuk-n.a._compressed.pdf.

[87] J. Aldane, "G7 leaders 'take stock' of AI amid calls for shared governance standards," *Global Government Forum*, May 25, 2023, accessed 10 May 2023, https://www.globalgovernmentforum.com/g7-leaders-take-stock-of-ai-amid-calls-for-shared-governance-standards/.

Southern European countries, as well as in Germany, Chile, and Japan. Residents of the Anglo-Saxon, Scandinavian countries, and the Netherlands should worry much less.[88]

However, in Italy, for instance, only one-half of 1 percent of tasks has been automated in the chemical and primary-metals industries, though around 14 to 16 percent could be automated today. Adoptions rates have also remained surprisingly low in industries that long have been at the forefront of automation.[89]

To ensure the safety of European society and its values fixed by the EU Treaties, the European Union presented several legal documents and is still working on some other acts, which will be analysed in that chapter. First of all, it should be noted that there is generally a high level of protection for employees in Europe because both employee representative bodies and labour authorities must be informed and consulted in advance: Directive 2002/14/EC establishing a general framework for informing and consulting employees in the European Community lays down minimum procedural standards.[90]

In case of mass replacement of humans with artificial intelligence, it is also likely to be possible to refer to the provisions of Council Directive 75/129/EEC on collective redundancies, as amended by Council Directives 92/56/EEC and 98/59/EC, requires employers to enter into negotiations with workers in the event of mass redundancy.[91]

In general, the European Union is one of the leaders in the legal support field for using AI. On 16 February 2017, the European Parliament adopted Resolution 2015/2103 (INL) on Civil Law Rules on robotics with recommendations for the European Commission, which highlights legal issues related to the development and use of robotics and artificial intelligence, foreseen in the next 10-15 years. Although the resolution is not a binding act, it contains guidelines that the legislator will follow in the future when developing mandatory standards. It emphasized the impossibility of holding artificial intelligence accountable for actions that caused harm to third parties.

The Resolution also calls on the Commission to propose standard Union definitions of cyber-physical systems, autonomous systems, intelligent autonomous robots, and their subcategories by taking into consideration the following characteristics of an intelligent robot:

---

[88] E. Sorokin, "Artificial intelligence will change (and is already changing) the labor market," *Zaborona*, January 12, 2022, accessed 10 May 2023, https://zaborona.com/shtuchnyj-intelekt-zminyt-i-uzhe-zminyuye-rynok-praczi/.

[89] M. Zinser, J. Rose, and H. Sirkin, *op.cit.*

[90] "Directive 2002/14/EC of the European Parliament and of the Council of 11 March 2002 establishing a general framework for informing and consulting employees in the European Community," EUR-Lex, accessed 28 May 2023, https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1529936472853&uri=CELEX:32002L0014.

[91] "Council Directive 98/59/EC of 20 July 1998 on the approximation of the laws of the Member States relating to collective redundancies," EUR-Lex, accessed 30 May 2023, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31998L0059&qid=1529936120445.

— the acquisition of autonomy through sensors and/or by exchanging data with its environment (inter-connectivity) and the trading and analysing of those data;

— self-learning from experience and by interaction (optional criterion);

— at least a minor physical support;

— the adaptation of its behaviour and actions to the environment;

— the absence of life in the biological sense.[92]

Therefore, this resolution was an attempt by the European Parliament to regulate the rapidly growing new market of robots and artificial intelligence, and to strike a balance between human rights without hindering the development of innovation.

European Union's attempt to regulate the artificial intelligence issue has resulted in some significant documents: the High Level Expert Group (HLEG) on AI's Ethics Guidelines for Trustworthy AI[93] and their Policy and Investment Recommendations[94], and the European Commission's White Paper on artificial intelligence.[95]

On 8 April 2019, the High-Level Expert Group on AI presented Ethics Guidelines for Trustworthy Artificial Intelligence. According to the Guidelines, trustworthy AI should be:

— lawful - respecting all applicable laws and regulations;

— ethical - respecting ethical principles and values;

— robust - from a technical perspective while considering its social environment.

The Guidelines put forward a set of 7 essential requirements that AI systems should meet to be deemed trustworthy. A specific assessment list aims to help verify the application of each key requirement:

1. Human agency and oversight.
2. Technical Robustness and safety.
3. Privacy and data governance.
4. Transparency.
5. Diversity, non-discrimination and fairness.
6. Societal and environmental well-being.
7. Accountability.[96]

---

[92] "European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL))," *op.cit.*

[93] "Ethics guidelines for trustworthy AI," European Commission, accessed 12 June 2023, https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai.

[94] "Policy and investment recommendations for trustworthy Artificial Intelligence," European Commission, accessed 13 June 2023, https://digital-strategy.ec.europa.eu/en/library/policy-and-investment-recommendations-trustworthy-artificial-intelligence.

[95] "White Paper on Artificial Intelligence: a European approach to excellence and trust," European Commission, accessed 12 June 2023, https://commission.europa.eu/publications/white-paper-artificial-intelligence-european-approach-excellence-and-trust_en.

[96] "Ethics guidelines for trustworthy AI," *op.cit.*

The EU approach settled in these Guidelines also impacted many companies. Mozilla, for example, adopted the term midway through 2019[97], and now uses it as an umbrella term for its work on artificial intelligence. Deloitte has put forward its own Trustworthy AI Framework, which aims to help businesses increase brand equity and trust, which can lead to new customers, employee retention, and more customers opting in to share data.[98]

In July 2019, Vodafone also launched its Artificial Intelligence Framework[99], which is based on the idea of Trustworthy AI and aims to promote transparency and accountability, ethics and fairness, privacy and security; human rights, diversity, and inclusion, and ensure an equitable transition to AI and contribute to building an inclusive digital society.

Furthermore, EU officials are now trying to shape a voluntary AI pact to see companies like Microsoft, Google, and Open AI agree to non-binding principles around transparency and accountability — as a stopgap solution for the rapidly developing technology.[100]

Policy and investment recommendations for trustworthy Artificial Intelligence prepared by HLEG follow the publication of the group's first deliverable, Ethics Guidelines for Trustworthy AI. These recommendations promote a human-centric approach to AI at work. They proposed possible measures to ensure that digital technologies do not negatively disrupt the workplace, and adequate social protection, collective representation, and training are offered to European workers:

1. Promote the research, development, and deployment of human-centric AI systems in work contexts without stifling socially beneficial innovation.
2. Encourage automation of dangerous tasks when humans are at risk to ensure safe working conditions.
3. Apply a process of representation, consultation, and, where possible, co-creation, where workers are involved in the discussion around AI production, deployment, or procurement process.
4. Map value chains in Europe and engage in horizon scanning to gain an understanding of which skills will become less relevant, and which ones will be more in demand or at risk of shortage.

---

[97] "Mozilla's Approach to Trustworthy Artificial Intelligence (AI)," Mozilla, accessed 15 June 2023, https://foundation.mozilla.org/en/blog/mozillas-approach-to-trustworthy-artificial-intelligence-ai/.

[98] "Deloitte Introduces Trustworthy AI Framework to Guide Organizations in Ethical Application of Technology in the Age of With," Deloitte, accessed 15 June 2023, https://www2.deloitte.com/us/en/pages/about-deloitte/articles/press-releases/deloitte-introduces-trustworthy-ai-framework.html.

[99] "Vodafone launches Artificial Intelligence framework," Vodafone, accessed 15 June 2023, https://www.vodafone.com/perspectives/blog/vodafone-launches-artificial-intelligence-framework.

[100] G. Volpicelli, Europe pitches 'AI Pact' to curtail the booming tech's risks, *Politico*, accessed 16 June 2023, https://www.politico.eu/article/big-tech-rumble-europe-global-artificial-intelligence-debate-ai-pact/.

5. Establish a full-fledged European transition fund to help manage the AI transformation socially responsibly.[101]

White Paper on artificial intelligence published by the European Commission on February 19, 2020, summarised the European approach to understanding the purpose of artificial intelligence. The white paper emphasises that the development of the AI ecosystem should bring benefits on several levels:

— *for citizens* to reap new benefits, for example, improved health care, fewer breakdowns of household machinery, safer and cleaner transport systems, and better public services;
— *for business* development, for example, a new generation of products and services in areas where Europe is powerful (machinery, transport, cybersecurity, farming, the green and circular economy, healthcare and high-value-added sectors like fashion and tourism);
— *for services of public interest*, for example by reducing the costs of providing services (transport, education, energy and waste management), by improving the sustainability of products and by equipping law enforcement authorities with appropriate tools to ensure the security of citizens, with proper safeguards to respect their rights and freedoms.[102]

In addition, the Europe Digital Decade was presented in 2020. The strategy consists of 4 main directions: digital skills, digital transformation of business, safe and sustainable digital infrastructure, and digitisation of public services.

The strategy suggests that by 2030, 80% of European citizens should have at least a basic level of digital skills, that is, carry out at least one activity using digital means. Such activities may be related to the following areas: information, communication and collaboration, content creation, security and personal data, and problem-solving. This will happen through a structured dialogue with Member States on digital education and skills, the development of joint recommendations by the European Commission for teachers and educators to promote digital literacy and recognise misinformation through education and learning, and the development of ethical guidelines on the use of AI and data in learning and teaching for educators and the introduction of the European Digital Skills Certificate.[103]

It also seems appropriate to mention the Digital Services Act (DSA).[104] The DSA applied directly in the EU and came into force on 25 August 2023. One of its goals is to reduce systemic

[101] "Policy and investment recommendations for trustworthy Artificial Intelligence," *op.cit.*
[102] "White Paper on Artificial Intelligence: a European approach to excellence and trust," *op.cit.*
[103] "Implementation of the Digital Decade objectives and the Digital Rights and Principles - Digital Decade report 2023," European Commission, accessed 12 June 2023, https://digital-strategy.ec.europa.eu/en/library/implementation-digital-decade-objectives-and-digital-rights-and-principles-digital-decade-report.
[104] "The Digital Services Act," European Commission, accessed 14 July 2023, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/digital-services-act-ensuring-safe-and-accountable-online-environment_en.

risks and misinformation. It also contains requirements for the transparency of algorithms. For example, blocking must be carried out using transparent algorithms, and users can appeal such actions in court. In turn, it will reduce the possibility of manipulating users and their online activities. As a result, it will reduce disinformation campaigns that use AI to achieve their goals since such activities will be more controlled.

Denise Wagner, Advisor to the Office of the OSCE Representative on Freedom of the Media, also noted that artificial intelligence tools, especially recommendation systems and targeted advertising, are the main means of spreading disinformation online. She added that one of the areas that should receive attention from a regulatory perspective is the spread and technique of spreading disinformation. Certain content should be restricted or removed.

An indicative situation is when the mayors of Berlin, Vienna, Madrid, Budapest and Warsaw held a call with a generated version of Vitali Klitschko – mayor of Kyiv. The attackers created a virtual double of the mayor of Kyiv using deepfake technology, and before that, they independently arranged a call. The mayor of Berlin, Franziska Giffay, disconnected the conversation because, due to the mayor's strange requests, she suspected that something was wrong with him. But Michael Ludwig, the burgomaster of the Austrian capital, did not understand that it was not the real Klitschko who was talking to him.[105]

Regarding other important acts of AI regulation in Europe, we should highlight Recommendation CM/Rec (2020) 1 of the Committee of Ministers of the Council of Europe to member states regarding the impact of algorithmic systems on human rights, which was adopted on April 8, 2020, and defines the main areas of human rights protection in connection with the introduction of algorithmic systems. The recommendation does not directly name an artificial element. Still, it defines algorithmic systems, characterising them as those built on the processes of mathematical optimisation, sorting, classification and output of data with the ability of algorithmic systems to automate their activities, in the process of which adaptive services are created in real-time.[106]

However, soon, the most important document for the regulation of AI would be the Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act or AI Act) – a draft law, the purpose of which is to achieve the following objectives:

[105] O. Petriv, "Disinformation and artificial intelligence: an (in)visible threat to modernity," *CEDEM*, August 23, 2023, accessed 5 October 2023, https://cedem.org.ua/analytics/dezinformatsiya-shtuchnyi-intelekt/.
[106] "Recommendation CM/Rec (2020) 1 of the Committee of Ministers to member States on the human rights impacts of algorithmic systems," Council of Europe, accessed 26 July 2023, https://search.coe.int/cm/pages/result_details.aspx?objectid=09000016809e1154.

— ensure that AI systems placed on the Union market and used are safe and respect existing laws on fundamental rights and Union values;
— ensure legal certainty to facilitate investment and innovation in AI;
— enhance governance and effective enforcement of existing law on fundamental rights and safety requirements applicable to AI systems;
— facilitate the development of a single market for lawful, safe, and trustworthy AI applications and prevent market fragmentation.[107]

The AI Act is currently under discussion and proposal for changes. On December 6, 2022, the EU Council adopted a common position on the AI Act. This made it possible to move on to negotiations with the European Parliament after it accepted its position. Once the EU Council and the European Parliament adopt a common text version, it can become a law.

Deputies have now submitted proposals for the AI Act (for example, that chatbots should inform users that they are not humans). According to European Parliament member Brando Benifey, parliamentarians want more transparency. Now that Parliament has agreed on its position, member states, the European Commission, and MEPs will work together to draft a final bill to pass before the end of the current term of the European Parliament in 2024.[108]

According to the Recital 3-4 of the AI Act, artificial intelligence is a fast-evolving family of technologies that can contribute to a wide array of economic and societal benefits across the entire spectrum of industries and social activities. By improving prediction, optimising operations, and resource allocation, and personalising digital solutions available for individuals and organisations, the use of artificial intelligence can provide key competitive advantages to companies and support socially and environmentally beneficial outcomes, for example, in healthcare, farming, education and training, infrastructure management, energy, transport and logistics, public services, security, justice, resource and energy efficiency, and climate change mitigation and adaptation.

At the same time, depending on the circumstances regarding its specific application and use, artificial intelligence may generate risks and cause harm to public interests and rights protected by Union law.[109]

According to the Recital 6 of the AI Act, the Artificial Intelligence Act should ensure legal certainty while providing the flexibility to accommodate future technological

[107] "Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts," EUR-Lex, accessed 30 July 2023, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52021PC0206.
[108] O. Petriv, "Artificial Intelligence and the Artificial Intelligence Act: Time for a Legal Framework," *CEDEM*, June 7, 2023, accessed 4 October 2023, https://cedem.org.ua/analytics/artificial-intelligence-act/.
[109] "Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts," *op.cit.*

developments.[110] It can be concluded that harmonised rules on artificial intelligence set in this law will help to avoid fragmentation of the European labour market by stimulating the development of AI technologies but protecting public interests. Furthermore, according to article 2 of the AI Act, its provisions would apply not only to European providers and users.

Similar to the General Data Protection Regulation (EU) 2016/679 (GDPR), one of the most important effects of the AI Act will be extraterritorial scope, which will impose significant obligations for non-EU businesses. The AIA will be another example of the Brussels effect, first coined by Anu Bradford in 2012, which refers to the "EU's unilateral power to regulate global markets". [111]

Artificial Intelligence Act consists of the proposal and the document with 9 Annexes. The proposal has 12 chapters, each of which regulates a separate field of application and development of artificial intelligence. It includes the scope of application of the new rules; specific rules for AI systems that create a high risk; transparency, monitoring, and reporting obligations; identification of the governance systems at the Union and national levels; and some other rules regarding the implementation of the regulation.

The proposal also responds to explicit requests from the European Parliament (EP) and the European Council, which have repeatedly expressed calls for legislative action to ensure a well-functioning internal market for artificial intelligence systems ("AI systems") where both benefits and risks of AI are adequately addressed at Union level.[112] The creation of a single European AI market will contribute to the free movement of AI technologies and digitalisation of services in various sectors of the economy, which will also affect the labour market in the EU. Job cuts are possible, especially in professions where routine work prevails. However, most of them will still have new opportunities, in particular, to delegate certain workloads, and the quality and intensity of work will increase.

Furthermore, after analysing Title 6 of the AI Act, it can be concluded that to control the use of AI and monitor the process of implementation of the AI Act by EU member states, as well as technology development companies, the European Artificial Intelligence Board (EAIB) will be created. The mentioned body will consist of representatives of the member states and the European Commission.

---

[110] *Ibid.*

[111] M. Ipek, "EU Draft Artificial Intelligence Regulation: Extraterritorial Application and Effects," *European Law Blog*, February 17, 2022, accessed 7 October 2023, https://europeanlawblog.eu/2022/02/17/eu-draft-artificial-intelligence-regulation-extraterritorial-application-and-effects/.

[112] "Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts," *op.cit.*

At the same time, according to Article 59 of the AI Act, national competent authorities shall be established or designated by each Member State to ensure the application and implementation of this Regulation. Also, a European Data Protection Supervisor will act as the competent authority for supervising the EU institutions, agencies and bodies subject to the act AI Act.

Most rules and requirements are set, of course, to prevent negative risks of AI systems. Certain harmful AI practices would be prohibited as contravening Union values, whereas others should be under specific restrictions and have remote biometric identification systems for law enforcement.

Transparency rules are also an important part of the AI Act. For high-risk AI systems, the requirements of high-quality data, documentation and traceability, transparency, human oversight, accuracy and robustness are strictly necessary to mitigate the risks to fundamental rights and safety posed by AI and that are not covered by other existing legal frameworks. For other, non-high-risk AI systems, only minimal transparency obligations are imposed, for example, in terms of providing information to flag the use of an AI system when interacting with humans.[113]

Artificial intelligence systems are generally classified by the degree of risk and regulated according to this criterion. According to the website of the European Commission, there are four categories of risks in AI: unacceptable, high, limited, minimal or no risk.

AI systems with an unacceptable risk considered a clear threat to people's safety, livelihoods, and rights will be banned, from social scoring by governments to toys using voice assistance that encourages dangerous behaviour.[114] It also includes practices that are highly likely to be used to manipulate people or exploit the vulnerability of certain vulnerable groups of the population (children, people with disabilities). In addition, such practices include social assessment by government agencies based on artificial intelligence.[115]

High-risk AI systems include those that have a significant impact on users' rights, health, or safety. These AI systems must meet mandatory requirements and undergo conformity assessment procedures before being placed on the EU market. Providers and users of these systems have clear security obligations.

The section of the act regulating such high-risk AI systems is one of the largest. It determines that high-risk AI is used in critical areas such as decision-making systems in court

[113] "Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts," *op.cit.*

[114] "Regulatory framework proposal on artificial intelligence," European Commission, accessed 1 August 2023, https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai.

[115] O. Petriv, "Artificial Intelligence and the Artificial Intelligence Act: Time for a Legal Framework," *CEDEM*, June 7, 2023, https://cedem.org.ua/analytics/artificial-intelligence-act/.

processes, risk assessments in banking, employee monitoring, and biometric identification systems. The Artificial Intelligence Act requires developers of high-risk AI systems to adhere to strict security, transparency and ethical requirements.[116]

Therefore, any company selling an AI product or service in the EU must be very responsible about using such AI systems, as the Proposal provides for the imposition of fines for violating the requirements of this legislation. According to article 71 of the AI Act, the infringements shall be subject to administrative fines of up to 30,000,000 EUR or, if the offender is a company, up to 6% of its total worldwide annual turnover for the preceding financial year, whichever is higher.

Limited risk refers to AI systems with specific transparency obligations. When using AI systems such as chatbots, users should be aware that they are interacting with a machine so they can make an informed decision to continue or step back.[117]

AI systems with limited risk have negligible impact on users. Typically, such systems are used in areas where data or content is exchanged between users, i.e., media platforms and social networks.[118] Recommendations on YouTube, TikTok, or LinkedIn are the most recognizable examples of such systems.

AI systems with minimal risk or no risk are free to use. This includes applications such as AI-enabled video games or spam filters. Most AI systems currently used in the EU fall into this category.[119] Examples of such systems include personal assistants, recommendation systems, virtual assistants and other entertainment programs. The AI Act does not introduce additional restrictions or requirements for AI systems of this risk level. Systems of this level can include, for example, "Grammarly" - an online service that uses artificial intelligence to recognise and correct grammar, punctuation, spelling and writing style errors.[120]

It is also worth adding that in Title 5 AI of the act, additional measures are proposed to support innovation, particularly through AI regulatory sandboxes. Regulatory sandboxes could be very useful for promoting AI and are welcomed by certain stakeholders, especially Business Associations.

AI regulatory sandboxes establish a controlled environment to test innovative technologies for a limited time based on a testing plan agreed with the competent authorities. The objectives of the regulatory sandboxes should be:

---

[116] *Ibid.*
[117] "Regulatory framework proposal on artificial intelligence," *op. cit.*
[118] O. Petriv, *op.cit.*
[119] "Regulatory framework proposal on artificial intelligence," *op. cit.*
[120] O. Petriv, *op.cit.*

— to foster AI innovation by establishing a controlled experimentation and testing environment in the development and pre-marketing phase to ensure compliance of the innovative AI systems with this Regulation and other relevant Union and Member States legislation;
— to enhance legal certainty for innovators and the competent authorities' oversight and understanding of the opportunities, emerging risks and the impacts of AI use and
— to accelerate access to markets, including by removing barriers for small and medium enterprises (SMEs) and start-ups.[121]

**To conclude**, the European Union actively supports the development of technologies. It works to regulate the ethical and, at the same time, effective use of artificial intelligence in various areas, in particular in the labour market. The European value system helps to create a safer and more ethical environment for AI development because it considers its benefits and risks.

Currently, the EU is finalising and approving the AI Act, which will become not only a law for EU member states but also a global regulator of social relations related to the use of AI. This act considers the relentless development of technology and objective market needs, particularly in the automation of work, and at the same time, prevents many violations of human rights that can be caused by artificial intelligence.

EU member states and companies engaged in the design and development of AI systems must already consider the AI Act and take the initiative to participate in the regulatory sandbox to be competitive in the European market when the AI Act enters into force.

### 2.2 EU member states AI strategies

This subchapter is dedicated to the overview of the AI strategies of EU member states in the context of the impact of artificial intelligence technologies on their national labour markets. Presently, twenty of the twenty-seven EU Member States have published their national strategies on artificial intelligence to solve the local problems of AI implementation, particularly in the labour market.

Germany, France, Lithuania, Poland, Slovakia, Latvia, Estonia and the Czech Republic were selected for discussion and comparison since they have similar approaches to legal regulation of social relationships based on their belonging to the Romano-Germanic legal family, as well as their close socio-economic ties, which form similarities in the regulation of national labour markets, solving the problems of employment and automation of work processes.

[121] "Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts," *op.cit.*

It seems appropriate to start with Germany and France. These countries, among others, have advanced economies, so they typically face an ageing workforce. However, the decline in working-age population growth is more immediate in some (Germany, Italy, and Japan) than in others. Automation can provide the productivity boost required to meet economic growth projections they otherwise would struggle to attain. Thus, these economies are interested in pursuing rapid automation development and adoption.[122]

**Germany**. In November 2018, the German Federal Government launched its National AI strategy jointly developed by the Federal Ministry of Education and Research, the Federal Ministry for Economic Affairs and Energy, and the Federal Ministry of Labour and Social Affairs.[123]

At present, 28.7% of employment in Germany is in occupations at the highest risk of automation compared to an OECD average of 27%. However, more than half (57%) of German employers adopting AI report consulting workers or worker representatives regarding using new technologies in the workplace. Employers who consulted with workers/worker representatives about AI adoption were likely to report positive effects on worker productivity, worker satisfaction, and managers' ability to measure worker performance and health and safety.

Germany's national AI strategy generally acknowledges that every individual should be well-informed about the importance of AI and the opportunities and challenges it presents.[124]

The German Federal Government proposes a broad-based set of instruments to expand and upgrade AI-related skills in the workforce. As the required skills of individuals will change significantly with the upcoming AI technologies, the German Federal Government launched some large-scale qualifications initiatives with attention to lifelong learning and for reskilling and upskilling employees across their entire careers:

— the formation of regional Centres of Excellence for Labour Research studying and organising labour in an AI working environment and imparting the necessary skills to management and the workforce;

— the creation of a Skilled labour strategy - a skills monitoring system to identify which skills are needed in the future;

— the formation of regional Hubs of tomorrow to address companies and employees with tailored information and innovative learning approaches to shape change.[125]

---

[122] M. Chui, J. Manyika, and M. Miremadi, "The Countries Most (and Least) Likely to be Affected by Automation," *Harvard Business Review*, April 12, 2017, accessed 10 September 2023, https://hbr.org/2017/04/the-countries-most-and-least-likely-to-be-affected-by-automation.

[123] "Germany AI Strategy Report," European Commission, AI Watch, accessed 12 September 2023, https://ai-watch.ec.europa.eu/countries/germany/germany-ai-strategy-report_en#ecl-inpage-271.

[124] "OECD Employment Outlook 2023: Artificial Intelligence and the Labour Market," *op.cit*.

[125] "Germany AI Strategy Report," *op.cit.*

Moreover, Germany is vying for highly qualified AI experts in research and development with other countries and numerous global companies in particular. Above all, it is becoming increasingly difficult to establish AI research at locations that do not already have an AI focus. Therefore, the Federal Government needs to secure more specialists through university courses, education and training and to create an attractive working and research environment for scientists. In light of the tight labour market situation and to open up career paths for future generations of excellent scientists, the funding of new AI professorships is designed to cover multiple years. Above and beyond this, the Federal Government will stress the importance of attractive conditions in Germany as a center of science and research in its talks with the Länder. It will advocate improved salary structures for AI professorships.

It also should be emphasised that when securing enough skilled labour to meet demand in AI, the Federal Government of Germany believes in a sectoral approach to find tailored solutions. Education and training curricula are being adapted. In addition to school and vocational and higher education, the focus is also on skills development and continuing training at companies for the development and use of AI.[126]

**France**. In March 2018, The French AI strategy entitled AI for Humanity was developed and based on the AI policy report prepared by French Member of Parliament and renowned mathematician Cédric Villani.[127]

According to the OECD assessment, 27.4% of employment in France is in occupations at the highest risk of automation, close to the OECD average of 27%. In 2022, the Council of State issued an official statement advocating for the use of AI for better public services. This acknowledges the importance of human and technical resources to implement AI in the public sector and declares the training of public managers a priority, alongside the recruitment of data experts.[128] Therefore, deploying AI technologies will majorly impact the French job market.

According to France's Employment Orientation Council, roughly half of the occupations could be automated in the medium to long term. To tackle this issue, the French AI strategy devotes particular attention to a better understanding of future labour demand and skill needs to prepare successfully for professional transitions.

First and foremost, the French government seeks ways to reduce the AI, data science and robotics skills gap in the labour market. The French AI strategy will continue providing financial incentives to higher education and research institutions to increase initial training at all levels,

[126] "Artificial Intelligence Strategy 2020 Update," German Federal Government, accessed 12 September 2023, https://www.ki-strategie-deutschland.de/files/downloads/Fortschreibung_KI-Strategie_engl.pdf.
[127] "France AI Strategy Report," European Commission, AI Watch, accessed 14 September 2023, https://ai-watch.ec.europa.eu/countries/france/france-ai-strategy-report_en#ecl-inpage-190.
[128] "OECD Employment Outlook 2023: Artificial Intelligence and the Labour Market," *op.cit*.

intermediate and expert, dual programs and the retraining or upgrading of talent. Initiatives to increase diversity in computer science and AI are being deployed, too.

Furthermore, the following policy recommendation targets increased labour market intelligence and forward-looking skills predictions:

— the creation of a public laboratory on the transformation of work to encourage reflection on how automation is changing occupations and to provide support for professional transitions;

— in terms of vocational training and lifelong learning initiatives, the French Government highlights the formation of the Grande Ecole du Numérique (GEN) to support training that helps to integrate people at risk of unemployment into the job market by developing their digital skills;

— the move towards quality labelling, certification and integration into rich professional training paths, including re-skilling and up-skilling, such as the efforts by the OPIIEC digital occupations observatory.[129]

**Lithuania**. In March 2019, the Ministry of Economy and Innovation released the Lithuanian artificial intelligence strategy: a vision for the future. The strategy seeks to upgrade and expand the current AI ecosystem in Lithuania and ensure that the nation is ready for a future with AI.[130]

According to the Lithuanian Strategy, manufacturing is the largest sector of the Lithuanian economy, and it is facing some challenges with new levels of labour productivity. Artificial intelligence systems can mitigate these challenges by automating routine tasks. Incentivizing the integration of AI systems and the application of intelligent robotics systems will help the Lithuanian manufacturing sector remain competitive in the regional and global markets.

According to the Automation, Skills Use and Training report done by OECD, in Lithuania, the work tasks of the median labourer have a 57% chance of being automated. This positions Lithuania as the second country with the highest chance of job automation, behind only the Slovak Republic.

To prepare Lithuanian citizens for AI implementation in different social relationships, a three-point approach should be implemented to target technical skill development in school children, students in higher education, and those currently employed. Adapting to the shift in labour markets should start with reevaluating the curriculum being taught at schools. More

[129] "France AI Strategy Report," *op.cit.*

[130] "Lithuania AI Strategy Report," European Commission, AI Watch, accessed 16 September 2023, https://ai-watch.ec.europa.eu/countries/lithuania/lithuania-ai-strategy-report_en#ecl-inpage-334.

emphasis must be placed on teaching the technical skills needed for a future where most work is augmented with AI.

This is especially true for Lithuania's regional districts, which need greater educational support than city centers concerning new technologies. These are also the areas where the labour market comprises jobs most susceptible to automation, as most of the regional economy is based on manufacturing. Exploring STEM fields should encourage students to develop a positive relationship with technology.

The second point Lithuania has to target is higher education. Rather than replacing the current academic structure, more emphasis should be placed on supplemental coursework that teaches AI and technologies to students in programs that do not traditionally require it. Studies in fields with a high risk of automation and change should have classes that teach the fundamental skills needed to adapt their workflow to meet the demands of AI.

The current labour force also needs the tools needed to succeed in the future with AI. Opportunities for vocational training need to be created, prioritising those with jobs and occupations with the greatest automation risk. The focus should be on augmenting and optimising current work with AI rather than re-training for a different occupation. This will allow the current labour force to remain relevant as the new generation prepares for work with AI. Leadership should communicate the positives of AI and the potential for an increase in productivity and time for tasks that require critical thinking rather than the possibility of job loss.

It also should be noted that the Lithuanian government is trying to ensure that the current workforce has the competencies needed for a changing labour market by creating vocational training programs regarding the application of artificial intelligence and other new technologies, especially for occupations most at risk of labour automation. Additionally, the government is developing a publicly available educational program on artificial intelligence, which will teach Lithuanian citizens the basics of AI and explain its advantages and risks.[131]

**Poland**. In December 2020, the Council of Ministers adopted the Polish national AI strategy, entitled Policy for the Development of Artificial Intelligence in Poland from 2020. The progress and milestones in developing the national AI strategy were highlighted in a roadmap released by the Ministry of Digital Affairs.[132]

Artificial intelligence combined with automation will greatly impact the Polish job market. By 2030, as much as 49% of working time in Poland can be automated using already

[131] "Lithuanian Artificial Intelligence Strategy: A Vision for the Future," The Ministry of the Economy and Innovations of the Republic of Lithuania, accessed 18 October 2022, https://eimin.lrv.lt/uploads/eimin/documents/files/DI_strategija_ENG(1).pdf.

[132] "Poland AI Strategy Report," European Commission, AI Watch, accessed 17 September 2023, https://ai-watch.ec.europa.eu/countries/poland/poland-ai-strategy-report_en.

existing technologies. On the one hand, this represents an opportunity to boost productivity; on the other, it poses challenges, particularly for the education system for young people and adults, in terms of adapting workers and their skills to the new labour market and developing appropriate tools to combat technological unemployment.[133]

According to the developed strategy, a plan is being developed for the comprehensive implementation of artificial intelligence in almost all spheres of state functioning to support Poland's desire to maintain and improve its place among the world's leading countries. The main goal of Poland is to join the narrow group of 20-25% of countries that are building artificial intelligence. To achieve this goal, the state sets the following task: by 2025, more than 700 companies using artificial intelligence should be created in the country.

Therefore, Poland must ensure its ability to retain a highly specialised AI workforce and attract experts from abroad — entrepreneurs, researchers, and workers, while maintaining a high level of protection for fundamental human rights.

By 2023, Poland has prioritised finding and implementing ways to mitigate the negative effects of the development of artificial intelligence on the domestic labour market. The following tools were used for this:

— identifying which professions are potentially at risk of disappearing in the near future and preparing re-education programs for workers;
— preparing and refining sectoral and thematic forecasts regularly to assess potential risks and opportunities for job creation;
— preparing and updating analysis of the labour market risks associated with smart automation on a regular basis;
— the systematic approach to monitoring the impact of technological change on the labour market by drafting reports and publishing the results.

In the future, the Polish government plans to work on removing legislative barriers and administrative burdens for AI startups by creating conditions for increasing the labour market's flexibility through appropriate legislative framework changes and consultation with employers and trade unions.

Another important task is identifying priority areas where Poland has a chance to be internationally competitive. This is possible thanks to consultations with Polish enterprises and business circles aimed at understanding the needs of the labour market and the potential for AI applications.

[133] "Predicts 2018: AI and the future of work," Gartner Research, accessed 17 September 2023, https://www.gartner.com/en/documents/3833572/predicts-2018-ai-and-the-future-of-work.

In addition, to effectively monitor, implement and coordinate the AI Policy, Poland plans to establish the AI Observatory for the Labour Market, appointed by the minister in charge of computerisation to monitor and study the impact of AI on the labour market in cooperation with the minister in charge of labour.

Therefore, only by coordinating the activities of all participants of the AI ecosystem Polish society and economy will be able to take advantage of the opportunities provided by the current technological revolution brought about by AI. Given the above, Poland needs cooperation in the following areas: building a culture of cooperation between the public and private sectors in innovation and ensuring conditions conducive to developing citizens' creativity by strengthening the labour market.[134]

**Slovakia**. In July 2019, the Slovakian Government published the Action plan for the digital transformation of Slovakia for 2019-2022. This action plan contains concrete steps to build a sustainable, human-centric, and trustworthy AI ecosystem within the long-term Strategy of the digital transformation of Slovakia 2030.

The Slovakian strategy aims to stimulate AI education in line with the public and private sectors' current and forthcoming needs. It proposes reforming the education system to train employees for new professional requirements and satisfy future labour demands. The plan is to explore and analyse emerging needs to make informed changes in educational paradigms and systems (e.g. teaching algorithmic thinking, creativity, problem-solving, teaching support, and transformations at all levels of education).

Besides strongly emphasising reforming the formal education systems, the Slovakian strategy also focuses on creating lifelong learning opportunities and vocational training in AI. The Ministry of Education and the Ministry of Labour are planning a policy initiative to support employee lifelong learning opportunities. These ministries will collaborate with universities to scrutinise the new requirements (e.g., new technological and digital knowledge associated with AI) of the labour market and formulate specific training for the employed workforce and job seekers.[135]

Also, specific attention should be paid to Slovak Digital Coalition, which intends to make education in digital technologies topical and effective, simultaneously providing Slovak citizens with the opportunity to develop their digital skills and competencies in the whole course of their lives to enable them to be successful in the labour market and use digital technologies for the

[134] "Resolution No. 196 of the Council of Ministers of 28 December 2020 on the establishment of the Policy for the development of artificial intelligence in Poland from 2020," Monitor Polish 2021, Item 23, accessed 20 October 2022, https://monitorpolski.gov.pl/MP/2021/23.

[135] "Slovakia AI Strategy Report," European Commission, AI Watch, accessed 14 September 2023, https://ai-watch.ec.europa.eu/countries/slovakia/slovakia-ai-strategy-report_en#ecl-inpage-398.

performance of their work and to ensure high quality of their lives. Slovakia will support and apply the best European practices in digital platform regulation and intermediaries to not threaten the jobs and safety of consumers and to foster economic growth and positive innovations in the labour market that will strengthen the middle class.[136]

Slovakia needs to set conditions for a continuous digital transformation of all economic sectors. It includes, above all, the transformation of the present-day industry to Industry 4.0, which is used to refer to the current trend of digitalisation and related automation of manufacturing and data exchange in production processes. Industry 4.0 will become the engine of the economic growth of the country. The goal is to utilise the potential and increase private and public investments in new technologies. Therefore, it will be necessary for the government to help businesses get prepared for such transformation. This preparation will primarily ensure that the government provides businesses access to knowledge, technologies and incentives for solving specific problems, e.g., through digital innovation hubs.

Furthermore, Slovakia needs a comprehensive systemic change in its education. Progress in the digital economy can be achieved only by improving education quality and developing the skills of students, employees, and consumers who can respond to new labour market challenges and accept technological innovations that will be appearing at an increasing pace. In the context of increasingly globalised labour markets, companies compete for the skills and qualifications necessary to support innovations.

Thus, it is important to adapt the Slovak labour market to the digital era to allow meaningful and flexible social assurance for the platform economy workers and to assess the effects of the platform economy and work changes in the digital era in the labour law and its institutes in the context of the entities concerned. There is also a need to attract the best foreign experts for the needs of innovative businesses and science and research institutions.[137]

**Latvia.** In February 2020, the Latvian Government released its national AI strategy on Developing artificial intelligence solutions. The objective of the Latvian strategy is to promote the uptake and growth of AI in the whole economy.[138]

Latvia is one of the European countries whose population has a low level of digital skills. For instance, over half of the population and 67% of the unemployed lack basic digital skills. Latvia has the lowest share of ICT specialists in employment in the European Union, with the

[136] "Action plan for the digital transformation of Slovakia for 2019–2022," Government of Slovak Republic, accessed 25 October 2022, https://www.mirri.gov.sk/wp-content/uploads/2019/10/AP-DT-English-Version-FINAL.pdf.

[137] "Strategy of the Digital Transformation of Slovakia 2030," Office of the Deputy Prime Minister of the Slovak Republic for Investments and information, accessed 30 October 2022, https://www.mirri.gov.sk/wp-content/uploads/2019/11/Brochure-SMALL.pdf.

[138] "Latvia AI Strategy Report," European Commission, AI Watch, accessed 21 September 2023, https://ai-watch.ec.europa.eu/countries/latvia-0/latvia-ai-strategy-report_en

share of women falling from 30% in 2008 to 14% in 2018. Such indicators negatively affect the ability of Latvian firms to use available digital technologies, which is reflected in their competitiveness in the European market.

The OECD assessed the situation with AI in Latvia, and they believed that digital technologies can help strengthen the enforcement of tax and labor laws in the country. Latvia's State Revenue Service (SRS) is already implementing digital tools and data analysis systems to better target audits at high-risk taxpayers. SRS is also working on a system to automatically match data received from foreign tax authorities with domestic data. By raising trust in public institutions, open government data can help fight informality and improve compliance with tax laws. Digital job platforms could help boost labor market formality, formalize word-of-mouth transactions, and allow tax authorities to extract data from such transactions, provided that appropriate regulations are in place.

Furthermore, the OECD notes that regional disparities in income per capita and unemployment are pronounced, leading to large differences in per capita tax revenues among municipalities. In addition, municipalities in Latvia are relatively small, which undermines the provision of high-quality public services, including education and public transport. Merging small municipalities would help to consolidate resources but is politically difficult. Digitalization provides an opportunity to pool digital resources and e-services among several municipalities, helping to improve the efficiency of local public service provision and reduce the growing urban-rural divide. Together with better transport infrastructure, high-speed broadband, and better use of digital technologies would create economic opportunities for workers and businesses, particularly SMEs, in disadvantaged regions.[139]

**Estonia**. In May 2019, an expert group led by the Ministry of Economic Affairs and Communications and Government Office presented proposals on advancing the take-up of artificial intelligence in Estonia aka for Estonia's national AI strategy. The strategy is a sum of actions that the Estonian government will take to advance the take-up of AI in both the private and public sectors, to increase the relevant skills and research and development base, as well as to develop the legal environment.

Now Estonia leads Eastern Europe in AI application. There are already some AI use cases working in the public sector of Estonia. The Estonian Unemployment Insurance Fund recruits people into open work propositions with an AI algorithm. This AI technology analyses the CVs of job seekers and the requirements for the position, compares them, and then connects the company and the right person for further employment.

[139] Organization for Economic Co-operation and Development, *Going Digital in Latvia*, Paris, 2021, 21, https://doi.org/10.1787/8eec1828-en.

To maintain this positive trend of AI development in Estonia, the government needs to stimulate the development of digital skills in the population and adapt the educational system to technological progress.

Additional further education training is in preparation and includes, among others, online courses for citizens to raise public awareness of AI and a training program targeting employees of companies developing AI solutions. The Ministry of Economic Affairs and Communications has developed training courses and instructional materials in AI for managers and developers in the public sector, courses to raise awareness of AI in the public sector and data governance training courses aimed at data stewards and upper management to support the development of AI.[140]

**The Czech Republic**. In May 2019, the Czech Republic released its National AI strategy that builds on both the Innovation Strategy 2019-2030 and the Digital Czech Republic strategy.[141]

The strategy emphasizes the importance of lifelong learning, vocational training and reskilling opportunities. The Czech government aims to monitor the labour market by commissioning analyses to predict the creation and loss of jobs due to AI. These trends should be reflected in the educational sphere through appropriate reforms. Also, forecasts of future labour needs will be entered into the National Register of Occupations and the Central Competence Database to systematically promote updated jobs through career guidance, worker mobility, and retraining opportunities.

Additionally, the strategy presented measures to address the impacts of AI on the labour market and the social system:

— promoting self-employment and starting a small business, adjusting flexible forms of work;

— continuous assessment of impacts and preparation of the social system and measures for changes in the labour market;

— supporting disadvantaged groups and regions most at risk due to automation.[142]

To realise those measures some objectives should be done. The Czech government needs to extend the National Qualifications Framework to new professional qualifications corresponding to the requirements of the future labour market in AI. Also, there is a need for the

[140] "Estonia AI Strategy Report," European Commission, AI Watch, accessed 24 September 2023, https://ai-watch.ec.europa.eu/countries/estonia/estonia-ai-strategy-report_en.

[141] "Czech Republic AI Strategy Report," European Commission, AI Watch, accessed 21 September 2023, https://ai-watch.ec.europa.eu/countries/czech-republic/czech-republic-ai-strategy-report_en#ecl-inpage-227.

[142] "National Artificial Intelligence Strategy of the Czech Republic," The Ministry of Industry and Trade of the Czech Republic, accessed 20 October 2022, https://www.mpo.cz/assets/en/guidepost/for-the-media/press-releases/2019/5/NAIS_eng_web.pdf.

operational deployment of tools and the implementation of prepared changes according to current changes in the labour market. Moreover, the state must prepare society for the changes and impacts of artificial intelligence and automation on the economy, especially the labour market.

This would be possible due to systematic support to labour market adaptation to technological changes, including the support for self-employment and starting small enterprises through practical career guidance, coaching, education, targeted grants, soft loans or tax depreciation. These actions may prevent long-term unemployment and flexibly create new jobs in the labour market for disadvantaged groups through targeted programs and effective measures of depreciation.[143]

**To conclude**, each of the countries mentioned above should regularly assess the impact of artificial intelligence on social relations, the economy, the labour market, and education. It will help to monitor the spheres most in need of state support. In general, all the EU member states are concerned about the impact of AI on the labour market, so most of them are looking for solutions that will regulate the current situation. They reform education sector, support entrepreneurs, create specific AI programs to provide companies with competent employees and the population, accordingly, with jobs where AI skills will be needed. Both private and public sectors should cooperate and provide sufficient resources for the balanced development of AI on the labour market while protecting employees from the harmful effects of technologies application.

[143] *Ibid.*, 28-30.

# CHAPTER 3. THE PLACE OF ARTIFICIAL INTELLIGENCE IN THE UKRAINIAN LABOUR MARKET

## 3.1 Regulation of artificial intelligence in labour process: Ukrainian approach

Forming a virtually new type of society (Super Smart and Society or Society 5.0) based on the use of advanced digital technologies to ensure the population's well-being is a trend in the modern world, and Ukraine is no exception.

In recent years, Ukraine's world-class artificial intelligence (AI) industry has become a calling card for the country's booming tech sector. Global tech giants such as Samsung, Google, and Rakuten have established AI R&D centres in the country.[144] In addition, in 2021, one of the Ukrainian IT companies founded the startup Neurotrack to develop software using machine learning and neural connections to penetrate the depths of the human brain, which will help identify trends in advertising before it is broadcast or predict the popularity of musical compositions before their release.[145]

According to LinkedIn's current data, there are more than 2,000 institutions and software development companies specialising in the field of AI in Ukraine. Among them are globally recognised companies such as Grammarly, Reface, and Ring Ukraine (SQUAD).

Also, according to the data of the State Statistics Service of Ukraine, revenues from the export of services in the field of telecommunications, computer and information services, where AI technologies are primarily used, collectively reach almost 30% of the export of services in the structure of foreign trade in services, which significantly exceeds imports.[146]

The above examples indicate not only the interest of Ukrainian companies in applying the power of artificial intelligence but also the ability of domestic businesses to work in high-level AI areas and move into the international market.

This success has proved possible without the benefit of any significant state support. Indeed, many believe the vibrancy and dynamism of Ukraine's AI industry are at least partially due to the relative absence of government interference in the sector.[147] However, like any modern state, Ukraine is obliged to regulate AI activities, particularly its impact on the national labour market, since the level of employment and the use of advanced technologies affect the country's economy and the general well-being of its population.

---

[144] V. Goncharuk, "Ukraine's roadmap to an artificial intelligence future," *Atlantic Council*, January 19, 2021, accessed 31 October 2023, https://www.atlanticcouncil.org/blogs/ukrainealert/ukraines-roadmap-to-an-artificial-intelligence-future/.

[145] "They connect the brain to a computer and believe in good AI. How a Ukrainian IT company predicts the popularity of products using neuromarketing," *MARKETER.UA*, April 8 2021, accessed 18 October 2023, https://marketer.ua/ua/it-company-predicts-product-popularity-with-neuromarketing/.

[146] A. Shevchenko et. al., *Strategy for the development of artificial intelligence in Ukraine (2022-2030),* (Kyiv: IPSHI, 2022), 66.

[147] V. Goncharuk, *op.cit.*

In certain aspects, the activities of AI may be regulated by the Law of Ukraine "On the Protection of Personal Data". The law contains requirements for the collection and processing of personal data, which can be automated with the help of AI, for example, to set up targets or advertising campaigns on social networks, which significantly increases sales of small and medium-sized businesses, whose activities are the basis of the modern economy of Ukraine.

Additionally, for larger Ukrainian companies targeting the European market and therefore using AI to process personal data of European citizens, it is essential not only to innovate but also to comply with the GDPR in the context of the responsible and ethical use of AI. It should be clarified that even though Ukraine is not yet a member of the European Union, the GDPR, due to its extra-territorial effect[148], applies to companies regardless of their location; therefore, a company from Ukraine that processes the personal data of European citizens is also subject to the GDPR.

In general, the activity of AI can be regulated by many laws, depending on specific aspects of its application. However, the issue of developing a law that will consider all the features of such an innovative product as AI remains urgent. Therefore, there is a need to prepare the Ukrainian AI Act, which would regulate the development and application of artificial intelligence comprehensively.

In October 2019, Ukraine, as a member of the Special Committee on Artificial Intelligence at the Council of Europe, joined the Recommendations of the Organisation for Economic Cooperation and Development, Recommendation of the Council on Artificial Intelligence[149]. This action led to the identification of priority directions for the development of AI in Ukraine. Moreover, according to the instructions of the Cabinet of Ministers of Ukraine on January 2, 2020, the Concept for the development of artificial intelligence in Ukraine was praised.[150]

One of the priority directions for implementing the Concept was the implementation of the norms laid down in the OECD Recommendations and bringing Ukrainian legislation into compliance with the guiding principles of the Council of Europe. However, within the scope of this study, to determine the impact of AI on the labour market in Ukraine, the most critical areas of implementation of the Concept are the introduction and development of artificial intelligence technologies in the fields of education, scientific and technological research, economy, public

[148] "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 (General Data Protection Regulation)," EUR-Lex, accessed 27 July 2023, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02016R0679-20160504&qid=1692348906488.

[149] Organization for Economic Co-operation and Development, *Recommendations of the Council on Artificial Intelligence,* Paris, 2019, https://oecd.ai/en/assets/files/OECD-LEGAL-0449-en.pdf.

[150] "The concept of artificial intelligence development in Ukraine No. 1556-p," Supreme Council of Ukraine, accessed 28 October 2022, https://zakon.rada.gov.ua/laws/show/1556-2020-%D1%80#Text.

administration, cyber security, defense and others to ensure the long-term competitiveness of Ukraine on the international market.

Therefore, Ukraine's new Development Strategy aims to embed AI technologies in every aspect of the country's development. It seeks to reform the education system to provide the next generation of Ukrainian tech companies with the AI talent and qualified human capital necessary to drive the country forward. It also aims to accelerate the introduction of AI technologies throughout the Ukrainian economy to safeguard the global competitiveness of sectors ranging from heavy industry to agriculture.[151]

In the Concept, the term "artificial intelligence" is defined as an organised set of information technologies, with the use of which it is possible to perform complex tasks by using a system of scientific research methods and algorithms for processing information obtained or independently created during work, as well as to create and use own knowledge bases, decision-making models, algorithms for working with information, and determine ways to achieve set goals.[152]

It is noteworthy that the Concept defines the category artificial intelligence, but the main criteria for identifying information technologies as artificial intelligence are absent in the legislation. Therefore, more than the adoption in Ukraine of the Concept of the development of artificial intelligence is needed since it is somewhat declarative and does not define the subjects, methods and means of performing the tasks, as well as the resources necessary for their effective implementation.

It is crucial to develop further separate legal or by-law regulations, recommendations, and standards for implementing this Concept. There is an urgent need to develop and adopt a law which can be called "On the legal basis of the use of artificial intelligence in Ukraine" or something similar.

It also seems appropriate to solve the problems specified in the Concept by adopting branch legislation in the relevant spheres of state administration. For example, O. M. Okhotnikova and S. V. Korpachova rightly propose, along with the adoption of the Law of Ukraine "On Artificial Intelligence", to adopt a by-law normative legal act that would regulate the issue of the effectiveness of public administration in the field of land relations, in particular, the Resolution of the Cabinet of Ministers of Ukraine "On the Sphere the functioning of artificial intelligence in the public administration of land relations".[153]

---

[151] V. Goncharuk, *op.cit.*

[152] *Ibid.*

[153] O. Okhotnikova, S. Korpachova, "Artificial intelligence in the public administration of land relations: problems and prospects," *Journal of the Kyiv University of Law* 1 (2021): 134. https://doi.org/10.36695/2219-5521.1.2021.23.

In addition, the development and adoption of the Code of Ethics for artificial intelligence in Ukraine would ensure the implementation of the Concept based on responsibility to society: transparent implementation of AI in various social relations, reporting on completed tasks and the amount of financial, labour and material resources involved for this, compliance with rights a person.

It should be added that the Ministry of Digital Transformation of Ukraine is entrusted with the public administration of activities related to the creation, implementation and use of artificial intelligence in Ukraine. Paragraph 3 of the Regulation on the Ministry of Digital Transformation of Ukraine states that one of the tasks of the Ministry is to ensure the development of virtual assets, blockchain and tokenisation of artificial intelligence.[154] However, the Regulation still lacks clear and specific powers of the Ministry, which should be considered a gap in Ukrainian legislation because public administration should not only be concerned with the development of artificial intelligence but rather the creation, implementation and use of artificial intelligence technologies, as stated in the Concept of the Development of Artificial Intelligence in Ukraine.

Nevertheless, in 2023, Ukraine is taking active steps towards regulating AI and its responsible use, particularly in the labour market. This is the publication of a monograph that examines the prerequisites and scientific foundations for creating the Strategy for Artificial Intelligence Development in Ukraine (2023-2030), as well as the means and ways of its effective implementation. It was recommended for publication by the Scientific and Technical Council of the Institute of Artificial Intelligence Problems of the Ministry of Education and Science of Ukraine and the National Academy of Sciences of Ukraine.[155]

This is the first but necessary step because Ukraine should apply the experience of the world's leading countries in adopting legislation aimed at the safe level of implementation and application of AI.[156]

The purpose of the Strategy is to create prerequisites for the post-war recovery of the state's economy, primarily security and defense, science and education, ensuring its sustainable development based on breakthrough AI technologies and the corresponding improvement of the population's well-being and quality of life. Realizing the specified goal will bring Ukraine closer to the leadership positions in the world in the field of artificial intelligence.[157]

[154] "Regulation on the Ministry of Digital Transformation of Ukraine No. 856," Supreme Council of Ukraine, accessed 28 August 2023, https://zakon.rada.gov.ua/laws/show/856-2019-%D0%BF#n12.
[155] A. Shevchenko et. al., *supra note*, 148: 2.
[156] O. Yara et al., *supra note*, 166: 283.
[157] A. Shevchenko et. al., *supra note*, 148: 64.

According to the authors of the monograph, artificial intelligence is a function of artificial consciousness, which is represented by a system of algorithms created and controlled by it, provides self-learning following available information, acquired knowledge, rules, laws of society and its own experience, creating new knowledge on this basis to fulfil human assignments, as well as the ability to conduct self-diagnosis and justify the decisions made by her. Therefore, artificial intelligence is implemented as a set of functions of a weakly structured informal system, which determine its purpose of activity and the possibility of decision-making, mechanisms of learning and self-learning, mastering knowledge about knowledge, and self-awareness.[158]

To realise this goal, the authors of the monograph consider it necessary to introduce organisational and financial mechanisms to support fundamental research and applied developments and the implementation of AI in the production of goods and the provision of services, in particular, to create a Committee on the Development and Implementation of Artificial Intelligence under the Cabinet of Ministers of Ukraine.

General management of implementing the Strategy for the Development of Artificial Intelligence in Ukraine should be carried out by the Cabinet of Ministers of Ukraine and coordinated by the Committee on the Development and Implementation of Artificial Intelligence. Scientific-technical and scientific-methodical support for the implementation of the Strategy for the Development of Artificial Intelligence in Ukraine should be provided by the Scientific Center of Artificial Intelligence, established based on the Institute of Artificial Intelligence Problems of the Ministry of Education and Science of Ukraine and the National Academy of Sciences of Ukraine.[159]

Thus, executive authorities should be established to form a stable system of management and regulation of AI in Ukraine, ensuring sustainable development of AI technologies and effective control over them.

Another essential step is that on October 7, 2023, the Ministry of Digital Transformation of Ukraine presented the Roadmap for regulating artificial intelligence in Ukraine.[160] It is noted that this Map will help Ukrainian companies to prepare for the adoption of a law similar to the AI Act of the European Union and citizens to learn how to protect themselves from AI risks: "We do not seek to regulate the AI market, instead, to find a balance between business interests and ensuring an adequate level of protection for citizens from AI risks. Sooner or later, Ukraine

[158] A. Shevchenko et. al., *supra note*, 148: 62-63.
[159] A. Shevchenko et. al., *supra note*, 148: 70.
[160] "Regulation of artificial intelligence in Ukraine: the Ministry of Digitization presented a road map," Ministry of Digital Transformation of Ukraine, accessed 7 October 2023, https://www.kmu.gov.ua/news/rehuliuvannia-shtuchnoho-intelektu-v-ukraini-mintsyfry-prezentuvalo-dorozhniu-kartu.

will have to implement the AI Act of the European Union as one of the conditions of European integration in the digital sphere.

We provide businesses with opportunities and tools to prepare for future regulation, the state — time to understand the market and risks and acquire the ability to implement the law (creating a regulator), and citizens — awareness of the topic. The implementation of the AI Act will probably coincide with the receipt of requirements from the EU regarding its implementation. Gradual implementation is possible with the gradual implementation of the most demanding provisions".

Therefore, this initiative aims to prepare Ukrainian businesses for the standards of the European Union, increasing its competitiveness in the global market and, at the same time, ensuring the rights of citizens in the digital space. After analysing the Roadmap, the following main points can be highlighted:

— the goal of developing the Roadmap is to create a safe environment where AI helps society and does not create threats;
— implementation is based on a bottom-up approach: first business tools, then legislative regulations;
— voluntary codes of conduct for companies working in the field of AI are expected to be signed;
— White Paper on Artificial Intelligence with the approaches, terms and stages of implementation of the regulation should become the main document for business preparation.

Regarding the legal personality of AI in Ukraine, the following can be noted. The absence of a legislative act on AI and, accordingly, a clear legal definition of AI complicates the determination of its legal personality and causes many discussions in scientific circles. For example, the Ukrainian researcher O. Radutny notes that artificial intelligence can be objectified in a robotics object or communicate with a person and the surrounding world through informational messages, but independently of a person, it is endowed with the ability to change its world, the world of a person and the universe around himself.

Even today, a legal entity (corporation) needs this feature, namely the ability to influence the environment, but this does not prevent the latter from being recognised as a subject of legal relations. Therefore, the possibility of recognising artificial intelligence as an independent subject of legal relations, including in the field of criminal law, under the name of an electronic person (personality) should by no means seem strange.[161]

[161] O. Radutny, "The development of criminal legal doctrine in the direction of recognition of artificial intelligence and digital man as a subject of legal relations and a subject of crime," in *Effectiveness of criminal legislation:*

Under this approach, it stands to reason that if an AI is to be legally responsible for its actions, then it should have a physical and legal identity similar to a human. However, the civil legislation of Ukraine establishes that individuals and legal entities are participants in civil relations.[162]

From this, it can be concluded that today, the participants of social relations present artificial intelligence in Ukraine as an object of social relations, as the property of a physical or legal entity and is used by them as an auxiliary tool.

So, according to the Ukrainian approach, the person who uses artificial intelligence is responsible for it. This is consistent with Resolution 2015/2103 (INL) of the European Parliament, which emphasizes the impossibility of holding artificial intelligence liable for actions that cause damage to third parties.[163] Although the Resolution is only recommendatory, taking into account the European integration course of Ukraine, its national legislation on the legal regulation of artificial intelligence must meet the already formed standards of the European Union.

What is the overall state of the use of artificial intelligence in the Ukrainian labour market? Currently, the use of AI in Ukraine is limited primarily to leading organizations in industry, information and communication and financial technologies based on foreign developments. Often, such developments are created in Ukraine, but the intellectual property rights to them belong to foreign companies. The market for software for the research and development of AI technologies is growing yearly, with more and more suppliers offering different AI solutions for business.[164]

Most AI experts in Ukraine believe the two sectors that offer the most tremendous potential for progress are education and defense.[165] The coronavirus crisis has developed an online learning system in Ukraine and introduced opportunities for technological solutions utilizing AI in the studying process. Now that there is a war in Ukraine, students need safe spaces to study, and distance learning complemented by AI can help Ukrainian schools and universities adapt to this reality and provide the necessary level of education.

Now is the time for the Ukrainian government to start forming new specialities in higher education institutions to meet the modern labour market. Increasing the number of specialists

---

*doctrinal, law-making and law-enforcement problems of its enforcement, Proceedings of an international scientific round table, May 17 2019, Kharkiv,* (Kharkiv: Konstanta, 2019), 204.

[162] "Civil Code of Ukraine No. 435-IV," Supreme Council of Ukraine, accessed 24 December 2022, https://zakon.rada.gov.ua/laws/show/435-15#Text.

[163] "European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL))," *op.cit.*

[164] A. Shevchenko et. al., *supra note,* 148: 66.

[165] V. Goncharuk, *op.cit.*

who will be able to manage AI will not only increase productivity but will also form the basic principles of a responsible approach to working with technology and artificial intelligence.[166]

Some Ukrainian companies also show a noticeable interest in the educational benefits of using AI and its practical application. For instance, the private Ukrainian EdTech Institute for Independent Professional Online Education Projector Institute provides an opportunity for everyone to take the course "AI for Business" on the possibilities of introducing artificial intelligence into various fields of activity, which will be especially useful for domestic entrepreneurs.[167]

It is vital that the state and businesses support the development of AI solutions in Ukraine. The need for specialists will stimulate the education system to change: provide opportunities for innovative learning using modern methods, create opportunities for retraining people for new professions, and attract grants and other international support.

Regarding defense, the previous head of Ukraine's Expert Committee on AI Development, Vitaliy Goncharuk, said that in 2021, Ukraine's ongoing military conflict with Kremlin forces in the east of the country continues to drive demand for AI innovations that will boost Ukraine's defense capabilities while saving lives on the frontlines.[168] Now, in the context of full-scale war, it is even more relevant. In current conditions, Ukraine needs many weapons to defend civilians and free the country. Therefore, the manufacturing of weapons systems, especially containing elements of AI, should be one of the most important priorities in that sphere.

In the military sphere, commercially available AI-enabled technologies (such as the use of uncrewed aerial vehicles, including strike, short-range and long-range crewless aerial vehicles, and cruise missiles with automatic target recognition) can provide access to an entirely new type of precision strike capabilities, including over long distances. That is why one of the main tasks today is the development of attack and strike-reconnaissance unmanned aerial drones, increasing the number and modifications, which will significantly strengthen the overall defence capability of the Ukrainian security sector.

In addition, in information and cyberspace, AI will significantly expand the ability to collect and analyse data, respond to cyber incidents, and create aggregated data. When solving intelligence problems, this will mean that a larger number of sources of objective information, as well as sources of disinformation and information influences, will be considered.[169]

---

[166] O. Stashkevich, "The impact of technology and artificial intelligence on the labor market in Ukraine," *InterConf*, 81 (2021): 25-30, https://doi.org/10.51582/interconf.21-22.10.2021.004.
[167] "AI for Business," Projector, accessed 25 September 2023, https://prjctr.com/course/ai-for-managers.
[168] V. Goncharuk, *op.cit.*
[169] A. Shevchenko et. al., *supra note*, 148: 149.

Ukraine's agriculture sector is another area of the economy with obvious AI potential. The vast and rapidly modernising Ukrainian agricultural industry is the ideal breeding ground for AI developments, with numerous success stories already demonstrating the ability of local ag-tech startups to expand on the international stage.[170]

In agriculture, the implementation of advanced AI technologies is foreseen to create a decision-making support system and systems for managing agricultural objects (including smart farms) and their control. In particular, it is planned to make automated analysis of grain crop data from aerial and space photographs and implement AI in horticulture to combat plant diseases and pests. Agricultural drones will help to determine the exact areas of crops, carry out audits and inventories of land plots, determine the presence of defects in crops, analyse the yield of crops, and monitor and control land reclamation systems.[171]

Thus, the use of AI in Ukrainian agriculture and agro-industry will contribute to more efficient use of resources, the development of small and medium-sized enterprises in this sector, and even the preservation of existing ecosystems, since as a result of the war minefields are a big problem for Ukraine. Therefore, the introduction of innovations, the automation of many processes and the use of agricultural drones can significantly speed up the solution to this issue.

Moreover, the influence of AI can become decisive for the development of the field of logistics in Ukraine. The private company "Nova Post", which is engaged in the delivery of parcels in Ukraine, and since 2023, has also worked in several European countries, among which Lithuania, the Czech Republic and Poland, is one of the largest employers on the Ukrainian labour market. The company is already using robots at sorting terminals.[172] Powerful implementation of technologies will only contribute to the development of the company and its expansion in the European market, which will stimulate employment and, accordingly, the country's economy.

Other Ukrainian businesses are also interested in cooperation with specialists in the field of AI. Denis Sudilkovsky, director of innovation at Projector AI Lab, notes: "We have already gone through the stages of computerisation. Back then, it was popular to include "Confident PC user" on your resume. Now, there is an equivalent to this skill: "Confident user of artificial intelligence". For example, I test the knowledge of AI tools of every person I interview for a job at LUN *(a Ukrainian IT product company)*. Without the ability to work with AI today, you will lose the competition tomorrow. You already have to catch up. Well, I want to work with those running ahead of everyone".

---

[170] V. Goncharuk, *op.cit.*

[171] A. Shevchenko et. al., *supra note*, 148: 75.

[172] "The new post office involves robots in sorting parcels," LIGA. Business, accessed 31 October 2023, https://biz.liga.net/ua/all/all/video/novaya-pochta-vnedryaet-robotov-dlya-sortirovki-posylok-video.

Also, he adds that AI opens up two points for business growth: "The first point is speed. Certain processes can happen many times faster. For example, to draw a girl for the first page of the site in 2010, the designer and I spent a week and a half. Midjourney will now do the job in 15 seconds. The second point is personalisation. Check out Grammarly now: their AI understands a company's tone of voice and helps you write English texts with this personalised brand voice in mind. And this is not an instruction, how the company wants to sound and what words should be used - AI itself understands how to communicate; the machine has learned to learn.[173]

In addition, AI is used in government agencies. For example, the Ministry of Justice of Ukraine is starting to use software "Cassandra" with elements of AI, which gives the opportunity to analyze the possibility of repeated violations of the law by a criminal. Punishment for the crime is set by the court, but in order to help it in this, there is a document called "Pre-trial report", which is prepared by probation officers and is part of the Ministry of Justice of Ukraine. This document describes the identity of the accused, as well as an assessment of the likelihood of him/her committing new crimes.

Accordingly, the software "Cassandra" automates this process. The probation officer, having put answers to questions within the software, receives an estimate of the probability of committing a new crime from 0 to 97. This assessment is carried out by an algorithm that gives points for a particular question and then summarizes them (The Ministry of Justice of Ukraine, 2020). The most obvious drawback of using the aforementioned programs is that the decisions are based only on known data. If the offender has not been previously convicted, his "profile" will be clean, so the program will consider him less of a risk.[174]

Another example is The Traffic Organization Center of Ukraine. It plans to purchase a program for calculating and analyzing the behaviour of cars, which will use AI. The system will provide information on how many cars are in a traffic jam and calculate the number of vehicles by direction of movement, depending on the time of day and other factors (Traffic in Ukraine, 2020).[175]

As for the potential influence of AI on the Ukrainian labour market in the future, currently, it is difficult to predict its development due to the country's main focus on solving martial law problems. In Ukraine, the surge in demand for AI specialists has not yet been noticeable and can hardly be expected shortly. Unfortunately, the war continues to influence the

[173] M. Markiv, "Denys Sudilkovskyi: Without the ability to work with AI today, you will lose the competition tomorrow," *Happy Monday*, September 12, 2023, accessed 1 November 2023, https://happymonday.ua/bez-vminnya-pratsyuvaty-z-shi-vy-prograyete-konkurentsiyu?utm_source=telegram&utm_medium=social&utm_campaign=article.

[174] O. Yara et al., *supra note*, 166: 282.

[175] "Traffic in Ukraine will be controlled by artificial intelligence," AutoKyiv, October 16, 2020, accessed 25 October 2023, https://autokyiv.info/2020/10/16/trafikom-v-kyyevi-upravlyatyme-shtuchnyj-intelekt/.

development of the tech sector, so our country's request is primarily aimed at security and preservation. Nevertheless, the fact that the development of AI is driving tectonic IT trends is beyond doubt. Smart companies are already preparing for a new future that is unimaginable without artificial intelligence.[176]

However, the deepening influence of AI will have a positive impact on employment and worker safety in Ukraine. Some researchers believe that the development of AI in Ukraine will significantly affect the labour market in the future: "The percentage of jobs will change under the influence of digital transformation (from 10% to 40% according to the forecast of several EU countries), and a certain number of currently available professions are undergoing major changes. In addition, the development and widespread adoption of AI technologies will lead to the creation of many new jobs, and some employees will have to change jobs or official relationships with employers and update their skills more often.

Therefore, opportunities for upskilling and reskilling, both on the job and through training programs, will become increasingly important. The predicted increase in AI components in production processes will entail a reduction in the number of workers performing dangerous, harmful and stressful work, which will lead to a decrease in the number of accidents and negative impacts on health and, therefore, increase operational safety. The widespread use of AI for mineral exploration should have a positive impact on the dynamics of reducing injuries.[177]

The creation of many new jobs is the most foreseeable. The number of new specialists will grow because there is demand. Today, according to Djinni data for Data Science, Data Analyst and Data Engineer, more than 30 candidates with no experience are applying for one vacancy. At the same time, there is almost no competition for experienced specialists.[178]

Due to the deepening use of AI in the Ukrainian labour market, it is likely that very soon there will be a need for specialists such as AI Auditor, who will monitor compliance with anti-discrimination standards in order to eliminate stereotypes and prejudices as much as possible based on the results of the AI.[179]

Also, shortly, the profession of Promt Engineer will be developed - a specialist who will be able to issue tasks for artificial intelligence in the most detailed and understandable way.

Human-machine teaming Managers will be the new generation of specialists who organise effective cooperation between humans and artificial intelligence, whose task will be to

[176] M. Yarova, "How does the popularity of AI affect the labor market in Ukraine and what should candidates do?" *AIN.UA*, April 14, 2023, accessed 29 October 2023, https://ain.ua/2023/04/14/yak-populyarnist-ai-vplyvaye-na-rynok-praczi-v-ukrayini/.
[177] A. Shevchenko et. al., *supra note*, 148: 77.
[178] M. Yarova, *op. cit.*
[179] V. Shapoval, "The professions of the future: how artificial intelligence will change the labor market," *Pro groshi*, September 6, 2023, accessed 29 October 2023, https://progroshi.news/news/kar-yera/profesiji-maybutnogo-yak-shtuchniy-intelekt-zminit-rinok-praci-9710.html.

ensure that AI not only performs its tasks effectively but also integrates into the work environment, taking into account the needs and capabilities of people.

This job is very similar to the role of the HR manager of today, so this profession may also be transformed under the influence of AI.

Also, one of the most in-demand professions of the future will likely be an AI Ethicist - a specialist responsible for the safe and ethical use of AI. Among his responsibilities will be the development of ethical standards to be followed by developers and users of AI, assessment of possible negative consequences that may arise from using AI, development of documents that will help limit or prevent potential risks and abuses of AI, etc.

At the same time, the profession of an AI Personality Designer will be necessary but controversial. The task of this expert will be to give the AI a personality so that it becomes "more alive". The specialist will teach him unspoken but important communication: understand slang and use phraseological units. A possible contradiction in the development of this profession is that a large part of the population is afraid to endow AI with human traits for fear of gaining an advantage over a living person.

Besides, an interesting study was conducted by the team of the Ukrainian publication The Page, where the journalist asked ChatGPT how it would affect the labour market in Ukraine and whether anyone should be afraid of losing their job because of it.[180] The chatbot responses were as follows:

1. Due to the ability to generate text and perform some routine tasks automatically, language models can replace some types of work that require low skills and repetitive actions.
2. The development of language models can create new job opportunities in Ukraine, particularly in the field of development and improvement of artificial intelligence technologies.
3. Knowledge of language patterns can help improve communications and interactions with customers, users, and other stakeholders in various industries such as marketing, sales, customer service, and more.
4. The risk of losing a job concerns specialists who deal with routine responses to client requests, process data, or other simple and standardized tasks. However, it can also create opportunities for professionals to retool to do more challenging and creative work.

**To conclude**, AI is getting very popular in different spheres of the Ukrainian economy. The development of AI will bring many positive changes to the Ukrainian labour market, but for

[180] I. Smirnova, "How artificial intelligence is changing the labour market in Ukraine," *The page*, April 19, 2023, accessed 30 October 2023, https://thepage.ua/ua/news/yak-chatgpt-vplinuv-na-robotu-riznih-fahivciv-v-ukrayini.

some workers, retraining will be needed to adapt to a new reality. Both the state and Ukrainian private businesses are interested in the application of innovations and boosting the power of AI not only at the national level but also in the European market.

### 3.2 Opportunities for cooperation and ways of implementing European experience into the Ukrainian legal system

Firstly, it is important to emphasise the reasons for cooperation between Ukraine and the countries mentioned in the previous chapter. The main point is the membership of these countries in the Romano-Germanic legal family, which makes it possible to regulate social relations, including using artificial intelligence, according to similar norms and principles.

Another ground is the real capacities of the mentioned countries to balance the use of AI in the labour market. According to the 2022 Oxford Government AI Readiness Index, which aimed to score governments on their readiness to implement AI in delivering public services[181], Ukraine is currently number 60 on a global scale. Such Ukrainian partners as France and Germany are in the top 15 countries, so their experience and best practices should be taken into consideration by the Ukrainian government to implement European values of responsible development and the use of AI in the national system.

However, Ukraine ranks number 12 in Eastern Europe. Lithuania, Latvia, Poland, the Czech Republic, and Estonia take higher positions. Moreover, Estonia leads the region with number 19 on a global scale. Therefore, cooperation with the mentioned countries would be helpful for Ukraine to develop the AI sector and further integration into the European Union.

Today, no state in the world is able to work in isolation from others on the creation and implementation of AI: only international cooperation of the world's leading scientists can ensure the advancement of capital-intensive high AI technologies. That is why Ukraine, as part of the European community of states and a member of the Ad Hoc Committee on Artificial Intelligence at the Council of Europe, must focus, first of all, on its standards, the standards of NATO, the EU and other pan-European institutions on AI.

In addition, at the UNESCO General Conference on November 21, 2021, Ukraine, together with other countries of the world, adopted global ethical standards for artificial intelligence, including data protection, social evaluation and mass surveillance, control and environmental protection.[182] Only effective cooperation will help to implement the defined standards in practice.

---

[181] A. Rogerson et al., *Government AI Readiness Index 2022*, (Oxford Insights, 2022), 8, https://www.unido.org/sites/default/files/files/2023-01/Government_AI_Readiness_2022_FV.pdf.
[182] A. Shevchenko et. al., *supra note*, 148: 68.

Cooperation between Ukraine and a number of specified European countries can take place in the following directions:

1. formation of a joint concept of legal regulation of artificial intelligence;
2. determination of the legal entity framework of AI and the probability of applying to it the norms of the law on responsibility;
3. establishment of the responsibility limits for AI developers who have caused certain damage to specific social relations with application of AI technologies;
4. joint research of legally significant problems arising in connection with new developments of artificial intelligence, as well as related to the use of existing ones;
5. identification of prospects for the creation of policies and legal doctrines related to the development, application and control of artificial intelligence.

First of all, it should be noted that artificial intelligence technology requires perfect legal regulation. With the development of technology, changes are needed in the legal regulation of AI so that the consequences of its use become useful for the whole society. Market forces with their own resources will not ensure successful development for the whole population. Legal regulation of AI is necessary in the following areas: privacy, data protection and data security issues, data processing, copyright for works created by AI, regulation of economic activities for the production of software and technologies with AI, development of the rules for using software, technologies or algorithms for working with human emotional states using machine learning and AI tools, which are necessary to prevent and minimize the risks of abuse of this technology, development of the Code of conduct for individual product using AI.[183]

Some countries are adopting, strengthening and/or enforcing legislation. While guidelines can be more timely and adaptable in response to a changing landscape, legislation is more enforceable. In most countries, existing non-AI-specific legislation already provides a foundation for addressing several concerns about the use of AI in the workplace, for example, legislation on data protection, discrimination, and consumer protection. Making sure that such legislation is up to date and reflects the new realities and challenges brought by AI will be important. In addition, many countries are considering AI-specific legislation, such as the AI Act in the European Union.[184]

For cooperation in the area of common legal regulation, each state can independently determine the likely risks and advantages of the introduction of artificial intelligence and then offer its vision at a joint conference, forum or round table. Furthermore, the states as lawmakers are able to determine what jobs they want to be performed exclusively by humans or artificial

[183] O. Yara et al., *supra note*, 166: 287.
[184] "OECD Employment Outlook 2023: Artificial Intelligence and the Labour Market," *op.cit*.

intelligence to prevent some risks. It can be a proposal with a list of such jobs or the sectors where the use of technologies is preferable. Also, it could be a bill regarding setting a tax for the use of machines in some spheres.

A joint public discussion of the successes and problems of using artificial intelligence and the analysis of the achievements of neighbouring countries in this direction will help each country to determine their policies with the next priority steps, in particular, to regulate the situation in its own labour market. Also, such policies should be evidence-based on the research and studies regarding the impact of AI on the labour market.

A key message of the *OECD Employment Outlook 2019* was that "The future of work will largely depend on the policy decisions countries make." Therefore, while there is much uncertainty about the impact AI will have on labour markets, there is a need to avoid technological determinism. To reap the benefits AI can bring to the workplace while addressing risks to workers' fundamental rights and well-being, countries should consider concrete policy actions to ensure the enforcement of key principles for the trustworthy use of AI. Governments need to ensure that AI supports inclusive labour markets rather than hinder them.[185]

This is especially relevant for Ukraine because cooperation with the countries listed above will contribute to the qualitative regulation of legislation in the field of artificial intelligence thanks to the discussion of current issues of the development of artificial intelligence and taking into account the peculiarities of global trends in its legal regulation. This process should take place comprehensively, both by harmonising national legislation with EU legislation and by creating a domestic system of regulatory and legal regulation of activities in the creation, implementation and use of artificial intelligence.

Most importantly, regulation is also fundamental in governing how automation and the introduction of new technologies will impact on the quality of the jobs that will be affected by them rather than merely focusing on their quantity. Labour legislation and collective bargaining must play a much more central role if these phenomena are to take place in a way that respects the human dignity and the fundamental rights of workers – yet, these aspects are still under-researched in the vast debate on automation and the future of work[186].

Therefore, collective bargaining and social dialogue may have an important role to play in supporting workers and businesses in the AI transition. They can facilitate AI adoption and use in the workplace, as well as shape and implement rights to address AI-related issues flexibly and pragmatically while promoting fairness.

---

[185] *Ibid.*

[186] Miriam A. Cherry, *Work in the Digital Age: A Coursebook on Labor, Technology, and Regulation (Aspen Casebook Series)*, (USA: Aspen Publishing, 2021), 279.

Collective bargaining can also complement public policies in enhancing workers' security and adaptability. In the insurance and telecommunication sector, for instance, European social partners have signed two framework agreements on AI that addressed transparency in data use and protection against bias and discrimination. More recently, social partners have started engaging in "algorithm negotiations", but only a few AI-related agreements have been signed to this date.[187]

Thus, Ukraine and the EU should support low-wage workers. Wage policies such as minimum wages and collective bargaining can help mitigate losses in purchasing power. Governments can also provide direct support through the tax and benefit system to protect low-income households' net income.[188]

However, to introduce the European experience in Ukraine, Ukrainians should start with reforming the higher education system. Creating favourable conditions for the development of technical higher education and the application of innovations in the educational process will attract more applicants who can become qualified specialists and increase the competitiveness of the Ukrainian labour market.

To achieve this goal, it is necessary to finance educational institutions, invest in scientific research in AI from the state budget and attract European donors, cooperate with international experts and exchange experience, and cooperate with private companies that are experts in the national market.

It is important to add that for Ukraine and the member states of the European Union, it is necessary not only to create conditions for the formation of new specialists but also for the re-profiling of existing workers on the labour market. Invest in training programs and encourage not only young people but also the adult population to master technologies. If a person feels supported in developing his abilities and sees a real example of social protection from the state. In that case, he is ready to effectively use his resources, thereby stimulating the development of the labour market.

OECD believes that training will also be important for workers to navigate the AI transition successfully. The impact of AI on tasks and jobs will engender changing skills needs. On the one hand, AI will replicate some skills, like manual and fine psychomotor abilities, and cognitive skills, such as comprehension, planning and advising. On the other hand, skills needed to develop and maintain AI systems, and those to adopt, use and interact with AI applications, will become more important. The demand for basic digital skills, data science and other

[187] "OECD Employment Outlook 2023: Artificial Intelligence and the Labour Market," *op.cit*.
[188] "EMPLOYMENT OUTLOOK 2023 Artificial intelligence and jobs," OECD, accessed 1 November 2023, https://oecd.org/employment-outlook/2023/.

cognitive and transversal skills will also increase. While companies using AI say they provide training for AI, a lack of skills remains a major barrier to adoption, suggesting more could be done. Public policies will, therefore, have an important role to play, not only to incentivise employer training but also because a significant proportion of training for the development and adoption of AI takes place in formal education. AI itself may present opportunities to improve the design, targeting and delivery of training, but several risks exist, and challenges must be addressed.[189]

Therefore, increasingly rapid AI development and adoption means that new skills will be needed while others will change or become obsolete. Training is needed for both low-skilled and older workers, but also for higher-skilled workers. Governments should encourage employers to provide more training, integrate AI skills into education, and support diversity in the AI workforce.[190]

In addition, a joint policy for developing artificial intelligence should be formed for cooperation and solving current AI problems. It seems appropriate to create a specialised institution at the international level, the Organization for the Implementation of Artificial Intelligence, whose powers will be aimed at implementing international policy in the field of creation, application and use of artificial intelligence, as well as ensuring control over the observance of human rights in the development and use of artificial intelligence systems.

It is also possible to create separate committees for supervision and monitoring the prevailing trends of the influence of AI on the European labour market, the security of personal data, and copyright.

Among other things, Ukraine and other European countries belonging to the Romano-Germanic legal system can conduct a joint discussion on forming a unified approach to defining the concept of artificial intelligence and understanding its place in the modern system of international relations between these countries. The promising consequences of this discussion may be the consolidation of the obtained results in international law and their further implementation in the national law of the participating states of this discussion.

In addition, the involvement of leading European and Ukrainian companies in this process will help to understand how business sees artificial intelligence and what the real needs of the AI labour market are. Automation of production, the transition to "green" energy, the development of medical technologies, the processing of large volumes of data, and cyber security are of the greatest interest to modern companies worldwide. Businesses will develop

[189] "OECD Employment Outlook 2023: Artificial Intelligence and the Labour Market," *op.cit*.
[190] "EMPLOYMENT OUTLOOK 2023 Artificial intelligence and jobs," *op.cit.*

better thanks to the implementation of artificial intelligence in these areas and, most importantly, increase employment and stimulate the economy.

That is why, similar to the European experience in Ukraine, it is necessary to develop and publish a White Paper which will describe what businesses and society can expect soon, highlight the state's approaches to regulating AI, and describe the practical results that the state aims to achieve over a certain period. Recommendations for using AI tools by civil society and businesses will promote awareness of its benefits and risks, which is important for the responsible use of technology. Additionally, such guidance for AI developers and employers will help them to understand and comply with the requirements of the legislation.

Furthermore, it is appropriate to provide such recommendations to state authorities because the automation of their activities will contribute to a more transparent decision-making process, cost savings, and more effective implementation of European norms and standards into Ukrainian legislation.

Minister of Digital Transformation Mykhailo Fedorov also confirms this: "There are many areas in Ukraine where AI can be used, for example, for structuring information or analysing the Ukrainian legislation. This will help the state save a lot of money. We are now moving towards the European Union. Thousands of laws need to be changed. It takes many people to analyse them. With the help of AI, you can do this much faster and automate the work thanks to a clear algorithm for its operation".[191]

Moreover, he adds that either you start using artificial intelligence, or it will replace you. Many people fear artificial intelligence and say: "What will happen to thousands of civil servants there? Moreover, what will happen to thousands of company employees?" He believes that, on the contrary, a robust market is opening up, and artificial intelligence must be studied. Many new specialists and new professions will appear. This trend needs to be led and not run away from it.[192]

Also, an essential step for further cooperation with the EU is the Ukrainian government's decision to launch a regulatory sandbox in artificial intelligence for artificial intelligence developers. It is a controlled environment within which development companies can create their product from the initial stage, taking into account the requirements of the future act on the regulation of artificial intelligence, which is being prepared in the EU.

---

[191] "Fedorov: Ukraine should gain experience in the field of artificial intelligence," Ukrinform, accessed 1 November 2023, https://www.ukrinform.ua/rubric-technology/3701489-fedorov-ukraina-mae-nabuti-dosvidu-u-sferi-stucnogo-intelektu.html.

[192] D. Levchenko, "Trends in the development of artificial intelligence in Ukraine and the world," *Gwara media*, August 21, 2023, accessed 1 November 2023, https://gwaramedia.com/tendenczii-rozvitku-shtuchnogo-intelektu-v-ukraini-ta-sviti/.

A company that creates a project using artificial intelligence can become a participant in the sandbox and receive expert support at all stages of the development of its product to be able to enter the EU market in the future. That is why, as soon as the Artificial Intelligence Act with regulatory sandboxes is adopted in Europe, EU candidate countries, including Ukraine, will also have to embrace it.

The act on the regulation of artificial intelligence, based on which the launch of the "regulatory sandbox" is planned, is a draft law that should control the progress and use of artificial intelligence, taking into account the public interest and human rights. This initiative was first put forward in April 2021, but all new rules will enter into force only after the agreement of the joint version of the text of the law by the Council of the EU and the European Parliament.

However, participation in such regulatory sandboxes will not be mandatory. The company must decide how to develop its product. At the same time, if some milder and simplified regulatory act regarding artificial intelligence is adopted in Ukraine, then Ukrainian companies will be uncompetitive in European countries.[193]

Therefore, to effectively implement the European vision of AI regulatory sandboxes, Ukraine should pay attention to the following necessary steps:

1. Thoroughly research the features and basic requirements of the AI Act to prepare for the implementation of the act.
2. Start work on the development and implementation of the legislative consolidation of the work of regulatory sandboxes with AI.
3. Organize the work of expert groups of specialists in the field of artificial intelligence and law-making, which will determine the main areas of legal regulation of AI and prepare relevant draft laws.
4. Definition of a regulatory body in the field of artificial intelligence with the primary function of monitoring compliance with legislation in this field.[194]

**In conclusion**, Ukraine is actively working on the development and regulation of AI in various fields. Both the state and private Ukrainian businesses strive to use the most modern technologies in the labour market. Currently, several problems create obstacles to the large-scale implementation of AI in the national space. At the same time, it will be challenging to solve existing problems without streamlining legislation on AI and implementing the European experience.

---

[193] I. Semenyuga, "Ukraine announced the launch of a regulatory "sandbox" for artificial intelligence," *MEDIASAPIENS*, March 23, 2023, accessed 12 October 2023, https://ms.detector.media/trendi/post/31483/2023-03-23-v-ukraini-anonsuvaly-zapusk-regulyatornoi-pisochnytsi-dlya-shtuchnogo-intelektu/.

[194] O. Petriv, "Artificial Intelligence and the Artificial Intelligence Act: Time for a Legal Framework," *CEDEM*, June 7, 2023, https://cedem.org.ua/analytics/artificial-intelligence-act/.

Therefore, cooperation between Ukraine and the EU on the regulation of AI should be based on the experience of neighboring countries, which are also strategic partners, and the requirements of European integration for Ukraine.

This lengthy process must take place comprehensively and requires many changes to Ukrainian legislation, rational use of resources, financing of education, and most importantly - interaction with international experts, businesses, and ordinary people so that the state not only develops the necessary recommendations but also makes them understandable, determined their priority, and also introduced the mechanisms of their implementation and the persons responsible for it.

## CONCLUSION

Based on all of the above and conducting research on the chosen topic, the author came to the following conclusions. Artificial intelligence's definition varies from sphere to application, but in general, it is a complex computer system capable of analyzing information, learning, and carrying out different tasks. There are narrow and strong AI that are used to resolve various issues, particularly in the labour market.

Currently, artificial intelligence is an object of the labour market that complements work processes to make the job easier for humans, not to replace them. The global replacement of a person by a machine is impossible since there is no objective possibility for this in many countries worldwide, and some professions cannot be replaced by technology at all.

At the same time, there is a rapidly growing need for automatizing some jobs to enhance productivity, provide workers safety, and reduce costs on routine work. All this is possible thanks to AI, the advantage of which is that it increases the quality of work, saves resources, and stimulates economic indicators not only of enterprises but also of the entire state, which, in turn, increases interest in the use of this technology in the labor market. Also, the development of AI stimulates the emergence of new professions, especially in tech and creative spheres.

However, the use of AI has its drawbacks because, due to automation, a particular category of workers worldwide is at risk of losing their jobs if they perform routine tasks that do not require social interaction or a creative approach or have a low level of technological proficiency. In addition, AI application may harm women and workers in low-labor-cost countries.

Given the existing benefits and risks of AI, workers must transform their skills according to the market’s current needs, employers must consider workers’ interests, and states must implement measures to prevent excessive automation and mass unemployment.

*Thus, the defense statement about the impossibility of transforming artificial intelligence from an object of the labour market to a full-fledged entity today is confirmed.*

The European Union actively works on regulating social relations related to the use of AI, particularly in the labour market. The EU has already established some critical documents to manage the risks of artificial intelligence. The upcoming AI Act will become a document of the international level in AI regulation. Compliance with this law's requirements will help companies be competitive in the European labour and technology market. Moreover, some EU member states established their national strategies for the regulation of AI use in the most vital social relationships, particularly in the local labour markets.

As for Ukraine, the country as a candidate for EU membership is developing its national regulation in compliance with European values. Therefore, Ukraine is striving to cooperate with the EU on the regulation of AI to implement the European approaches and best practices of neighboring countries.

Implementing the European experience into the Ukrainian legal system should occur at the legislative level and with the actual use of European practices in the public sector, in conducting business, for reforming education, and in other spheres of public life. This approach will optimize the use of artificial intelligence in both the Ukrainian and European labor markets, which will contribute to the development of the potential of AI while taking into account the interests of employees.

*Therefore, the defense statement regarding the advantageous impact of cooperation between the European Union and Ukraine on the well-being of the common labour market in Europe is confirmed.*

## RECOMMENDATIONS

The following recommendations to Ukrainian authorities on improvement of the artificial intelligence regulation in Ukraine and in which directions to cooperate with the European Union are suggested.

1. The formation of a common concept of artificial intelligence. Both the EU and Ukraine lawmakers have to establish a legal definition of AI on a national level, however, the joint efforts on this issue are more relevant since it will provide legal certainty in the whole Europe.
2. A joint policy for developing artificial intelligence should be formed for cooperation and solving current AI problems in Europe. As a candidate for EU membership, Ukraine and other EU members may organize a public conference on the privileges and problems of using artificial intelligence to identify further priorities in regulating the situation in national labour markets.
3. The creation of a specialized institution at the international level for implementing international policy in the field of creation, application, and use of artificial intelligence. This international body will ensure control over the observance of human rights in developing and using artificial intelligence systems.
4. The establishment of national committees in EU members and Ukraine to supervise the AI impact on the European labour market, data protection, and copyright law.
5. The support of low-wage and less qualified workers in Ukraine and the EU. Governments should establish effective wage policies and encourage employers to provide training or reskilling for their workers.
6. The reform of the Ukrainian higher education system. Using innovative approaches in the educational process and cooperation with scientific tech institutions and companies will provide an opportunity to improve the basic digital skills of students and train more specialists familiar with AI, increasing their competitiveness in the labour market.
7. The determination of the responsibility limits for AI developers who have caused certain damage to certain social relations in Ukraine. It can be achieved by implementing the European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL)).
8. The cooperation of authorities with European and Ukrainian national companies to understand how business sees artificial intelligence and the real needs of the AI labour market.

9. The implementation of a White Paper in Ukraine. This EU document describes what businesses and society can expect from AI, so its development and publication in Ukraine will highlight the state's approaches to regulating AI.
10. Also, an essential step for further cooperation with the EU is the Ukrainian government's decision to launch a regulatory sandbox in artificial intelligence for artificial intelligence developers, taking into account the requirements of the future act on the regulation of artificial intelligence, which is being prepared in the EU. A business that creates a project using artificial intelligence in the EU or Ukraine can participate in the sandbox and receive assistance in developing its product, which may help enter the European market.

## LIST OF BIBLIOGRAPHY

### Legal Documents


1. "Action plan for the digital transformation of Slovakia for 2019–2022." Government of Slovak Republic. Accessed 25 October 2022. https://www.mirri.gov.sk/wp-content/uploads/2019/10/AP-DT-English-Version-FINAL.pdf.
2. "Artificial Intelligence Strategy 2020 Update." German Federal Government. Accessed 12 September 2023. https://www.ki-strategie-deutschland.de/files/downloads/Fortschreibung_KI-Strategie_engl.pdf.
3. "Civil Code of Ukraine No. 435-IV." Supreme Council of Ukraine. Accessed 24 December 2022. https://zakon.rada.gov.ua/laws/show/435-15#Text.
4. "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee, and the Committee of the Regions, Artificial Intelligence for Europe." EUR-Lex. Accessed 24 July 2023. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2018%3A237%3AFIN.
5. "Council Directive 98/59/EC of 20 July 1998 on the approximation of the laws of the Member States relating to collective redundancies." EUR-Lex. Accessed 30 May 2023. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31998L0059&qid=1529936120445.
6. "Directive 2002/14/EC of the European Parliament and of the Council of 11 March 2002 establishing a general framework for informing and consulting employees in the European Community." EUR-Lex. Accessed 28 May 2023. https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1529936472853&uri=CELEX:32002L0014.
7. "Ethics guidelines for trustworthy AI." European Commission. Accessed 12 June 2023. https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai.
8. "European Economic and Social Committee, Artificial intelligence – The consequences of artificial intelligence on the (digital) single market, production, consumption, employment and society (own-initiative opinion)." EUR-Lex. Accessed 4 February 2023. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52016IE5369.
9. "European Parliament resolution of 16 February 2017 with recommendations to the Commission on Civil Law Rules on Robotics (2015/2103(INL))." EUR-Lex. Accessed 12 September 2023. https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52017IP0051&rid=9.
10. "Implementation of the Digital Decade objectives and the Digital Rights and Principles - Digital Decade report 2023." European Commission. Accessed 12 June 2023. https://digital-

strategy.ec.europa.eu/en/library/implementation-digital-decade-objectives-and-digital-rights-and-principles-digital-decade-report.

11. "Lithuanian Artificial Intelligence Strategy: A Vision for the Future." The Ministry of the Economy and Innovations of the Republic of Lithuania. Accessed 20 October 2022. https://eimin.lrv.lt/uploads/eimin/documents/files/DI_strategija_ENG(1).pdf.
12. "National Artificial Intelligence Strategy of the Czech Republic." The Ministry of Industry and Trade of the Czech Republic. Accessed 20 October 2022. https://www.mpo.cz/assets/en/guidepost/for-the-media/press-releases/2019/5/NAIS_eng_web.pdf.
13. "Policy and investment recommendations for trustworthy Artificial Intelligence." European Commission. Accessed 13 June 2023. https://digital-strategy.ec.europa.eu/en/library/policy-and-investment-recommendations-trustworthy-artificial-intelligence.
14. "Proposal for a Regulation of the European Parliament and of the Council laying down harmonized rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union legislative acts." EUR-Lex. Accessed 30 July 2023. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52021PC0206.
15. "Recommendation CM/Rec (2020) 1 of the Committee of Ministers to member States on the human rights impacts of algorithmic systems." Council of Europe. Accessed 26 July 2023. https://search.coe.int/cm/pages/result_details.aspx?objectid=09000016809e1154.
16. "Recommendation on the Ethics of Artificial Intelligence." UNESCO. Accessed 21 October 2022, https://unesdoc.unesco.org/ark:/48223/pf0000381137.
17. "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 (General Data Protection Regulation)." EUR-Lex. Accessed 27 July 2023. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02016R0679-20160504&qid=1692348906488.
18. "Regulation on the Ministry of Digital Transformation of Ukraine No. 856." Supreme Council of Ukraine. Accessed 28 August 2023. https://zakon.rada.gov.ua/laws/show/856-2019-%D0%BF#n12.
19. "Resolution No. 196 of the Council of Ministers of 28 December 2020 on the establishment of the "Policy for the development of artificial intelligence in Poland from 2020." Monitor Polish 2021, Item 23. Accessed 20 October 2022. https://monitorpolski.gov.pl/MP/2021/23.
20. "Strategy of the Digital Transformation of Slovakia 2030." Office of the Deputy Prime Minister of the Slovak Republic for Investments and information. Accessed 30 October 2022. https://www.mirri.gov.sk/wp-content/uploads/2019/11/Brochure-SMALL.pdf.

21. “The concept of artificial intelligence development in Ukraine No. 1556-p.” Supreme Council of Ukraine. Accessed 28 October 2022. https://zakon.rada.gov.ua/laws/show/1556-2020-%D1%80#Text.
22. “The Digital Services Act.” European Commission. Accessed 14 July 2023. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/digital-services-act-ensuring-safe-and-accountable-online-environment_en.
23. “White Paper on Artificial Intelligence: a European approach to excellence and trust.” European Commission. Accessed 12 June 2023. https://commission.europa.eu/publications/white-paper-artificial-intelligence-european-approach-excellence-and-trust_en.

**Books**

1. B. Baweja, B., P. Donovan, M. Haefele, L. Siddiqi, and S. Smiles. *Extreme automation and connectivity: The global, regional, and investment implications of the Fourth Industrial Revolution*. World Economic Forum, 2016. https://www.ip-watch.org/weblog/wp-content/uploads/2017/09/ubs-vierte-industrielle-revolution-2016-01-21.pdf.
2. Cherry, Miriam A. *Work in the Digital Age: A Coursebook on Labor, Technology, and Regulation (Aspen Casebook Series)*. USA: Aspen Publishing, 2021.
3. Edelman, *2019 Edelman AI Survey*, USA, 2019, accessed 14 August 2023, https://www.edelman.com/sites/g/files/aatuss191/files/2019-03/2019_Edelman_AI_Survey_Whitepaper.pdf.
4. Executive Office of the President of the United States, National Science, and Technology Council Committee on Technology. *Preparing for the Future of Artificial Intelligence*. USA, 2016. https://info.publicintelligence.net/WhiteHouse-ArtificialIntelligencePreparations.pdf.
5. Gmyrek, P., J. Berg, and D. Bescond. *“Generative AI and jobs: A global analysis of potential effects on job quantity and quality.”* Geneva: ILO. https://doi.org/10.54394/FHEM8239.
6. Rogerson, A., E. Hankins, P. F. Nettel, and S. Rahim. *Government AI Readiness Index 2022*. Oxford Insights, 2022. https://www.unido.org/sites/default/files/files/2023-01/Government_AI_Readiness_2022_FV.pdf.
7. Shevchenko, A., O. Bilokobylskyi, M. Vakulenko, E. Bodyanskyi, A. Dovbysh, V. Kazimir, S. Kovalevskyi, Yu. Kondratenko, D. Lande, O. Mintser, S. Ramazanov, A.A. Roskladka, A. Sergienko, V. Slyusar, O. Stryzhak, S. Subbotin, V. Tereshchenko, O. Chertov, O. Kozlov, E. Sidenko, A. Fisunenko, M. Klymenko, O. Stryuk. *Strategy for the development of artificial intelligence in Ukraine (2022-2030)*. Kyiv: IPSHI, 2022.

8. Wisskirchen, G., Blandine T. Biacabe, Ulrich Bormann, Annemarie Muntz, Gunda Niehaus, Guillermo J. Soler, and Beatrice von Brauchitsch. *Artificial Intelligence and Robotics and Their Impact on the Workplace*. IBA Global, 2017. https://www.ibanet.org/Article/NewDetail.aspx?ArticleUid=012a3473-007f-4519-827c-7da56d7e3509.

**Conference papers**

1. Karácsony, G. "Managing personal data in a digital environment – did GDPR's concept of informed consent really give us control?" In *Computer law, AI, data protection and the biggest technological trends. Proceedings of an international scientific conference*, 1–9. Sládkovicove, Brno: MSD 2019.
2. Radutny, O. "The development of criminal legal doctrine in the direction of recognition of artificial intelligence and digital man as a subject of legal relations and a subject of crime." In *Effectiveness of criminal legislation: doctrinal, law-making and law-enforcement problems of its enforcement, Proceedings of an international scientific round table, May 17, 2019, Kharkiv,* 202–213. Kharkiv: Konstanta, 2019.

**Dissertations and Theses**

1. Azmuk, N. "Strategic directions of balancing the development of the national labor market and the digital economy." Doctoral dissertation, Institute of Industrial Economics, 2020. https://iie.org.ua/wp-content/uploads/2020/08/dysertatsiia_azmuk-n.a._compressed.pdf.

**Legal Articles**

1. Alekseeva, L., J. Azar, M. Gine, S. Samila, and B. Taska. "The Demand for AI Skills in the Labour Market." *Labour Economics, Forthcoming* (2019): 1–60. http://dx.doi.org/10.2139/ssrn.3470610.
2. Androschuk, G. "Trends in the development of artificial intelligence technologies: economic and legal aspect." *Theory and practice of intellectual property* 3, (2019): 84–101.
3. Agrawal, A., J. Gans and A. Goldfarb. "Artificial Intelligence: The Ambiguous Labor Market Impact of Automating Prediction." *The Journal of Economic Perspectives*, 33, 2, (2019):31–50. http://dx.doi.org/10.2307/26621238.
4. Azmuk, N. "Artificial intelligence in the work process in the digital economy: new challenges and opportunities." *Economic Herald of Donbass* 3, 57 (2020): 137–145. https://doi.org/10.12958/1817-3772-2019-3(57)-137-145.
5. Azmuk, N. "Employment and Work Motivation in the Information Economy: Transformation and Interrelation." *Problems of the economy* 4 (2017): 376–383.

6. Bessen J., E., S. M. Impink, L. Reichensperger, and R. Seamans. “The Business of AI Startups.” *Law and Economics Research Paper* 18, 28, (2018): 1–42. http://dx.doi.org/10.2139/ssrn.3293275.
7. Brussevich, M., Dabla-Norris E. and S. Khalid. “Is Technology Widening the Gender Gap? Automation and the Future of Female Employment.” *IMF Working Paper*, (2019): 1–37.
8. Brynjolfsson, E., and T. Mitchell. “What Can Machine Learning Do? Workforce Implications.” *Science* (2017): 1530–1534. https://doi.org/aap8062.
9. Davenport, T. and R. Kalakota. “The potential for artificial intelligence in healthcare.” *Future Healthcare Journal* 6, 2 (2019): 94–98. http://dx.doi.org/10.7861/futurehosp.6-2-94.
10. Ernst, E., R. Merola, and D. Samaan. “The economics of artificial intelligence: Implications for the future of work.” *IZA Journal of Labor Policy* 9, 1 (2019): 1–35. https://doi.org/10.2478/izajolp-2019-0004.
11. Felten E., M. Raj, and R. Seamans. “The Occupational Impact of Artificial Intelligence on Labor: The Role of Complementary Skills and Technologies.” *NYU Stern School of Business*, 19, 605 (2019): 1–67. http://dx.doi.org/10.2139/ssrn.3368605.
12. Fossen, F., and A. Sorgner. “New Digital Technologies and Heterogeneous Employment and Wage Dynamics in the United States: Evidence from Individual-Level Data.” *IZA Discussion Paper Series* 12242, (2019): 1–46. https://doi.org/10.1016/j.techfore.2021.121381.
13. Helm, J. Matthew, Andrew M. Swiergosz, Heather S. Haeberle, Jaret M. Karnuta, Jonathan L. Schaffer, Viktor E. Krebs, Andrew I. Spitzer, and Prem N. Ramkumar. “Machine Learning and Artificial Intelligence: Definitions, Applications, and Future Directions.” *Curr Rev Musculoskelet Med* 13, (2020): 69–76. https://doi.org/10.1007/s12178-020-09600-8.
14. Lane, M. and A. Saint-Martin. “The impact of Artificial Intelligence on the labour market: What do we know so far?” *OECD Social, Employment and Migration Working Papers* 256, (2021): 1–61. https://doi.org/10.1787/7c895724-en.
15. Okhotnikova, O., S. Korpachova. “Artificial intelligence in the public administration of land relations: problems and prospects.” *Journal of the Kyiv University of Law* 1 (2021): 132–135. https://doi.org/10.36695/2219-5521.1.2021.23.
16. Onyshchuk, I. “Legal regulation of artificial intelligence technologies: theoretical, applied and ethical principles.” *Scientific notes of the Institute of Legislation of the Verkhovna Rada of Ukraine*, 3 (2020): 50–58. https://doi.org/10.32886/instzak.2020.03.06.
17. Pizhuk, O.I. “Artificial Intelligence as One of the Key Drivers of the Digital Transformation of the Economy.” *Economics, Management and Administration* 3, 89 (2019): 41–46. https://doi.org/10.26642/ema-2019-3(89)-41-46.

18. Remus, D., and L. Frank. “Can Robots Be Lawyers? Computers, Lawyers, and the Practice of Law.” *Georgetown Journal of Legal Ethics* 30, 3 (2017): 1–501. https://link.gale.com/apps/doc/A514460996/AONE?u=googlescholar&sid=googleScholar&xid=1570f4f3.
19. Saint-Martin, A., H. Inanc, and C. Prinz. “Job Quality, Health and Productivity: An evidence-based framework for analysis.” *OECD Social, Employment and Migration Working Papers* 221, (2018): 1–65. https://doi.org/10.1787/a8c84d91-en.
20. Stashkevich, O. “The impact of technology and artificial intelligence on the labor market in Ukraine.” *InterConf,* 81 (2021): 25–30. https://doi.org/10.51582/interconf.21-22.10.2021.004.
21. Stefano, V. “Negotiating the algorithm: Automation, artificial intelligence and labour protection.” *Employment Policy Department Working Paper* 246, (2018):1–61. https://doi.org/10.1787/7c895724-en.
22. Sydorchuk, Yu. “Philosophical and legal problems of using artificial intelligence.” *Law and society* 3, 2 (2017): 16–19.
23. Telychko, O. V., Rekun, and Y. Chabanenko. “Problems of definition and regulatory confirmation of the concept of “artificial intelligence” in the legislation of foreign countries and Ukraine.” *Juridical Scientific and Electronic Journal*, 2 (2021): 310–313. https://doi.org/10.32782/2524-0374/2021-2/75.
24. Topol, E.J. “High-performance medicine: the convergence of human and artificial intelligence.” *Nature Medicine* 25, 1 (2019):44–56. https://doi.org/10.1038/s41591-018-0300-7.
25. Webb, M. “The Impact of Artificial Intelligence on the Labor Market.” *SSRN*, (2020):1–61. http://dx.doi.org/10.2139/ssrn.3482150.
26. Yara, O., A. Brazheyev, L. Golovko, and V. Bashkatova. “Legal Regulation of the Use of Artificial Intelligence: Problems and Development Prospects.” *European Journal of Sustainable Development* 10, 1 (2021): 281–289. https://doi.org/10.14207/ejsd.2021.v10n1p281.

**OECD Working Papers**

1. “OECD Employment Outlook 2023: Artificial Intelligence and the Labour Market.” OECD iLibrary. Accessed 18 October 2023. https://doi.org/10.1787/19991266.
2. Organization for Economic Co-operation and Development. *Going Digital in Latvia*. Paris, 2021. https://doi.org/10.1787/8eec1828-en.

3. Organization for Economic Co-operation and Development. *Recommendations of the Council on Artificial Intelligence.* Paris, 2019. https://oecd.ai/en/assets/files/OECD-LEGAL-0449-en.pdf.

**Other sources**

1. "AI for Business." Projector. Accessed 25 September 2023. https://prjctr.com/course/ai-for-managers.
2. Aldane, J. "G7 leaders 'take stock' of AI amid calls for shared governance standards." *Global Government Forum,* May 25, 2023. Accessed 10 May 2023. https://www.globalgovernmentforum.com/g7-leaders-take-stock-of-ai-amid-calls-for-shared-governance-standards/.
3. Alonso, C., S. Kothari, and S. Rehman. "How Artificial Intelligence Could Widen the Gap Between Rich and Poor Nations." *IMF Blog,* December 2, 2020. Accessed 10 February 2023. https://www.imf.org/en/Blogs/Articles/2020/12/02/blog-how-artificial-intelligence-could-widen-the-gap-between-rich-and-poor-nations.
4. "Artificial Intelligence," Oxford English Dictionaries. Accessed 26 July 2023. https://www.oed.com/search/dictionary/?scope=Entries&q=artificial%20intelligence.
5. Boran, M. "Artificial Intelligence judges court cases with 79% accuracy." *The Irish Times*, October 27 2016. Accessed 4 March 2023. www.irishtimes.com/business/technology/artificial-intelligence-judges-court-cases-with-79-accuracy-1.2842492.
6. "CIPL AI First Report: Artificial Intelligence and Data Protection in Tension." Centre for Information Policy Leadership. Accessed 14 March 2023. https://www.informationpolicycentre.com/uploads/5/7/1/0/57104281/cipl_first_ai_report_-_ai_and_data_protection_in_tension__2_.pdf.
7. Cole, S. "Netflix Made an Anime Using AI Due to a 'Labor Shortage,' and Fans Are Pissed." *VICE*, February 1, 2023. Accessed 20 August 2023. https://www.vice.com/en/article/bvmqkv/netflix-anime-dog-and-the-boy-ai-generated-art.
8. Chui, M., J. Manyika, and M. Miremadi. "The Countries Most (and Least) Likely to be Affected by Automation." *Harvard Business Review,* April 12, 2017. Accessed 10 September 2023. https://hbr.org/2017/04/the-countries-most-and-least-likely-to-be-affected-by-automation.
9. Cremer D., and G. Kasparov. "AI Should Augment Human Intelligence, Not Replace It." *Harvard Business Review,* March 18, 2021. Accessed 14 August 2023. https://hbr.org/2021/03/ai-should-augment-human-intelligence-not-replace-it.

10. “Czech Republic AI Strategy Report.” European Commission, AI Watch. Accessed 21 September 2023. https://ai-watch.ec.europa.eu/countries/czech-republic/czech-republic-ai-strategy-report_en#ecl-inpage-227.
11. Dastin, J. “Amazon scraps secret AI recruiting tool that showed bias against women.” *Reuters*, October 11, 2018. Accessed 5 September 2023. https://www.reuters.com/article/us-amazoncom-jobs-automation-insight-idUSKCN1MK08G.
12. “Deloitte Introduces Trustworthy AI Framework to Guide Organizations in Ethical Application of Technology in the Age of With.” Deloitte. Accessed 15 June 2023. https://www2.deloitte.com/us/en/pages/about-deloitte/articles/press-releases/deloitte-introduces-trustworthy-ai-framework.html.
13. “EMPLOYMENT OUTLOOK 2023 Artificial intelligence and jobs.” OECD. Accessed 1 November 2023. https://oecd.org/employment-outlook/2023/.
14. “Estonia AI Strategy Report.” European Commission, AI Watch. Accessed 24 September 2023. https://ai-watch.ec.europa.eu/countries/estonia/estonia-ai-strategy-report_en.
15. “Fedorov: Ukraine should gain experience in the field of artificial intelligence.” Ukrinform. Accessed 1 November 2023. https://www.ukrinform.ua/rubric-technology/3701489-fedorov-ukraina-mae-nabuti-dosvidu-u-sferi-stucnogo-intelektu.html.
16. “France AI Strategy Report.” European Commission, AI Watch. Accessed 14 September 2023. https://ai-watch.ec.europa.eu/countries/france/france-ai-strategy-report_en#ecl-inpage-190.
17. “Germany AI Strategy Report.” European Commission, AI Watch. Accessed 12 September 2023. https://ai-watch.ec.europa.eu/countries/germany/germany-ai-strategy-report_en#ecl-inpage-271.
18. Goncharuk, V. “Ukraine’s roadmap to an artificial intelligence future.” *Atlantic Council*, January 19, 2021. Accessed 31 October 2023. https://www.atlanticcouncil.org/blogs/ukrainealert/ukraines-roadmap-to-an-artificial-intelligence-future/.
19. Hawking, S. “This is the most dangerous time for our planet.” *The Guardian*, December 1 2016. Accessed 15 February 2023. https://www.theguardian.com/commentisfree/2016/dec/01/stephen-hawking-dangerous-time-planet-inequality.
20. Ipek, M. “EU Draft Artificial Intelligence Regulation: Extraterritorial Application and Effects.” *European Law Blog*, February 17, 2022. Accessed 7 October 2023. https://europeanlawblog.eu/2022/02/17/eu-draft-artificial-intelligence-regulation-extraterritorial-application-and-effects/.

21. Kissinger, H. E. Schmidt, and D. Huttenlocher. “ChatGPT Heralds an Intellectual Revolution.” *The Wall Street Journal*, February 24, 2023. Accessed 15 December 2022. https://www.wsj.com/articles/chatgpt-heralds-an-intellectual-revolution-enlightenment-artificial-intelligence-homo-technicus-technology-cognition-morality-philosophy-774331c6.
22. Kuang, C. “Can A.I. Be Taught to Explain Itself?” *The New York Times,* November 21, 2017. Accessed 15 December 2022. https://www.nytimes.com/2017/11/21/magazine/can-ai-be-taught-to-explain-itself.html?_r=0.
23. “Latvia AI Strategy Report.” European Commission, AI Watch. Accessed 21 September 2023. https://ai-watch.ec.europa.eu/countries/latvia-0/latvia-ai-strategy-report_en.
24. Levchenko, D. “Trends in the development of artificial intelligence in Ukraine and the world.” *Gwara media*, August 21, 2023. Accessed 1 November 2023. https://gwaramedia.com/tendenczii-rozvitku-shtuchnogo-intelektu-v-ukraini-ta-sviti/.
25. “Lithuania AI Strategy Report.” European Commission, AI Watch. Accessed 16 September 2023. https://ai-watch.ec.europa.eu/countries/lithuania/lithuania-ai-strategy-report_en#ecl-inpage-334.
26. Manyika J., S. Lund, M. Chui, J. Bughin, J. Woetzel, P. Batra, R. Ko, and S. Sanghvi. “Jobs lost, jobs gained: What the future of work will mean for jobs, skills, and wages.” *McKinsey & Company*, November 28, 2017. Accessed 12 February 2023. https://www.mckinsey.com/featured-insights/future-of-work/jobs-lost-jobs-gainedwhat-the-future-of-work-will-mean-for-jobs-skills-and-wages/.
27. Markiv, M. “Denys Sudilkovskyi: Without the ability to work with AI today, you will lose the competition tomorrow.” *Happy Monday*, September 12, 2023. Accessed 1 November 2023. https://happymonday.ua/bez-vminnya-pratsyuvaty-z-shi-vy-prograyete-konkurentsiyu?utm_source=telegram&utm_medium=social&utm_campaign=article.
28. Meyer, Jens-Uwe. “Will I soon be digitized away?” *Spiegel*, November 1, 2016. Accessed 2 September 2023. https://www.spiegel.de/karriere/roboter-im-job-werde-ich-bald-wegdigitalisiert-a-1119061.html.
29. “Mozilla’s Approach to Trustworthy Artificial Intelligence (AI).” Mozilla. Accessed 15 June 2023. https://foundation.mozilla.org/en/blog/mozillas-approach-to-trustworthy-artificial-intelligence-ai/.
30. Nquyen, Viet Lan. “Sophia the robot Viet Nam.” *United Nations Development Programme*, July 13, 2018. Accessed 22 November 2022. https://www.undp.org/vietnam/news/sophia-robot-viet-nam.

31. Pells, R. “10 jobs graduates will be applying for from 2026.” *Independent*, August 2016. Accessed 27 May 2023. https://www.independent.co.uk/news/education/education-news/10-jobs-graduateswill-be-applying-for-from-2026-a7179316.html.
32. Petriv, O. “Artificial Intelligence and the Artificial Intelligence Act: Time for a Legal Framework.” *CEDEM*, June 7, 2023. Accessed 4 October 2023. https://cedem.org.ua/analytics/artificial-intelligence-act/.
33. Petriv, O. “Disinformation and artificial intelligence: an (in)visible threat to modernity.” *CEDEM*, August 23, 2023. Accessed 5 October 2023. https://cedem.org.ua/analytics/dezinformatsiya-shtuchnyi-intelekt/.
34. “Poland AI Strategy Report.” European Commission, AI Watch. Accessed 17 September 2023. https://ai-watch.ec.europa.eu/countries/poland/poland-ai-strategy-report_en.
35. “Predicts 2018: AI and the future of work.” Gartner Research. Accessed 17 September 2023. https://www.gartner.com/en/documents/3833572/predicts-2018-ai-and-the-future-of-work.
36. “Regulation of artificial intelligence in Ukraine: the Ministry of Digitization presented a road map.” Ministry of Digital Transformation of Ukraine. Accessed 7 October 2023. https://www.kmu.gov.ua/news/rehuliuvannia-shtuchnoho-intelektu-v-ukraini-mintsyfry-prezentuvalo-dorozhniu-kartu.
37. “Regulatory framework proposal on artificial intelligence.” European Commission. Accessed 1 August 2023. https://digital-strategy.ec.europa.eu/en/policies/regulatory-framework-ai.
38. Russo, A. “Recession and Automation Changes Our Future of Work, But There are Jobs Coming, Report Says.” *World Economic Forum*, October 20, 2020. Accessed 7 May 2023. https://www.weforum.org/press/2020/10/recession-and-automation-changes-our-future-of-work-but-there-are-jobs-coming-report-says-52c5162fce/.
39. Semenyuga, I. “Ukraine announced the launch of a regulatory sandbox for artificial intelligence.” *MEDIASAPIENS*, March 23, 2023. Accessed 12 October 2023. https://ms.detector.media/trendi/post/31483/2023-03-23-v-ukraini-anonsuvaly-zapusk-regulyatornoi-pisochnytsi-dlya-shtuchnogo-intelektu/.
40. Shapoval, V. “The professions of the future: how artificial intelligence will change the labor market.” *Pro groshi*, September 6, 2023. Accessed 29 October 2023. https://progroshi.news/news/kar-yera/profesiji-maybutnogo-yak-shtuchniy-intelekt-zminit-rinok-praci-9710.html.
41. Sivakivskyi, Ya. “Dangerous assistant: Samsung banned employees from using artificial intelligence - the reason.” *24 Business*, May 3, 2023. Accessed 28 September 2023. https://24tv.ua/business/samsung-zaboroniv-shtuchniy-intelekt-yaka-prichina_n2305970.

42. “Slovakia AI Strategy Report.” European Commission, AI Watch. Accessed 14 September 2023. https://ai-watch.ec.europa.eu/countries/slovakia/slovakia-ai-strategy-report_en#ecl-inpage-398.
43. Smirnova, I. “How artificial intelligence is changing the labour market in Ukraine.” *The page*, April 19, 2023. Accessed 30 October 2023. https://thepage.ua/ua/news/yak-chatgpt-vplinuv-na-robotu-riznih-fahivciv-v-ukrayini.
44. Soper, S. “Fired by Bot at Amazon: «It’s You Against the Machine»” *Bloomberg*, June 28, 2021. Accessed 12 September 2023. https://www.bloomberg.com/news/features/2021-06-28/fired-by-bot-amazon-turns-to-machine-managers-and-workers-are-losing-out.
45. Sorokin, E. “Artificial intelligence will change (and is already changing) the labor market.” *Zaborona*, January 12, 2022. Accessed 10 May 2023. https://zaborona.com/shtuchnyj-intelekt-zminyt-i-uzhe-zminyuye-rynok-praczi/.
46. Stetsyuk, K. “Why managers need to use AI at work now.” *Projector Mag*. Accessed 18 October 2022. https://prjctrmag.com/ai-for-managers.
47. “The new post office involves robots in sorting parcels.” LIGA. Business. Accessed 31 October 2023. https://biz.liga.net/ua/all/all/video/novaya-pochta-vnedryaet-robotov-dlya-sortirovki-posylok-video.
48. “The Potentially Large Effects of Artificial Intelligence on Economic Growth.” Goldman Sachs Economic Research. Accessed 10 August 2023. https://www.key4biz.it/wp-content/uploads/2023/03/Global-Economics-Analyst_-The-Potentially-Large-Effects-of-Artificial-Intelligence-on-Economic-Growth-Briggs_Kodnani.pdf.
49. “The new robots are coming – humans are staying.” IG Metall Robotik-Fachtagung. Accessed 2 September 2023. https://www.igmetall.de/politik-und-gesellschaft/zukunft-der-arbeit/industrie-40/die-neuen-roboter-kommen--der-mensch-bleibt.
50. “They connect the brain to a computer and believe in good AI. How a Ukrainian IT company predicts the popularity of products using neuromarketing.” *MARKETER.UA*, Accessed 18 October 2023. https://marketer.ua/ua/it-company-predicts-product-popularity-with-neuromarketing/.
51. “Traffic in Ukraine will be controlled by artificial intelligence.” AutoKyiv. Accessed 25 October 2023. https://autokyiv.info/2020/10/16/trafikom-v-kyyevi-upravlyatyme-shtuchnyj-intelekt/.
52. Vincent, J. “Pretending to give robot citizenship helps no one.” *THE VERGE*, October 30, 2017. Accessed 26 November 2022. https://www.theverge.com/2017/10/30/16552006/robot-rights-citizenship-saudi-arabia-sophia.

53. “Vodafone launches Artificial Intelligence framework.” Vodafone. Accessed 15 June 2023. https://www.vodafone.com/perspectives/blog/vodafone-launches-artificial-intelligence-framework.
54. Volpicelli G. “Europe pitches ‘AI Pact’ to curtail the booming tech’s risks.” *Politico*. Accessed 16 June 2023. https://www.politico.eu/article/big-tech-rumble-europe-global-artificial-intelligence-debate-ai-pact/.
55. Yarova, M. “How does the popularity of AI affect the labor market in Ukraine and what should candidates do?” *AIN.UA*, April 14, 2023. Accessed 29 October 2023. https://ain.ua/2023/04/14/yak-populyarnist-ai-vplyvaye-na-rynok-praczi-v-ukrayini/.
56. Zeng, M. “Alibaba and the Future of Business.” *Harvard Business Review,* 2018. Accessed 18 August 2023. https://hbr.org/2018/09/alibaba-and-the-future-of-business.
57. Zinser, M., J. Rose, and H. Sirkin. “How Robots Will Redefine Competitiveness.” *Boston Consulting Group*, September 23, 2015. Accessed 21 May 2023. https://www.bcg.com/publications/2015/lean-manufacturing-innovation-robots-redefine-competitiveness.

## ABSTRACT

The master thesis examines the place of artificial intelligence in the European labour market. The study begins with an analysis of the concept of artificial intelligence and the challenges caused by its development. Also, the author describes the benefits and drawbacks of AI applications in the labour market.

Further research concentrates on analyzing the European and Ukrainian legislation to compare their approaches to AI regulation and identify ways of cooperation between the European Union and Ukraine. Additionally, the author searched through the AI strategies of certain EU member states, examining how they deal with risks created by AI for national labour markets. The choice of countries is dictated by their economic ties and belonging to a Romano-Germanic legal family.



**Key words:** artificial intelligence, labour market, automatization, employment.

**SUMMARY**

**THE ROLE OF ARTIFICIAL INTELLIGENCE IN THE EUROPEAN UNION LABOUR MARKET**

**Rehina Skrypnyk**

**The main aim** of this master thesis is to determine artificial intelligence's place in the European labour market, as well as the advantages and drawbacks associated with using AI in the European and Ukrainian legal systems in the context of the digital economy.

The following **objectives** have been identified to achieve this aim:

1) to examine the concept of artificial intelligence and its impact on the labour process in order to provide arguments for and against the usage of AI in the labour market;

2) to identify the European approach to the regulation of artificial intelligence through analysis of EU member states AI strategies to find out how they manage AI challenges;

3) to assess the Ukrainian regulation of artificial intelligence in order to improve its legislation and propose ways for cooperation between the European Union and Ukraine in this field.

**The research is divided into three parts. In the first part**, the author described the concept of artificial intelligence, its types, as well as the pros and cons of its application. It was found that artificial intelligence is a complex computer system that is capable of solving different tasks. Now, AI cannot replace a human; it serves the well-being of society but still can create some problems for specific categories of workers. Moreover, using such technology leads to job loss in some spheres, which, however, allows the creation of new professions, boosts companies' productivity, and generates innovation.

**In the second part**, the author analyzed the European Union legislation regarding the regulation and application of AI and concluded that artificial intelligence is an object of the European labour market. Additionally, the author examined the AI strategies of some EU member states to explore countries' responses to AI risks and necessary steps to prevent mass unemployment.

**In the third part**, the author focused on the Ukrainian approach to AI regulation. Some cases of AI application in the Ukrainian labour market show the country's potential. Furthermore, the author provided several possibilities for cooperation and implementation of European experience into the Ukrainian legal system.

Based on the above, the author provided several conclusions regarding the role of AI in modern society and its impact on the European and Ukrainian labour markets. Moreover, some recommendations were provided related to changes in Ukrainian legislation and the proposition for cooperation between the European Union and Ukraine.