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LEGAL PROTECTION OF WORKERS AND EMPLOYERS WHEN USING ARTIFICIAL INTELLIGENCE IN THE WORKING ENVIRONMENT***

Abstract

The use of artificial intelligence in the work environment by both workers and employers represents the present in which many issues of labor law are realized, which indirectly affect both Commercial Law and Intellectual Property Law. In the digital age we are in, workers exercise new rights and new forms and ways of working that pose a challenge to labor legislation, while employers can use (generative) artificial intelligence tools when hiring and controlling workers, which raises a number of questions in the field of ethics, the realization of basic workers' rights, and the protection of personal data. The issue of legal protection of artificial intelligence developed by workers in an employment relationship with an employer is open. In the spirit of the

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new EU regulation 2024/1689 on determining the conformity of the rules on artificial intelligence, the authors in this paper propose new legal solutions in the field of Labor Law and Intellectual Property Law *(de lege ferenda)*.

Keywords: labor law, intellectual property law, worker, employer, artificial intelligence, new types of work

INTRODUCTION

The fourth industrial revolution brought us artificial intelligence with the help of technical means from the third industrial revolution (computers, software, electronic databases, the Internet) (Marković 2024, 101–102). It seems that it is not possible to function without information technology, which has introduced considerable changes in the world of work, economy, intellectual property, and the protection of personal data. As existence is secured from work as a relationship in which remuneration is one of the characteristics, the changes that occur in and in connection with work relationships are especially in focus. Attention to labor relations has increased since the use of digitization and artificial intelligence. Although it is indisputable that the application of digitization and artificial intelligence has brought benefits for both employers and employees, one cannot ignore all the challenges in the employment relationship, which have arisen as a result of these changes (Božičić 2023, 92). Digitization of work seems to be a consequence of the influence of information technologies in labor relations, which has opened up some legal questions, such as whether artificial intelligence can replace people or employees, how to protect personal data in the context of digital work, or what the nature of intellectual property arising from labor relations is. It is indisputable that employers use artificial intelligence to monitor the work of employees, and the positive effects of applying artificial intelligence to the world of work are mostly reflected in the field of productivity. However, the modernization of artificial intelligence systems led to the fact that these systems take over some of the powers that the employer has, as platform workers emerged, whose position is particularly specific and unfavorable. This is because software based on the large amount of data it stores can make discriminatory

decisions, without the possibility for employees to influence them. There is also the issue of protecting employees' personal data.

A particularly challenging issue is the protection of intellectual property rights on artificial intelligence, created in the employment relationship, especially bearing in mind that the basis of the development of artificial intelligence is a computer program. There is also the issue of the universally popular application of generative artificial intelligence ChatGPT which, based on the user's query, can, based on the user's query, create or generate text that "imitates" human intelligence, which additionally started a discussion about the way to regulate artificial intelligence in the workplace. This is especially due to the fact that Serbian labor laws and those that regulate intellectual property do not know the concept of artificial intelligence, which represents an additional problem in understanding artificial intelligence as a sophisticated information system, which consists of one or more computer programs (software) and an electronic database.

In the paper, the authors tried to answer some of the dilemmas presented, using the normative and comparative law method. After the introduction, part of the research is dedicated to the way artificial intelligence is used by the employer, then the part dedicated to the treatment of artificial intelligence created in the employment relationship, while the end of the paper will be dedicated to new forms of work, which arose as a result of the influence of digitization and artificial intelligence in the employment relationship.

Considering the set title of the research topic, the authors proceed from the following hypotheses: it is necessary to define at the legislative level the concept of information system and artificial intelligence in order to apply the provision concerning copyrights to computer programs and databases, as well as the right of producers to databases; furthermore, the absence of transparency when using artificial intelligence by the employer is associated with considerable challenges in terms of protecting personal data and making discriminatory decisions in the employment process and at work; and finally, harmonization of domestic legislation with European standards is a necessary step in order to promote and apply new employee rights, which our law does not recognize.

(UN)AUTHORIZED USE OF ARTIFICIAL INTELLIGENCE BY THE EMPLOYER

We are witnessing the digital revolution, which has resulted in the influence of digital tools in all spheres of society, including labor relations. Thus, the traditional working relationship is changing under the influence of digitalization. We agree with De Stefano that technological transformation is inevitable and that it represents the price for all the benefits that social processes record through the use of new technologies (De Stefano 2018, 1). As the theory states, artificial intelligence "is at the heart of digital transformation" (Kovačević 2024, 87), which represents a significant indicator of technological development that has been accelerated by this. Reljanović and Misailović (2021, 408) point out that the digitization of work arose as a response to the development of information technologies, and that digital work reached its peak during the Covid-19 pandemic. One of the issues that deserves the attention of scientists is the degree of influence that artificial intelligence has in the sphere of work, starting with employment, while the way in which employers use this tool in the exercise of their powers is followed with special interest. In this sense, Reljanović and Misailović (2021, 408) conclude that digitization has had a double impact on labor relations, on the one hand, creating new occupations based on digitization, but at the same time, it has led to the precariousness of the position of employees, which they believe is a necessary companion to the flexibilization of work. This should be especially related to the mental health of employees, who in the digital age are expected to always be available (*alwys on culture*), to carry out work tasks even after leaving the workplace and after working hours have expired, so the line between business and private life is difficult to draw, especially when it involves working outside the employee's premises. Such a pace of work often leads to the so-called *employee burnout*, and in Japan, the expression for employees who take their own life because of work (*karroshi*) has become popular (Rajić Ćalić 2023, 303–319; Balnožan 2023, 237–258). As Špadina and Ljubić (2024, 407) point out, constant availability leads to a drop in employee concentration, increased stress, emotional exhaustion, and addiction to the use of digital devices. We should also not forget the employee's right to privacy, which is difficult to protect due to working in the digital age, where a large amount of employee data is available to the employer. As Misailović (2025, 283) underlines, the employee's right to privacy

must be viewed in the context of the limits of the employer's authority and the employee's obligation to perform work tasks at the workplace and within working hours, relying on the principle of proportionality and transparency. Special attention when it comes to privacy protection must certainly be focused on the employee who performs work outside the employer's premises. This is particularly relevant in this case, as it is necessary to balance the employer's interest in supervising the employee's work, which is not conducted on their premises, with the employee's interest in maintaining their privacy, thereby establishing a balance between family and professional life. Guided by the aforementioned principles, the interests of the employer and the employee in this case must be harmonized by establishing the supervision of the employee's work by infringing the employee's privacy as little as possible, with the mandatory notification of the employee about the measures that the employer will use (Misailović 2025, 284). The request for privacy protection also applies to data circulating through the use of the Internet by the employee, as well as e-mail and telephone, which creates the need for the introduction of special surveillance measures in the digital world of business performance (Pivčević and Erceg Ćurić 2022, 122). As the right to privacy is provided for in Article 8 of the Convention on the Protection of Human Rights and Fundamental Freedoms, it is valuable to recognize the violation of the right to privacy in cases that now serve as a guide at the national level. In a court, case *Bărbulescu v. Romania* (61496/08, par 121–122), European Court of Human Rights demanded that national legislations to ensure the protection of the employee's privacy at the workplace, as well as that the national courts in judging take into account the interests of employers and employees through notifying the employee about the surveillance, who had to be informed in advance about the surveillance and its content, then through the justification of the surveillance, the degree of encroachment into the employee's private sphere and the like. Also interesting is the verdict in the case of *Antović and Mirković v. Montenegro* (70838/13), in which the court adopted a broader understanding of private life, based on the fact that the performance of a professional activity, such as the work of a professor at a university, must be subject to protection because it represents "private social life." Accordingly, the violation of Article 8 of the Convention is represented by the installation of video surveillance in some of the rooms at the faculty where professors teach, because the

amphitheatres where classes are held are "the place where professors and students interact and where their social identity is built."

Therefore, it is important to keep in mind that job security gains additional value in the context of digitalization, which some authors claim is the basic dimension of dignified work (Reljanović and Misailović 2022, 443). This is a conclusion we agree with, bearing in mind that working in a digital environment together with artificial intelligence represents a suitable ground for precarization, as well as that remuneration is an element that distinguishes the employment relationship from other relationships, which ensures the existence of the employee and his family, and it is necessary to protect the employee from the uncertainty that his employment relationship will be terminated. It is clear that the use of information and communication technologies together with artificial intelligence has numerous benefits in the working relationship, but at the same time we must be aware of the creation of potentially greater risks of violation of certain rights, especially when it comes to decision-making by appropriate software based on algorithms that leave complete decision-making autonomy, so that in fact these tools, by means of artificial intelligence, take over the role played by employers. It is true that many jobs performed by employers are automated, and with the help of artificial intelligence, they can be performed by various software. This is especially important if we keep in mind that there is no possibility for the employee to be involved in the decision-making process, that is, that digital tools together with artificial intelligence can completely replace humans when it comes to management positions (Zappala 2023, 623). In this sense, it is worth pointing out the existence of digital platforms, which, as Božičić claims, represent a kind of virtual labor market, because they function through the Internet as an application, connecting employers and employees through algorithmic platforms (Božičić 2023, 91).[1] Algorithmic platforms are changing the traditional two-sided working relationship by introducing a platform alongside clients who are looking for a specific job and platform workers who are qualified to perform a specific job. As stated, these platforms function with the help of a large amount of data that is stored from the moment when users register, and on through all stages of the employment relationship, whereby the algorithm takes over some

[1] The author defines an algorithm as an instruction, a set of steps, or a procedure for solving a problem or task.

of the functions of the employer (Božičić 2023, 91). More precisely, the platform selects workers, supervises and evaluates their work, on which the final assessment of the specific worker and the scope of work that will be assigned to him crucially depends (Božičić 2023, 95). Here, in fact, there is a complete takeover of the employer's function, which is called algorithmic management, closely linked to the risks that this way of decision-making carries, in the form of a lack of transparency in terms of algorithmic functioning, but also a lack of objectivity when making decisions (Božičić 2023, 101). Such decisions should be "rational, neutral, unbiased and equal for all to whom they apply," otherwise the possibility is created for the emergence of the so-called algorithmic discrimination, which is considered one of the negative consequences of the impact of artificial intelligence on human rights (Prlja, Gasmi, and Korać 2023, 60).[2] Špadina (2023, 173) warns of the same, indicating that the data in itself is, of course, not discriminatory, but a discriminatory decision can be reached during the interpretation process due to data that is not correct, is partially correct, or is skewed with certain prejudices. This kind of discrimination can especially be a problem when selecting candidates in the recruitment process, considering that algorithms can exclude certain candidates from the selection process, without the possibility of using all factors that can prevent discriminatory decisions. This is the case especially with complex algorithms (Špadina 2023, 173). Reljanović and Misailović (2021, 425) highlight the disadvantageous position of workers hired through platforms, emphasizing that algorithms evaluate work without considering other relevant factors, which would be taken into account if the assessment were made by the employer.[3] The question can rightly be asked: can new technology, together with artificial intelligence, completely replace the employer? On the other hand, the question that can be heard much more often is: will automation and artificial intelligence replace people in many workplaces?

[2] As the algorithm is based on the data it stores, the possibility of making discriminatory decisions increases if the data taken into account is based on discriminatory decisions. Such is the case with the frequent employment of men in certain workplaces. The authors point out that it is not difficult to achieve algorithmic discrimination by selecting target variables and classes, selecting system data, and selecting characteristics.

[3] The authors cite the example of a delivery person, whose work is evaluated by an algorithm based on pre-collected data, so if the worker is unable to perform work on a certain day due to illness, he receives negative points, which affects the distribution of work, and in some cases, the termination of the employment contract.

That digital tools together with artificial intelligence must be used carefully, and it has become clear with the emergence of systems that can control the work of employees. Although it is emphasized that the use of such software contributes to more productive work for the employer (Ter Haar and Otto 2023), its use without control can be questionable when it comes to employee privacy. This refers to software that tracks the location of employees, which is beneficial to the employer in controlling remote work (De Stefano 2018, 7).[4] This author also points out that it is about controlling the work of employees without limits, all with the aim of monitoring work efficiency. Cankaya (2023, 42) refers to the use of Desktime software, which gives the employer the opportunity to monitor the attendance and productivity of employees by monitoring the employee's official communication. That the surveillance possibilities are almost unlimited, as stated at the beginning, it was shown by the example of using the Work Examiner software, which is programmed to monitor all the activities of the employee on the computer, so the employer can have an insight into what the employee searches, the content of the documents he downloads, the emails the employee sends (Çankaya 2023, 42). This is confirmed by De Stefano (2018, 9), who refers to the use of the Fitbit application for insight into the activities of employees outside of working hours and on the premises of the employer. The author indicates that employers tend to use these applications in order to monitor activities outside of working hours, and all in the context of the already mentioned always-on culture. Such applications can collect a large amount of data about the employee, which can detect their behavior outside the workplace, with the possibility of monitoring the employee's activities on social networks, and the author points to similar behavior in the Ford car company (De Stefano 2018, 9).

PROTECTION OF INTELLECTUAL PROPERTY RIGHTS ON ARTIFICIAL INTELLIGENCE CREATED IN A WORK RELATIONSHIP

At the level of the European Union, a long-awaited Regulation was adopted that regulates some basic issues related to artificial intelligence, the so-called AI Regulation. In Article 3 of the EU AI Regulation AI

[4] The author particularly points to the position of employed truck and van drivers, as well as delivery crews, where systems are used to check the location, as well as online freelancers, whose work is checked based on ratings on the platform.

"Artificial Intelligence System" is defined as a machine-based system that is designed to work with different levels of autonomy and that can show adaptability after deployment, and that, for explicit or implicit goals, concludes, based on the input data it receives, how to generate outputs such as predictions, content, recommendations or decisions that can affect the physical or virtual environment (Regulation EU 2024/1689, Art.3). However, this The EU regulation on artificial intelligence does not directly regulate artificial intelligence created in the employment relationship. For this reason, we will perform a comparative legal analysis of the positive regulations that regulate copyright protection of the computer program that is the basis of artificial intelligence.

In the era of information technologies, in which the digital transformation of all social processes is more than represented, ready-made "package" solutions in the banking sector, telecommunications, companies, electricity distribution, and other sectors that are widely called "information systems" have come to the fore. Information systems represent a broader term than "software" and consist, among other things, of a database model and application software (i.e., computer program + program description, i.e., accompanying technical documentation), which "manages" the aforementioned database (Živković and Hasić 2022, 335). As an example of an information system, we can take, e.g., software (one or more computer programs) that processes the (electronic) database of all electricity consumers that is systematically organized and has its original structure.

That it is precisely the information system that is the precursor and the foundation on which AI was created is represented by examples of works by authors who talk about the use of AI in the process of digitalization of electricity supply. The positive effects of AI in the production of electricity would be the optimization of electricity production, overcoming the problem of (un)confidentiality of the amount of electricity supplied/consumed, but also challenges related to the human factor, control and maintenance of hardware (equipment, machines, networks), in order to achieve energy efficiency and sustainability (Mišković 2024, 261). One of the most popular generative artificial intelligences is *ChatGPT,* which is a language model created by San Francisco-based AI company *OpenAI* (Živković 2024, 331). *ChatGPT* has become the fastest- growing software application in history, with the power to mimic human abilities to produce text, images, videos, music, and software codes (Čović 2024, 661). This means that *ChatGPT* has

affected all industries and raised an open legal question regarding the regulation of (generative) artificial intelligence that is created in the employment relationship.

Our positive legal regulations in the field of intellectual property law, especially copyright and related law, as well as labor law do not recognize the "concept of artificial intelligence," and since artificial intelligence is basically a sophisticated information system that basically represents one or more computer programs (software) that together with an electronic database form an information system, we will analyze the positive legislation in the field of protection of computer programs and databases in employment. It should be pointed out that for the regulation of artificial intelligence in the employment relationship, positive legal regulations from the field of intellectual property rights are applied as lex specialis. For a better understanding of the above, we will provide an explanation of these terms, and then perform a comparative legal presentation of copyright protection on computer programs, copyright on the database structure, as a particularly related sui generis right of the database producer. Finally, after analyzing these terms, we will analyze the computer programs and (electronic) databases created in the work relationship that represent the basis on which artificial intelligence is developed.

A computer program in any form means a computer program in source and target (executable) code.[5] It is important to point out that the ideas and principles on which any element of a computer program is based, including the elements that are the basis for its interface, are not protected (Hasić i dr. 2023, 299.) The term "computer program" used by the Law on Copyright and Related Rights of Bosnia and Herzegovina (ZASP BIH 2010) and on which copyright may exist, should be distinguished from the term "software" in the technical and legal sense. Software is a broader term than a computer program, and can consist of one or more computer programs, preparation of designed material (program description), and additional, ie, accompanying (user) documentation, and potentially other elements. From the point of view of copyright, a computer program and preparatory design material can represent a special type of author's work, provided that they represent

[5] The term *source code* means a computer program expressed in one of the programming languages, while the term *target (executable) code* refers to a computer program converted into a digital machine record that a computer can understand and execute (Marković 2018, 150).

an "individual intellectual creation" in the sense of Art. 4 st. 1 (ZASP BIH 2010). This point of view is supported by the French text of the Computer Program Directive, where the terms computer program and software are clearly distinguished, and protection is provided only to computer programs! Based on the above, we can conclude that the legal term of a computer program includes the technical term of a computer program and accompanying technical documentation (Kunda and Matanovac Vučković 2010, 85–132). Precisely because of this, we can mention the excellent example of Serbia, which, in its Law on Copyright and Related Rights, expands the definition of a computer program as an author's work, and in Art. 2nd st. 2 of the mentioned law stipulates that, among other things, *written works* are considered copyrighted works, i.e., *computer programs with accompanying technical and user documentation in any form of expression, including preparatory material for their creation, etc.* (ZASP RS 2019). Legal experts point out that a computer program, as part of the software, represents *instructions for the computer to carry out the determination of an action in order to solve a problem.* Because there are many stages in the development of a computer program, all elements of a computer program can potentially enjoy copyright protection. Because there are many stages in the development of a computer program, all elements of a computer program can potentially enjoy copyright protection (Lučić 2020, 433).

Analyzing the comparative legislation of Serbia, Croatia, and BiH, we can draw several conclusions. First of all, the ZASP BIH (2010) stipulates that the author's work is an *individual spiritual creation,* and this definition lacks the word *original* in comparison with Serbia and Croatia, where the legislator, when defining the author's work, pointed out that it is an *original spiritual creation* (ZASP RS 2019) or to the *original intellectual creation* of Croatia (ZASP RH 2021). Secondly, the term *computer program* prescribed by the legislators in BiH, Serbia, and Croatia, and on which copyright may exist, should be distinguished from the term *software* in the technical and legal sense. Software is a broader term than a computer program, and can consist of one or more computer programs, preparation of designed material (program description), and additional, i.e., accompanying (user) documentation, and potentially other elements. From the point of view of copyright, a computer program and preparatory design material can represent a special type of author's work, provided that they represent an *original intellectual creation* in the sense of Art. 2nd st. 1 (ZASP RS 2019). Serbia is in Art. 2nd st. 2

(ZASP RS 2019) expanded the definition of a computer program as an author's work.

This solution was adopted by both Serbia and the neighboring countries of Bosnia and Herzegovina and Croatia, with certain differences in the legal regulation of this rule. Article 98, paragraph 4 of the ZASP RS (2019) stipulates: "If the author's work is a computer program or database, the permanent holder of all exclusive property rights in the work is the employer, unless otherwise stipulated by the contract. The author has the right to special compensation if this is provided for in the contract." It is also necessary to apostrophize co-authored works related to computer programs that are regulated in Article 10, paragraph 3 and 4 of the ZASP RS (2019) as follows: "If the co-authored work is a computer program or database, the copyright on such a computer program or database belongs to all co-authors. For the exercise of copyright and the transfer of that right, the consent of all co-authors is necessary." Regarding the contract on the order of the author's work, Article 95, paragraph 3 of the ZASP RS (2019) prescribes the following: "If a computer program is created on the basis of the contract on the order of the author's work, the client acquires all rights to use the computer program, unless otherwise stipulated by the contract."

Finally, we have the situation of regulating the collective author's work related to computer programs. Thus, in Article 97, paragraph 1 of the ZASP RS (2019), the following is prescribed: "An author's work created by merging the contributions of a number of authors into one whole (encyclopedia, anthology, computer program, database, etc.) is considered a collective author's work."

ZASP BIH (2010) and ZASP RH (2021) have somewhat different legal solutions regarding computer programs created in the employment relationship and on order. The legislator in Bosnia and Herzegovina, unlike the legislator in Serbia, has regulated computer programs created in an employment relationship and by order in one legal provision. Thus, Article 103 of the Law on Copyrights and Related Rights (ZASP BIH 2010) states: "If a computer program is created by an employee in the performance of their duties or according to the instructions of the employer, or if it is created by an author based on an order contract, it is considered that all copyright property rights to such a program are exclusively and entirely transferred to the employer or the purchaser, unless otherwise stipulated by the contract."

The legislator in the Republic of Croatia has regulated the computer program created in an employment relationship with a specific provision. Thus, Article 100, Paragraph 6 of the Copyright and Related Rights Act (ZASP RH 2021) states: "When a computer program is created by an employee in the performance of their obligations under the employment contract, the employer has all exclusive rights to exploit that computer program, without content, temporal, or spatial limitations, unless otherwise determined by the employment contract." Regarding contracts for the creation of a work upon order, there is no specific provision for computer programs, so a general provision for all commissioned works applies. Article 96, Paragraph 3 of the ZASP RH (2021) states: "Unless otherwise provided by the contract for the creation of a commissioned work or by this Law, it is assumed that the client has acquired exclusive copyright property rights to exploit the commissioned work created, to the extent necessary for the realization of the activities they perform, without spatial and temporal limitations."

Analyzing the positive legislation of Serbia, BiH, and Croatia mentioned above, we can state that there are two cases that are regulated. The first situation is if the author's work is a computer program or a database, in which case the permanent holder of all exclusive property rights in the work is the employer, unless otherwise specified in the contract. Under copyright property rights is meant the author's right to "the economic exploitation of his work, as well as the work created by the processing of his work, and for any exploitation of the author's work by another person, the author is entitled to compensation," unless otherwise stipulated by the ZASP RS or by contract, and all in the sense of Article 19 (ZASP RS 2019). The property rights of the author in particular include "the right to reproduction, the right to put copies of the work into circulation, the right to lease copies of the work, the right to perform, the right to present, the right to transmit the performance or present, the right to broadcast," etc., and all in terms of ZAPS RS (2019). What is important to note is that the employee and the employer can contract and dispose of copyright property differently by contract. However, the legislator in Serbia also clearly mentions the database that represents the author's work, which is also based on a legal assumption that exclusive copyright property rights belong to the employer. The legislator in Serbia even goes a step further and prescribes a special compensation if it is stipulated in the contract, while the legislator in the Republic of Croatia (ZASP RH 2021) points out that the mentioned exclusive rights are

transferred to the employer "without content, time and space limitations, unless the employment contract stipulates otherwise." ZASP BIH (2010) does not even mention the database when dealing with acts arising out of an employment relationship.

As for author's moral rights, they are non-alienable and non-transferable, the author can only be a natural person, i.e. a worker who has moral rights that include the right of paternity (the right to be recognized as the author of his work), the right to indicate the name, the right to publish, the right to protect the integrity of the work, the right to oppose unworthy exploitation of the work, all in the sense of ZASP RS (2019).

The situation is different if the *computer program was created by the author on the basis of an order contract; it is considered that all copyright property rights on such a program are exclusively and entirely transferred to the customer.*[6] It is also important to note that in the Anglo-Saxon legal tradition, in the case of works created to order, i.e., in an employment relationship, there is an exception to the rule that the original copyright holder is considered to be the author, i.e., the person who actually created the work. If the work was created in an employment relationship or by order, the employer or the customer (natural or legal entity) is considered the author, regardless of the fact that the work was essentially created by an employee or a contractor from the work order contract (Živković 2020, 631).

We can conclude that Serbia and Croatia, unlike Bosnia and Herzegovina, have regulated in separate articles the author's work that was created in an employment relationship and on order, even if the legal assumption for both works is the same, the employer or the client remains the holder of the author's property rights in the event that the contract does not stipulate otherwise. It is certainly necessary to apostrophize that the legislator in Serbia prescribed the assumption that the author's work on the database also belongs to the employer, unless otherwise specified in the contract. This kind of solution is very important, especially because often computer programs are connected

[6] For example, if the customer hires a certain software company to create or program a computer program for him, unless otherwise stipulated in the contract, all copyright property rights belong to the customer. However, if the executor of the work is a natural person as a developer, he retains copyright moral rights that are non-transferable and inalienable, and he can retain copyright property rights (both natural and legal person) only if he so agrees with the client (Hasić i dr. 2023, 299).

to the database that makes up the information system. Therefore, the author proposes, as a *de lege ferenda*, that the legislators in Bosnia and Herzegovina and Croatia, following the example of Serbia, introduce a legal presumption in favor of the employer and for copyrighted works on databases.

Finally, we will note that there is a legal presumption of the transfer of copyright property rights to the employer, the legislator in Croatia, where it is prescribed that such transfer is without content, time and space limitations, which is a solution that should certainly be considered as a good solution as a proposal *de lege ferenda* for legislators in Serbia and Bosnia and Herzegovina. What could still cause confusion is the statement that the wording in the ZASP RH (2021), "unless otherwise determined by the employment contract," in which case the question arises as to what happens to those situations when the employer hires workers outside of the employment relationship.[7]

NEW RIGHTS OF WORKERS AND A NEW WAY OF WORKING IN THE DIGITAL AGE

Positive legal regulations in the field of employment relations, which include classic work in an employment relationship (on the basis of an employment contract for an indefinite period of time, employment contract for a fixed period of time, trial work and on professional training and development for an internship) and work outside the employment relationship (contract on work outside the employment relationship, contract on temporary and occasional jobs and supplementary work) are facing a great challenge in how to regulate all forms of new worker rights and new ways of working brought about by the digital age, as the third industrial revolution in the form of digital transformations, as well as the fourth industrial revolution in terms of artificial intelligence.

The most significant novelty is that in all sectors where workers do their jobs via computers, i.e., laptops, where they provide essentially intellectual services as forms of work, with the development of information and communication technologies, work from home is more than represented, which has several modalities: 1) Home based work – "workers whose main place of work is their own home;" 2) Remote work

[7] For example, on the basis of a work contract, a contract on additional work, or a contract on temporary and occasional jobs.

– "remote work that includes all places that are not on the employer's premises, including employees' homes;" 3) Telework from home – "a modality of remote work that is carried out at the worker's home," with the specificity that the independent worker provides information and communication tools for work.[8] This represents a type of flexible work brought about by digital technologies, where work tasks can be regularly performed outside the employer's headquarters or outside the worker's home, supported above all by the Internet, i.e., information and communication technologies, in addition to establishing online access to the employer's computer systems (employer's server). *Cisco Webex, Skype, Google Meet*, and file-sharing sites such as *Google Drive, Google Docs, Dropbox,* and *Slack* are used as instruments for virtual collaboration.[9] In practice, especially in one of the fastest-growing industries, the IT industry, *remote work* is predominantly applied, i.e., work at a distance where the worker chooses from which place to perform work tasks, where the means for work are usually provided by the employer (in the sense of a laptop).

In Europe, new forms of work have been identified and published by the European Foundation for the Improvement of Living and Working Conditions as early as 2015 in the Study on New Forms of Work. The first one most often mentioned in the literature is *employee sharing,* the second is *job sharing*, the third is *voucher-based work*, then we have "mobile work based on information and communication technologies, interim management, casual work, portfolio work, collaborative employment and work on digital platforms" (Urdarević and Antić 2021, 158–161).

The first, *employee sharing*, refers to situations in which one worker is hired by two or more employers at the same time, but at most up to the worker's full time (Urdarević and Antić 2021, 159). When we analyze *the sharing of employees* as an institute, we can easily conclude that the very title of this work negates the basic postulates of the employment relationship, which implies a legal relationship between one employee and one employer. As far as the comparative legal analysis is concerned, certain legislations have followed the trend of new business and decided

[8] In the literature, the aforementioned is referred to as the concept of mixed work from home (Misailović 2025, 280–281).

[9] This type of work, in most cases, qualifies as remote work. What is important to note is that it is necessary to distinguish *remote work* from *work through platforms* (*platform work, crowd work*) (Kovačević 2024, 102).

to regulate *the sharing of employees* by labor law regulations. Others, on the other hand, decided not to regulate this institute with legislative amendments or new laws, but to leave it unregulated, and to bring it under some of the already regulated relationships that are established by contracts, such as part-time work, agency employment, or employment contracts using the existing instruments of employment flexibility with all the risks they bring. Viewed in a broader sense, and observing the practice that has developed in European countries, under *the sharing of employees*, as a form of work, it is understood that a labor contract is concluded between the worker and a group of employers, and the group of employers becomes the formal employer of the employee. Apart from this contract that is signed with the employee, the group of employers concludes another, separate contract, in which it more closely regulates the relations between the group of employers itself, such as specifying the payment of contributions by each employer within the group.

In the literature, there are examples of France, Germany, and Hungary that, in practice, recognize this type of contract, conceptually assimilating it with regular employment contracts. One of the employers is usually perceived as the main one and is identified as the representative of the "employer group" and thus takes responsibility for paying wages and respecting workers' rights. Here we can see similarities with the group of so-called bidders (a consortium and a representative of a group of bidders in terms of regulations governing public procurement). It is important to note that, for example, in Hungary, the employment contract explicitly mentions which of the employers will pay the employees' taxed wages, as well as a clear amount of the part of the wages paid to the joint employee by each of the employers. As regards social and health insurance obligations paid by employers forming a group, Hungarian legislation stipulates that employers inform the tax authority of the specific employer responsible for paying tax and social and health insurance obligations (Misailović 2025, 350–352).

The second modality is designated as *work sharing* and implies that one employer establishes a working relationship with two or more workers in order to work together on a specific job. In practice, this would mean that the employer has one systematized workplace, where a large number of part-time executors can work, while the workers themselves can be of different ages and skills (Urdarević and Antić 2021, 159). With this modality, it is obvious that it is a part-time employment relationship, the purpose of which is to ensure that work obligations can always

be fulfilled, and which is shared by two or more workers as a group formed by the employer. Workers who are employed by an employer are not able to arbitrarily constitute a group that would share a specific job, but it is necessary that such a work organization be determined by the employer. In some legal systems, workers who share the work have their own individual employment contracts, but the amount of salary and other monetary income, as well as the extent of individual rights, are realized on a pro rata basis, that is, according to the share of each worker in the performance of specific work obligations. Other countries regulate work sharing as a modality of work in which an employment contract details the relationship between the employer on the one hand, and on the other hand, the rights and obligations of the workers who share the work (Misailović 2025, 381). In contrast to the *sharing of employees, the sharing of work* is also in the positive legislation of the Republic of Serbia Labor Law (Zakon o radu Republike Srbije 2005), but also in the neighboring legal systems such as the Republic of Srpska (Zakon o radu Republike Srpske 2016). In Bosnia and Herzegovina it can easily be covered by fixed-term employment contracts for, say, 20 hours a month for two workers who would cover one job and who together have a full-time working time of 40 hours a month.

The third modality of new forms of work, which is somewhere between employment and self-employment, is *work based on vouchers*, where employment and earnings are based on a voucher instead of a classic employment contract. In other words, the employer pays for services with vouchers that he buys from an authorized organization that covers wages and social security contributions of workers. This modality of work has come to life on the labor market of many countries as a suitable tool for the cooperation of states and employers in order to support the employment of the population, especially in sectors characterized by a large number of workers who work "on the black market," low incomes, and low levels of qualifications required for performing work. It should be emphasized that this modality of work is the rarest form of employment that is present in Europe.[10]

[10] The reason for the low presence of this type of work in Europe can be found in the fact that the establishment of this type of work requires the establishment of a special policy, which is not the case with other new forms of work. Finally, we can point out that work voucher systems are present in the household and agriculture sector for the reason that employers most often hire workers without a legal basis in these sectors (Misailović 2025, 438–439).

In terms of new work patterns, that is, new ways of doing work, the European Foundation for the Improvement of Living and Working Styles includes the following work modalities: 1) mobile work based on information and communication technologies; 2) temporary management; 3) casual work; 4) portfolio work; 5) collaborative employment and 6) work on digital platforms. Work based on information and communication technologies represents a type of remote work that was discussed in the introduction of this chapter, but unlike it, the worker does not work in a specific location, but even more flexibly, in different places, or while on the road, so the team itself constitutes a type of mixed remote work (Urdarević and Antić 2021, 159). In terms of legal qualification, ICT workers, when working off-premises (from home or remotely), may find themselves in a position similar to that of on-call workers. However, one of the most represented and significant works through ICT is the legal qualification popularly called *a freelancer*. *Freelancers* usually offer their services to a number of employers simultaneously or successively, without a permanent work commitment. If the freelancer is a natural person, the legal basis of their engagement is usually a work contract, a copyright contract,[11] but it can also be a contract for additional work, that is, a contract for temporary and occasional jobs. In practice in the ICT industry, freelancers are most often registered as entrepreneurs, and then the classic form of self-employment occurs.

Temporary management (Interim) represents a special type of employment in which the employer temporarily hires an expert or a highly qualified worker in order to overcome a certain managerial or technical problem that has arisen in the working environment. If the need for such a worker is greater, it is not disputed that they can be hired on the basis of a fixed-term employment contract, but since it is often a matter of narrowly specialized experts, it is more often necessary to hire them on a temporary basis (Urdarević and Antić 2021, 159). It is important to note that contracts outside the employment relationship, such as a contract for work, a contract for temporary and occasional jobs, as well as a contract for supplementary work, can cover this type of work.

Casual work is a special form of employment in which the employer is not obliged to give the worker regular work and can call

[11] Freelancers are traditionally accessible among artists, writers, programmers, and they are determined by their entrepreneurial spirit and communication (Misailović 2025, 431–432).

him on request, that is, when he needs him. This group usually includes seasonal jobs or on-call work. This type of work can also be performed on the basis of a zero-hour contract, in which case the minimum working hours are not specified, but the worker works only when the employer calls them.[12] Although it is not directly regulated, this casual work could also be brought under either a work contract or a contract on temporary and occasional jobs as a form of work outside the employment relationship.

Portfolio work refers to a form of work where several employers use a self-employed individual or freelancer to perform minor business tasks for each employer individually. The self-employed enjoy freedom in choosing the time and place of work. This form of work is mostly used in creative activities and the media industry (jobs of journalists and translators). Then, *collaborative employment* refers to the effort of self-employed persons, as well as small and medium-sized companies, to work together in order to overcome the limitations they face in the market. Finally, we have *work on digital platforms* (*Platform work*), which is not a new form of employment, but a new form of organizing work, where instead of tasks being assigned to one worker, they are assigned to a large number of "virtual workers," that is, workers on the platform (Urdarević and Antić 2021, 159).

The new rights of workers and the new way of working in the digital age are characterized by new, more flexible ways of working and ways of employment, some of which are more favorable for the employer and some more favorable for the worker, which is influenced by the labor market. The current positive legislation in the field of labor relations, although it can bring some of these forms of work under the current framework, especially under contracts related to work outside the employment relationship, is still facing a big challenge because it is expected to regulate new types of work brought about by the digital economy, following the example of developed EU countries.

[12] In this case, the position of the worker is characterized by (legal) insecurity, bad economic situation, instability, and increased stress because he never knows when he will work and how much, which is why some countries have banned this work (Urdarević and Antić 2021, 160–161).

CONCLUSION

With the arrival of the fourth industrial revolution, (generative) artificial intelligence enters every pore of society and social processes, which presents a challenge for legal sciences and legislators to legally regulate the aforementioned activity. As artificial intelligence itself is most often developed by large companies, the application of artificial intelligence both by the employee and by the employer, and the legal protection of artificial intelligence in the employment relationship leaves many open questions in which labor law and intellectual property law are intertwined. To understand artificial intelligence, it is important to note that it owes its development to the third industrial revolution, which includes digitization characterized by computers, computer programs, or, in a broader sense, software, databases, computer networks, and information systems. Precisely sophisticated information systems represent (generative) artificial intelligence.

One of the most complex issues is how to regulate artificial intelligence in the workplace. The first proposal of the author of *de lege ferenda* is to expand the definition of computer programs in positive legal solutions to accompanying technical and user documentation in any form of their expression, including preparatory material, as well as design material where the ZASP RS (2019) is the closest to the definition of a computer program that would be equivalent to the technical term software. The second proposal of the author of the *de lege ferenda* is that the information system in the following amendments and additions to the ZASP RS (2019) is defined as one or more computer programs (software) together with a database in order to explain the completeness of this system and to show that there can be multiple copyrighted works on the computer program, database structures, as well as the special right of the database manufacturer. The third proposal *de lege ferenda* is in the ZASP RS (2019) to define the term artificial intelligence, especially from the aspect of intellectual property law and labor law, taking into account the new EU regulation (2024/1689) on determining the conformity of the rules on artificial intelligence. The fourth proposal *de lege ferenda* is that ZASP RS (2019) regulates the rights of authors of computer programs in a separate article in order to describe the specificity of these rights in the best possible way.

With regard to *the use of artificial intelligence by the employer*, it should be demarcated here to what extent the employer may use

artificial intelligence in order to monitor the productivity of workers, without thereby infringing the constitutional right of workers to work, the right to privacy, and, first of all, respecting the regulations governing the protection of personal data. Also, it is important to note that the employer would have the obligation to notify the workers in case they use certain software applications to monitor the work of the workers, and on the other hand, the use of these software applications would be well regulated by positive legal regulations so that they do not violate the privacy of the workers.

Finally, *new forms of work* brought about by the digital economy are represented in the EU, where some new rights of workers can be brought under our positive legislation that regulates labor law. However, some new rights, such as sharing of workers, when one worker is hired by one or more employers, negate the basic tenets of the employment relationship, which implies a legal relationship between one worker and one employer. Following the example of EU countries, Serbia is faced with the challenge of adapting its positive legislation in the field of labor relations to all new forms of work.

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ПРАВНА ЗАШТИТА РАДНИКА И ПОСЛОДАВЦА ПРИЛИКОМ ПРИМЕНЕ ВЕШТАЧКЕ ИНТЕЛИГЕНЦИЈЕ У РАДНОМ ОКРУЖЕЊУ***

Резиме

Примена вештачке интелигенције у радном окружењу од стране како радника, тако и послодавца представља садашњост у којој се остварају многа питања радног права, а која посредно утичу како на привредно право, тако и на право интелектуалне својине. У дигиталном добу, у којем се налазимо, радници остварују нова права и нове облике и начине рада који представљају изазов за радно законодавство, док послодавци могу да користе алате (генеративне) вештачке интелигенције приликом запошљавања и контроле радника где се отварају бројна питања из области етике, остваривања основних права радника и заштите података о личности. Отворено је питање правне заштите вештачке интелигенције развијене од стране радника у радном односу код послодавца. Полазећи од хипотезе да је рачунарски програм основа развоја вештачке интелигенције, аутори предлажу детаљније регулисање појмова софтвер, информациони систем, вештачка интелигенција и посебно регулисања развоја вештачке интелигенције у радном односу где се као lex specialis примењују прописи из области права интелектуалне својине, а све наведено у духу нове уредбе ЕУ 2024/1689 о утврђивању

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*** Овај рад је резултат истраживања у оквиру пројекта „Прилагођавање правног оквира друштвеним и технолошким променама са посебним фокусом на вештачку интелигенцију“ који је 2025. године спровео Институт за упоредно право уз финансијску подршку Министарства за науку, технолошки развој и иновације (број уговора 451-03-136/2025-03/200049).

усклађености правила о вештачкој интелигенцији. Први предлог аутора *de lege ferenda* јесте да се дефиниција рачунарских програма у позитивним правним решењима прошири на пратећу техничку и корисничку документацију у било ком облику њиховог изражавања, укључујући припремни материјал, као и дизајнерски материјал где је ЗАСП РС (2019) најближи дефиницији рачунарског програма која би била еквивалентна техничком термину софтвер. Други предлог аутора *de lege ferenda* је да се информациони систем у наредним изменама и допунама ЗАСП РС (2019) дефинише као један или више рачунарских програма (софтвера) заједно са базом података како би се објаснила потпуност овог система и показало да на рачунарском програму може бити више ауторских дела, структура базе података, као и посебно право произвођача базе података. Трећи предлог *de lege ferenda* је у ЗАСП РС (2019) да се дефинише појам вештачке интелигенције, посебно са аспекта права интелектуалне својине и радног права, посебно узимајући у обзир нову уредбу ЕУ (2024/1689) о утврђивању усаглашености правила о вештачкој интелигенцији. Четврти предлог *de lege ferenda* је да ЗАСП РС (2019) регулише права аутора рачунарских програма у посебном члану како би се на што детаљнији и јаснији начин (*lex certa*) описала специфичност ових права.

Кључне речи: радно право, право интелектуалне својине, радник послодавац, вештачка интелигенција, нове врсте рада

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