



# ISSUES OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES APPLICATION: PROTECTION OF INTELLECTUAL PROPERTY RIGHTS ON MARKETPLACES

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**Abstract** - the article explores the problem of application of artificial intelligence technologies and its impact on the protection of intellectual property rights on marketplaces. Artificial intelligence (AI) is becoming more and more widespread and is used in various spheres, including e-commerce. However, with its development a number of difficulties and problems arise related to the protection of intellectual property rights, such as trademarks, copyrights and patents. The article discusses the main problems that may arise when using AI in marketplaces. One such problem is the possibility of infringement of intellectual property rights, as AI can implicitly infringe copyrights or create competing products that imitate well-known brands. The article considers cases of infringements related to the use of AI on marketplaces and analyses the existing legal norms that regulate this problem. The article also offers practical recommendations for the protection of intellectual property rights on marketplaces. The article considers mechanisms of legal protection, such as registration of trademarks, copyrights and patents, and recommendations for the actions of right holders, if their rights have been violated on the marketplace. The possibilities of using artificial intelligence technologies to detect infringements and protect intellectual property rights are also discussed.

**Keywords:** artificial intelligence, intellectual property rights, marketplaces, infringement, online environment, emerging technologies

## INTRODUCTION

The application of Artificial Intelligence (AI) technologies in various domains has become an integral part of the modern world. Artificial Intelligence has the potential to significantly improve and optimise processes, increase productivity and create new opportunities. Among the areas where AI is particularly relevant is e-commerce. The use of AI in marketplaces brings both new opportunities and new challenges, including the protection of intellectual property rights.

Protection of intellectual property rights is one of the key tasks in the modern economy and legal system. Intellectual property objects, such as copyrights, patents and trademarks, are valuable assets for their owners and are the basis for innovation and competition. However, the use of AI in marketplaces can pose a number of challenges and potential threats to the protection of such rights.

One of the main problems associated with the use of AI technologies in marketplaces is the possibility of infringement of intellectual property rights. AI may be able to create content that is similar to or even copies existing works, infringing copyright. In addition, AI can be used to create and promote products that mimic well-known brands and infringe trademarks.

In the context of the use of AI on marketplaces, it becomes important to consider the role and responsibility of platforms in the protection of intellectual property rights. Marketplaces, acting as an intermediary between sellers and buyers, may be involved in the process of infringement of intellectual property rights. In such cases, platforms should take measures to prevent infringement and assist rights holders.

One way to combat copyright infringement may be to use content-identification technologies that can identify and compare new content with existing works. This would allow similar or copying content to be identified and action taken to remove or block it. In addition, platforms can develop policies that prohibit the uploading of infringing content to their platforms.

In terms of trademark infringement, platforms can also use AI to monitor new products and brands, analysing and comparing them to already registered trademarks. This will enable them to identify counterfeit or imitation goods and take appropriate action to remove or block them.



Beyond the use of AI, the co-operation of rights holders themselves is also important. They should actively assert their rights and provide sufficient information about them to enable platforms to respond effectively to infringements. In addition, mechanisms for fast and efficient verification of claims can be developed to prevent abuse and wrongful blocking of content.

From a legal regulatory perspective, there are various international and national laws and conventions that govern the protection of intellectual property. However, in light of the ever-changing technological environment and the emergence of new challenges, legal rules and principles may need to be further developed.

Thus, the purpose of this article is to consider the problems of application of artificial intelligence technologies on marketplaces and its impact on the protection of intellectual property rights. Within the framework of the article the main problems and challenges related to the use of AI on marketplaces will be discussed and the existing legal norms regulating this problem will be analysed. In addition, practical recommendations will be offered to protect intellectual property rights on marketplaces, including the possibilities of using AI technologies to detect infringements and protect rights.

The hypothesis of this study is that the use of artificial intelligence technologies in marketplaces can play an important role in the protection of intellectual property rights. It is hypothesised that the application of AI, such as content-identification and brand analysis technologies, can help to effectively detect and prevent copyright and trademark infringement on marketplaces.

#### Research Objectives:

1. To study the emerging issues and new challenges in the application of artificial intelligence technologies to protect intellectual property rights in marketplaces. To determine the advantages and limitations of these technologies.
2. To study the problems associated with copyright and trademark infringements on marketplaces, as well as to analyse the degree of their prevalence and impact on right holders.
3. To evaluate the effectiveness of the application of artificial intelligence technologies to prevent infringement of intellectual property rights on marketplaces and determine their contribution to reducing the level of infringement.
4. To develop recommendations and proposals to improve the protection of intellectual property rights on marketplaces using artificial intelligence technologies.
5. To formulate conclusions and recommendations based on the obtained research results.

#### Materials and research methods

To fulfil this research a combination of qualitative and quantitative approaches will be used. The research was based on general scientific and special (method of legal interpretation, formal-legal) methods of cognition. The main research methods were the analysis of available empirical data in reports and legislative base. Judicial practice and scientific literature were analysed in order to collect the necessary information for the preparation of this research article.

As a result of the research it is expected to obtain information about the advantages and disadvantages of using AI in marketplaces for the protection of intellectual property rights. These results can be used to develop recommendations and guidelines to improve practices and legal regulation in this area.

#### 1. New challenges in the application of artificial intelligence technologies

The application of artificial intelligence technologies for the protection of intellectual property rights on marketplaces has become an urgent task in today's digital world. However, it also raises a number of challenges and problems that require attention and solutions.

One of the main challenges in the application of artificial intelligence for the protection of intellectual property rights in marketplaces is related to the detection of infringements [1]. Incorrect automatic detections can lead to false positives or false negatives, which can be detrimental to both the rights



holder and the platform users. Achieving high accuracy and reliability of infringement detection algorithms requires extensive amounts of data, which can be difficult to collect and annotate.

Another challenge associated with the application of artificial intelligence on marketplaces is the dynamic nature of violations [2]. Users are constantly finding new ways to bypass protection systems, which requires constant updating and adaptation of algorithms to effectively protect copyright holders. Flexibility and quick response to changes become key factors.

As mentioned earlier, one of the challenges is to collect a large amount of data to train the disturbance detection algorithms [3]. This requires significant resources and time for research and development. In order for the system to work effectively to protect copyright holders, it is necessary to find an optimal balance between the quantity and quality of data.

Also, the support and cooperation from marketplaces is an important factor. They need to actively cooperate with rights holders, provide them with tools and mechanisms for effective protection of their rights [4]. It is important to create an environment in which rights holders can easily detect and report infringements and receive support in solving these problems.

Another important aspect is the transparency and explainability of algorithms, especially when they make important decisions that affect users. Users should be able to understand why a decision was made and possibly challenge it if they feel it is unfair. This requires the development of methods and standards to explain the algorithmic decisions made.

Another challenge is the difficult balancing act between the protection of rights-holders and the rights of users [5]. While it is important to protect intellectual property, the rights and interests of users must be considered in order not to restrict their freedom of expression and access to information. Therefore, it is important to develop mechanisms that take both sides into account and find a compromise solution.

In conclusion, the application of artificial intelligence to protect intellectual property rights in marketplaces is a complex task that requires attention to a number of technical, ethical and legal aspects. However, with the right approach and co-operation, it is possible to achieve effective protection of rights holders and a fair balance between all stakeholders.

## **2. Intellectual property objects and their protection on marketplaces (application of artificial intelligence)**

### **2.1 Patents and Inventions**

Intellectual property objects play an important role in modern marketplaces, especially in the context of artificial intelligence applications. One of the most common and important objects are patents and inventions.

Patents are a legal document issued to the right holder for a new invention. They protect intellectual property and provide rights and benefits to the patent holder, excluding others from using, producing or selling the invention without his authorisation.

In the context of marketplaces, where artificial intelligence is actively used, the protection of patents and inventions is particularly important. Technology companies are always looking to create new and innovative products using artificial intelligence. These intelligent developments can be key to a company's success and ensure its competitiveness in the marketplace [6].

However, as marketplaces provide a platform for the exchange and sale of goods and services, they also have a role in protecting exclusive intellectual property rights. Patent and invention owners can face infringements of their rights on these platforms, where the theft of ideas and counterfeiting of products is not uncommon.

In this context, marketplaces should take measures to ensure the protection of intellectual property. This may include implementing a filtering system, monitoring and stopping infringements, and cooperating with rights holders to combat piracy and copyright infringement [7].

In general, the protection of intellectual property, especially patents and inventions, in AI-driven marketplaces is important. It promotes innovative development and competitiveness of companies, as



well as protects the rights and interests of right holders. Interaction between marketplaces and right holders is a key factor for achieving fair and balanced protection of intellectual property.

## 2.2 Copyrighted Works

Intellectual property objects play an important role in today's digital world. They represent various creative and intellectual products that are created by people's minds, such as literary, musical and artistic works, inventions, commercial brands, software, etc.

However, due to the advancement of technology and the spread of the internet, protecting intellectual property has become a challenge. Marketplaces such as online shops, sharing platforms and other digital marketplaces have become the main venue for hosting and distributing such objects.

The application of artificial intelligence in this context can be crucial. Artificial intelligence can automatically detect and monitor copyright infringements, protect the interests of rights holders and prevent the illegal use of intellectual property objects on marketplaces [8]. Machine learning algorithms and neural networks help to automate processes and analyse large amounts of data, which allows to effectively detect infringements and take necessary legal measures.

Intellectual property specialists are actively developing and implementing new methods and tools to protect intellectual property objects on marketplaces using artificial intelligence. They cooperate with platform owners and artificial intelligence developers to create effective and reliable automated protection systems [9].

Thus, the protection of intellectual property objects on marketplaces with the use of artificial intelligence is an urgent and promising task. It allows to ensure fairness for right holders, promote innovation and advance people's creative potential and has a positive impact on the digital economy as a whole.

## 2.3 Trademarks and brands

Trademarks and brands play a crucial role in the intellectual property landscape and require effective protection on marketplaces. The application of artificial intelligence (AI) can be instrumental in enhancing the protection of trademarks and brands. Here are some key aspects to consider [10]:

1. **Trademark Monitoring:** AI can be used in the monitoring and detection of potential trademark infringements. By analyzing vast amounts of data from various online platforms, AI algorithms can identify instances of unauthorized use of registered trademarks or the sale of counterfeit goods. This proactive approach helps protect the reputation and value associated with brands.
2. **Brand Reputation Management:** AI-powered tools can monitor online mentions, reviews, and social media interactions related to a brand. By analyzing sentiment analysis, AI systems can quickly identify and address negative feedback, potential brand dilution, or instances of brand misuse. This enables businesses to take timely actions to protect and maintain their brand reputation.
3. **Trademark Clearance:** Before launching a new brand or trademark, businesses need to ensure that there are no conflicting trademarks already registered. AI can assist in conducting comprehensive trademark searches across databases, websites, and various sources to identify potential conflicts. The use of machine learning algorithms can help streamline and expedite the trademark clearance process.
4. **Counterfeit Detection:** AI can play a vital role in the identification and removal of counterfeit products on online marketplaces. By analyzing product images, descriptions, and other relevant data, AI algorithms can detect patterns and anomalies that indicate potential counterfeits. This helps brands and intellectual property owners take action to remove infringing listings and protect consumers from counterfeit goods.
5. **Domain Name Protection:** AI algorithms can assist in monitoring and detecting the registration of domain names that may infringe on existing trademarks or be used for counterfeit activities. By analyzing domain name registrations and patterns, AI can identify potentially infringing domain names and enable IP owners to take appropriate legal action.



6. **Trademark Portfolio Management:** AI tools can streamline trademark portfolio management, including monitoring renewal deadlines, maintaining accurate records, and providing analytics on brand performance. By automating routine tasks, AI allows brand owners to focus on strategic decision-making and proactive brand protection measures.

7. **Brand Intelligence and Market Insights:** AI-powered analytics can provide valuable insights into market trends, consumer behavior, and competitive landscape analysis. By leveraging AI technologies, brands can better understand market dynamics, identify emerging risks, and make informed decisions to protect their intellectual property assets effectively.

Overall, the application of AI technologies in the protection of trademarks and brands on marketplaces can significantly enhance enforcement efforts, streamline processes, and mitigate risks associated with intellectual property infringement. By leveraging AI tools, businesses can proactively safeguard their valuable brands and trademarks, ensuring a robust marketplace presence and maintaining consumer trust [11].

### 3. Patent rights infringements on marketplaces

Patent rights infringements on marketplaces can be a significant issue, especially with the rise of online platforms and the ease of sharing and selling products. Marketplaces play a crucial role in facilitating transactions between buyers and sellers, but they also need to be vigilant in preventing patent infringement [12].

Here are some steps that marketplaces can take to address patent rights infringements:

1. **Implement Robust Intellectual Property (IP) Policies:** Marketplaces should have clear and comprehensive IP policies that outline the rules and consequences for infringement. These policies should explicitly state that the sale of infringing products is prohibited and outline the steps to report and remove such listings.

2. **Encourage Sellers to Verify their Products:** Marketplaces can encourage sellers to verify that their products do not infringe on any patents before listing them. This can be done through a self-certification process or by requiring sellers to provide proof of non-infringement.

3. **Establish Stringent Seller Verification Processes:** Marketplaces should have robust systems in place to verify the identity and legitimacy of sellers. This can include verifying their business credentials, checking for any past IP infringement complaints, and conducting periodic audits.

4. **Promptly Respond to Infringement Reports:** Marketplaces should have a well-defined process for handling infringement reports. When a report is received, the marketplace should promptly investigate the claim, remove the infringing listing if necessary, and take appropriate action against the seller.

5. **Collaborate with Patent Holders and Rights Holders:** Marketplaces should establish channels of communication with patent holders and rights holders to facilitate the reporting and resolution of infringement cases. This collaboration can help in identifying and removing infringing products more effectively.

6. **Implement AI-Powered Monitoring Systems:** AI technologies can be leveraged to monitor marketplace listings for potential patent infringement. AI algorithms can analyze product descriptions, images, and other metadata to detect potential violations. This proactive approach can help identify and remove infringing listings before they gain significant traction.

7. **Educate Sellers and Buyers:** Marketplaces can invest in educational initiatives to raise awareness among sellers and buyers about patent rights and the consequences of infringement. This can include providing guidelines on how to avoid infringing on patents and offering resources for sellers to verify the legality of their products.

It's important to note that marketplaces are intermediaries, and the ultimate responsibility for patent compliance lies with the sellers [13]. However, by implementing stringent policies, verification processes, and proactive monitoring, marketplaces can play a vital role in deterring patent rights infringements and protecting the interests of patent holders.



#### 4. Copyright and trademark infringements on marketplaces

The problems associated with copyright and trademark infringement on marketplaces are current and extensive. Such infringements include illegal distribution and use of content (e.g., music, movies, books, and software) without the consent of copyright holders, as well as illegal use of trademarks or counterfeiting of products [14].

In the context of the application of artificial intelligence technologies, these problems have their own peculiarities. One of the main reasons for the spread of copyright infringement on marketplaces is the volume and speed of content download. Many users upload a huge number of files, which makes it impossible to manually check each content for infringements. Here artificial intelligence technologies can be useful, allowing to automate the process of infringement detection and reduce the burden on copyright holders.

One of the main problems with using AI technologies for infringement detection is that the models may not always accurately detect the presence of infringement or may be falsely triggered. For example, a system could incorrectly detect copyright infringement if it has been improperly trained or uses outdated information. This could lead to undeserved blocking of content or damage to copyright holders if their rights have not been properly protected.

Another problem associated with the use of artificial intelligence is the possibility of circumventing the infringement detection system by changing or modifying content [15]. Some users may modify music tracks, films or other content to circumvent the copyright infringement detection system. This poses challenges for developers of detection algorithms to effectively recognise such modifications.

In addition, it is important to consider the scale and prevalence of these problems in marketplaces. Copyright and trademark infringements on marketplaces are widespread phenomena that negatively impact the revenues of rights holders and legitimate sellers. The sale of counterfeit or illegally uploaded content reduces the valuation of original products and undermines consumer trust [16].

Thus, the problems experienced can have a significant impact on rightsholders. They lose potential revenues from the sale of counterfeit or illegal copies of their products and content, and may also face damage to their image and reputation. Ultimately, this may reduce the motivation of rights holders to develop new products and content, leading to a loss of innovation and diversity in the market.

The use of artificial intelligence technologies to solve these problems makes it possible to automate the processes of detecting and combating copyright and trademark infringement on marketplaces. However, it is necessary to constantly improve models and algorithms, to consider the context and peculiarities of each case and to ensure a balanced approach that considers the interests of right holders and users.

#### 5. Problems related to the protection of intellectual property rights on marketplaces

##### 5.1 Plagiarism and copying

Plagiarism and copying are indeed significant problems related to the protection of intellectual property rights on marketplaces. These issues can undermine the rights and efforts of original creators and lead to unfair competition [17]. Here are a few key challenges and potential solutions to address them:

1. Identifying Plagiarism and Copying: One of the major challenges in addressing plagiarism and copying on marketplaces is the ability to accurately identify infringing content. Marketplaces can employ advanced algorithms and artificial intelligence (AI) systems to detect similarities between listings, images, descriptions, and other relevant content. These systems can help flag potential infringements and alert rights holders for further investigation.

Furthermore, incorporating watermarking technologies can prove useful in protecting digital content. Watermarks help identify the source of the original content and deter potential plagiarists by making it evident that the content is protected.

2. Enforcing Intellectual Property Rights: Once instances of plagiarism and copying are identified, the next challenge is enforcing intellectual property rights effectively. Marketplaces can implement robust mechanisms for reporting infringements, allowing rights holders to easily submit infringement claims and



provide evidence of ownership. Platforms can establish dedicated teams or collaborate with specialized agencies to review and handle these claims promptly and efficiently.

To deter future infringements, marketplaces can impose penalties on violators, ranging from warnings and temporary suspensions to permanent bans from the platform. Implementing these measures helps maintain a fair marketplace environment and demonstrates a commitment to protecting original creators.

3. **Educating Sellers and Buyers:** Education plays a vital role in preventing plagiarism and copying on marketplaces. Marketplaces can provide resources and guidelines on intellectual property rights, including information on copyrights, trademarks, and patents. Sellers should be encouraged to thoroughly research and create their own original content while respecting the rights of others.

Similarly, buyers should be educated on the importance of supporting original creators and avoiding counterfeit or pirated products. By raising awareness and promoting ethical purchasing practices, marketplaces can foster an environment that values and respects intellectual property rights.

4. **Collaboration with Rights Holders:** Effective collaboration with rights holders is crucial in combating plagiarism and copying. Marketplaces can establish channels of communication with rights holders, allowing them to easily report infringements and provide supporting evidence. Timely and transparent communication helps build trust and enables marketplaces to take swift action against infringers.

Additionally, marketplaces can work with rights holders to develop proactive strategies such as proactive monitoring of suspicious listings or implementing automated takedown processes for known infringing content. By collaborating closely, marketplaces and rights holders can develop effective countermeasures against plagiarism and copying.

In conclusion, addressing the challenges of plagiarism and copying on marketplaces requires a multi-faceted approach involving advanced detection technologies, robust enforcement mechanisms, educational initiatives, and close collaboration with rights holders. By employing these strategies, marketplaces can take significant steps towards protecting intellectual property rights and fostering a fair and competitive marketplace environment.

## **5.2 Copyright infringement in content generation**

Copyright infringement in content generation is a prevalent problem related to the protection of intellectual property rights on marketplaces. With the rise of online marketplaces and platforms, it has become easier for individuals or businesses to create and distribute content. However, this accessibility has also led to an increase in unauthorized use and reproduction of copyrighted material.

Here are some key challenges and potential solutions to address copyright infringement in content generation [18]:

1. **Lack of Awareness:** One of the significant challenges is the lack of awareness among content creators and users about copyright laws and regulations. Many people may not fully understand what constitutes copyright infringement or how to use copyrighted material legally. Marketplaces can play a crucial role in addressing this issue by providing educational resources and guidelines on copyright protection. They can offer clear instructions on how to properly attribute and obtain permission for copyrighted material.

2. **Monitoring and Reporting:** Marketplaces can implement systems to monitor and detect potential cases of copyright infringement in content generation. This can involve using AI algorithms and image recognition technology to identify similarities between uploaded content and copyrighted material. Users can be encouraged to report any instances of suspected infringement, allowing marketplaces to investigate and take appropriate action.

3. **Licensing and Permissions:** Marketplaces can facilitate the process of obtaining licenses and permissions for copyrighted material. They can partner with content creators and copyright holders to provide a streamlined licensing platform, making it easier for users to acquire the necessary rights to use copyrighted material legally. This can help prevent unintentional infringement and ensure that content creators are appropriately compensated for their work.



4. **Copyright Protection Tools:** Marketplaces can implement tools and features that help protect the copyright of content creators. This can include watermarking technology, which digitally stamps content with the creator's information, making it more difficult for others to claim ownership. Additionally, platforms can implement content recognition systems that automatically flag potential instances of copyright infringement before content is published.

5. **Legal Enforcement:** In cases where copyright infringement occurs, marketplaces can work closely with copyright holders to enforce their rights. This can involve establishing clear procedures for reporting infringement, taking down infringing content, and imposing penalties on repeat offenders. By demonstrating a commitment to protecting intellectual property rights, marketplaces can create a safer and more trustworthy environment for content creators and users.

Ultimately, addressing copyright infringement in content generation requires a multi-faceted approach that involves education, monitoring, licensing, and legal enforcement. By implementing these strategies, marketplaces can play a significant role in safeguarding intellectual property rights and creating a fair and sustainable content generation ecosystem.

### **5.3 Trademark infringement and counterfeiting of goods**

Trademark infringement and counterfeiting of goods are significant challenges related to the protection of intellectual property rights on marketplaces. These problems have become increasingly prevalent with the rise of online marketplaces and e-commerce platforms.

Here are some key challenges and potential solutions to address trademark infringement and counterfeiting [19]:

1. **Global Reach:** Online marketplaces provide a global platform for sellers and buyers, which makes it easier for counterfeiters to reach a wide audience. Counterfeit goods can be produced and sold across different jurisdictions, making it challenging to enforce trademark rights. To tackle this issue, marketplaces need to implement robust verification and authentication processes to ensure that sellers are legitimate and that their products do not infringe on trademarks.

2. **Identification and Reporting:** Marketplaces should have mechanisms in place to identify and detect potentially counterfeit goods. This can involve using technology solutions, such as AI algorithms and image recognition, to compare product listings with known trademarks and to identify any suspicious or counterfeit items. Users should also be encouraged to report any suspected counterfeit products, allowing the marketplace to investigate and take appropriate action.

3. **Collaboration with Trademark Owners:** Marketplaces can collaborate with trademark owners and brand protection agencies to ensure effective enforcement of trademark rights. This can involve sharing information on known counterfeiters and working together to remove infringing listings. Marketplaces can also implement proactive measures, such as keyword monitoring and automatic takedown procedures, to prevent the listing of counterfeit goods in the first place.

4. **Education and Awareness:** Providing education and awareness to sellers and buyers is crucial in combating trademark infringement and counterfeiting. Marketplaces should offer resources and guidelines on trademark protection, including information on how to identify genuine products and how to report suspected counterfeit items. By raising awareness, marketplaces can empower users to make informed purchasing decisions and contribute to the fight against counterfeiting.

5. **Legal Measures:** Marketplaces should have clear policies and procedures for handling trademark infringement and counterfeiting cases. They should promptly respond to takedown requests from trademark owners and ensure that repeat offenders are appropriately penalized. Additionally, marketplaces can collaborate with law enforcement agencies to identify and prosecute those involved in the production and sale of counterfeit goods.

Overall, combating trademark infringement and counterfeiting requires a multi-faceted approach involving technology, collaboration, education, and legal measures. By addressing these challenges, marketplaces can provide a safer and more trustworthy environment for sellers and buyers while protecting the valuable intellectual property rights of trademark owners.





## 6. Application of artificial intelligence on marketplaces

Every year artificial intelligence is becoming more and more popular and in demand in various business spheres. One of these areas is marketplaces, where the use of artificial intelligence can bring huge benefits and optimise the work of the platform [20].

The first and most obvious advantage of using artificial intelligence in marketplaces is the automation of processes. AI can automate various processes within marketplaces, leading to increased efficiency and cost savings. For example, AI-powered bots can handle customer inquiries and support, reducing the need for manual intervention. These chatbots can use natural language processing to understand customer queries and provide relevant responses. Automating processes like order management, inventory tracking, and payment processing can streamline operations and improve overall marketplace efficiency. Thanks to this tool, various tasks such as searching, filtering and sorting products on the platform can be greatly simplified and accelerated. Artificial intelligence can work more efficiently and accurately than a human, which allows you to automatically process large amounts of information and provide a quick response to user requests.

Another important aspect of applying artificial intelligence to marketplaces is personalisation of offers. AI algorithms can analyze customer data and behavior to create personalized offers and recommendations. By analyzing historical purchase data, browsing patterns, and demographic information, AI systems can predict customer preferences and tailor offers accordingly. This personalized approach improves the customer experience, increases engagement, and drives sales. AI can also enable dynamic pricing, where prices are adjusted in real-time based on factors like demand, competition, and customer behavior. Machine learning algorithms can analyse the behaviour and preferences of each user and, based on this data, offer them the most relevant products or services [21]. This personalisation helps to make the user experience more convenient and pleasant, and increase the likelihood of making a purchase.

AI can analyze large volumes of data from various sources to provide insights and make accurate forecasts. By using machine learning algorithms, AI can analyze sales data, customer behavior data, market trends, and other relevant data points to identify patterns and trends. This information can help marketplace operators forecast demand, optimize inventory management, and make data-driven decisions. AI-powered analytics can also provide actionable insights on customer segmentation, marketing strategies, and pricing optimization, helping marketplace operators maximize revenue and profitability.

So, the application of artificial intelligence in marketplaces is an integral component of modern business. Process automation, personalisation of offers and predictive analytics have become indispensable tools that help optimise platform performance, improve user experience and increase competitiveness. The development and application of artificial intelligence on marketplaces is only accelerating and is expected to play an increasingly important role in the future.

The potential applications of AI in this context are vast and can lead to significant improvements in efficiency, customer experience, and business performance.

## 7. Efficiency of application of artificial intelligence technologies to prevent infringement of intellectual property rights objects

Application of artificial intelligence technologies to prevent infringements of intellectual property rights on marketplaces has a significant potential to reduce the level of such infringements.

One of the main advantages of artificial intelligence is its ability to process large amounts of data and automate the processes of content detection and filtering on marketplaces [22]. This allows marketplaces to effectively control the published content and quickly respond to violations of intellectual property rights.

Artificial intelligence technologies, such as computer vision and machine learning algorithms, allow marketplaces to automatically scan and analyse content, identify copyright and trademark infringements, as well as identify fakes or plagiarism [23]. This significantly speeds up the detection process and helps to prevent the publication and distribution of illegal content.

In addition, artificial intelligence technologies can be used to develop content ranking systems that increase the visibility of legitimate and lawful intellectual property objects on marketplaces. This allows copyright holders to protect their rights more effectively and encourages users to choose legitimate content.

Thus, the use of artificial intelligence technologies in combination with other measures and approaches can significantly improve the prevention and combating of infringement of intellectual property rights on marketplaces, but requires a systematic approach and continuous development to achieve the highest possible level of effectiveness.

### **8. Advantages and disadvantages of using AI in marketplaces**

The application of artificial intelligence (AI) on marketplaces to protect intellectual property rights has both advantages and disadvantages. Let us discuss them in more detail [25]:

#### *Advantages:*

1. **Efficiency of infringement detection:** The use of machine learning algorithms can automate the process of detecting infringements of intellectual property rights. AI can scan large volumes of data, analyse images, texts and other content, identify infringements and react proactively.
2. **Speed up the response process:** AI can automatically send notifications of infringements to rights holders and marketplace administrators, reducing response time to infringements. Fast response time is important to prevent further distribution of infringing content and protect copyright holders.
3. **Cost reduction:** The use of AI can reduce the cost of manually analysing and processing large amounts of data. Automated infringement detection process can be more efficient and cost-effective for marketplaces.

#### *Disadvantages:*

1. **False positives and false negatives:** Artificial intelligence is not perfect and can face the problem of false positives and false negatives. For example, machine learning algorithms can misclassify content, which can lead to misidentifying infringements or inappropriately blocking legitimate content.
2. **Lack of contextual understanding:** AI may face the problem of not sufficiently understanding the context of infringements. Some forms of infringements may be difficult to detect automatically, especially when the infringement in question has a novel or non-standard form.
3. **Lack of "flexibility":** Machine learning algorithms work on the basis of pre-training and require sufficient data to work effectively. But in some cases, they may need to react quickly to new forms of disturbances that have not been previously worked out.
4. **Need for continuous improvement:** AI requires constant updating, training and improvements. Machine learning technologies and techniques are evolving rapidly, and marketplaces must constantly adapt and update their systems and algorithms to remain effective in detecting and preventing breaches.

In general, the use of AI in marketplaces to protect intellectual property rights can be a valuable tool, but requires careful attention and careful control to reduce possible errors and minimise negative consequences.

### **9. Recommendations and suggestions for improving IPR enforcement**

To improve the protection of intellectual property rights on marketplaces using artificial intelligence technologies, the following recommendations and suggestions can be discussed:

1. **Development of more accurate machine learning algorithms:** It is necessary to constantly improve machine learning algorithms to increase their accuracy and reliability in detecting infringements of intellectual property rights.
2. **Co-operation with rights holders:** Marketplaces should actively co-operate with rights holders to receive information about new infringements and updated data for training artificial intelligence



algorithms. It is important to establish effective feedback and collaboration mechanisms to better detect and prevent infringement.

3. Improved reporting: The development of user-friendly and easy-to-use reporting systems can greatly simplify the process of detecting and responding to infringements. This will allow users and rights holders to easily report infringements, provide necessary documentation and evidence, and respond quickly to requests.

4. Introducing data analytics: Analysing data on marketplace infringement can help identify patterns and trends, as well as the recurrence of infringement. This will enable more effective strategies to prevent and combat IP infringement.

5. Educate users and sellers: Marketplaces can conduct educational programmes and seminars for users and sellers to raise their awareness of legal regulations and intellectual property rights protection. This will help improve understanding of prospective programs and increase overall compliance.

6. Engagement with government authorities: Co-operation and engagement with relevant government authorities can help to develop effective policies and legislation, and ensure effective prosecution of infringers.

The implementation of these recommendations can help to improve the protection of intellectual property rights on marketplaces using artificial intelligence technologies. However, it should be noted that this requires joint efforts on the part of marketplaces, right holders, users and state authorities to effectively combat infringements of intellectual property rights.

## 10. Results and discussions

In this article the problem of application of artificial intelligence technologies for the protection of intellectual property rights on marketplaces was investigated. The aim of the research was to study the actual technologies and their application, to analyse the problems associated with infringement of rights on marketplaces, as well as to assess the effectiveness of the application of artificial intelligence technologies in this area.

The research included a review of scientific studies and publications, as well as an analysis of legal regulation. Various artificial intelligence technologies used to protect intellectual property rights were reviewed, including machine learning algorithms, neural networks and computer vision.

The results of the study showed that the use of artificial intelligence technologies in marketplaces can significantly improve the protection of intellectual property rights. Such technologies can automatically detect copyright and trademark infringements, speed up the process of processing complaints and allow for more efficient fight against illegal content.

However, despite all the advantages, there are some limitations to the application of artificial intelligence technology. For example, some algorithms may be prone to false positives or miss violations, requiring continuous improvement of the system. It is also important to consider the ethical aspects of using such technologies in order not to violate the rights of users and to ensure fairness in the complaints process.

Discussing the obtained results, we can conclude that the application of artificial intelligence technologies on marketplaces is a promising solution for the protection of intellectual property rights. However, to achieve the best results it is necessary to constantly improve the algorithms used and to train models on a large amount of data.

As a result, based on the conducted research, we can make a number of recommendations to improve the protection of rights on marketplaces using artificial intelligence technologies. Firstly, it is necessary to update the legal regulation so that it meets modern challenges and requirements. Secondly, it is necessary to continue to develop and improve artificial intelligence technologies to detect and combat infringements of intellectual property rights.

On the basis of the conducted research it is possible to make a number of recommendations for the effective protection of intellectual property rights in marketplaces using artificial intelligence technologies.



1. Constant updating and improvement of algorithms. Artificial intelligence technologies are developing rapidly, so it is important to keep up to date with new developments and apply the latest algorithms. This will help improve detection accuracy and reduce false positives.
2. Increased use of computer vision. Computer vision plays a key role in detecting irregularities in images and video. Further development of this technology, including the use of deep learning and neural networks, will help detect illegal content more effectively.
3. Improving machine learning models. Training machine learning models on large amounts of data and using different algorithms can significantly improve their accuracy and reliability. It is also worth considering the characteristics of different types of intellectual property objects and applying appropriate models and features to detect them.
4. Cooperation with rights holders. It is important to establish an effective mechanism of communication and co-operation with rights holders. This will enable faster response to their complaints and ensure faster and more accurate removal of infringing content.
5. Ethical considerations. Ethical considerations should be considered in the development and use of AI technologies. It is necessary to take care of the protection of users' rights, to ensure fairness in the process of reviewing complaints and to observe the principles of data privacy.

In general, the use of artificial intelligence technologies can significantly improve the protection of intellectual property rights on marketplaces. Legal regulation and technical capabilities of these technologies should be interconnected and constantly improved to ensure effective fight against infringement of rights on marketplaces.

## CONCLUSION

In this article the problem of application of artificial intelligence technologies in the context of protection of intellectual property rights on marketplaces was considered. As a result of the research the following conclusions can be drawn:

1. Artificial intelligence technologies provide significant advantages in detecting and combating infringements of intellectual property rights. With their help it is possible to automate the processes of detection and removal of illegal content, which reduces the amount of manual work and increases the effectiveness of protection of right holders.
2. However, despite the potential benefits, the use of artificial intelligence technologies also presents certain challenges and problems. It is important to consider the possibility of algorithm errors and false positives, which can lead to the wrongful removal of legitimate content or the ignoring of infringements. Therefore, care should be taken and algorithms should be modified to improve their accuracy and reliability.
3. Computer vision is one of the key artificial intelligence technologies used to detect irregularities in images and videos. Its development and improvement allows for more effective detection of illegal content and protection of copyright holders.
4. Cooperation between marketplaces and rights holders is an important factor in the successful protection of intellectual property rights. Establishing an effective communication and co-operation mechanism allows for faster response to complaints and removal of infringing content.
5. It is also important to consider ethical considerations in the development and use of artificial intelligence technologies. It is necessary to ensure fairness in the complaints process, protect the rights of users and respect the principles of data privacy.

The totality of these conclusions allows us to conclude that the use of artificial intelligence technologies on marketplaces for the protection of intellectual property rights is a promising direction. However, further research and development, as well as implementation of reliable and effective technological solutions are required to ensure more effective protection of right holders and compliance with the law.

Despite some limitations and challenges, the use of artificial intelligence can significantly improve the detection and removal of illegal content, which in turn contributes to the protection of rights holders.

One of the key advantages of AI technologies is the ability to automate processes. This allows to reduce the amount of manual work and increase the efficiency of the fight against infringement of intellectual property rights. Artificial intelligence algorithms based on machine learning and computer vision are able to automatically detect and classify content, which significantly reduces the time and effort spent on searching for infringements.

However, it is important to note that AI technologies are not perfect and may face certain challenges. Incorrect triggers and false positives can be a problem, especially when algorithms are used on large amounts of data. This can lead to the wrongful removal of legitimate content or ignoring infringements. Therefore, it is important to thoroughly test and modify algorithms to improve their accuracy and reliability.

An important factor in the successful protection of intellectual property rights is co-operation between marketplaces and rights holders. Establishing effective feedback and communication mechanisms helps to respond quickly to complaints and quickly remove infringing content. Such partnerships contribute to a more effective fight against infringements and ensure justice.

We should not forget about the ethical aspects of using artificial intelligence to protect intellectual property rights. It is important to ensure fairness in the complaints process, protect the rights of users and respect the principles of data privacy. AI technologies should be used in accordance with ethical norms and standards.


In general, the use of artificial intelligence technologies in the protection of intellectual property rights on marketplaces has great potential to improve the process of detection and removal of illegal content. Rights holders, marketplaces and technology developers should actively co-operate and work together to develop effective and ethical solutions to protect intellectual property rights.

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