Revista Jurídica unicuritiba

Submetido em: 10/01/2024
Aprovado em: 16/04/2024
Avaliação: Double Blind Reviewe
ISSN: 2316-753X

O USO DE MODELOS DE LINGUAGEM DE INTELIGÊNCIA ARTIFICIAL NOS PROCESSOS JUDICIAIS: ASPECTOS INFORMACIONAIS E LEGAIS

THE USE OF AI-LANGUAGE MODELS IN JUDICIAL PROCEEDINGS: INFORMATION AND LEGAL ASPECTS

Kseniia Serhiivna Tokarieva
Doctor in Law, associate Professor of the Department of Constitutional and Administrative Law, Faculty of Law, National Aviation University. 1 Lyubomyra Husara Ave, Kyiv, Ukraine, 03058. Email: ph.d.tokarieva@gmail.com Orcid id: https://orcidorg/0000-0001-5705-5211

Olha Yaroslavivna Kovalchuk
Ph.D. in Physics and Mathematics, Associate Professor of the Law Theory and Constitutionalism Department, Faculty of Law, West Ukrainian National University (Ukraine). Email: o.kovalchuk@wunu.edu.ua Orcid id: https://orcid.org/0000-0001-6490-9633

Andrii Pavlovych Kolesnikov
Ph.D. in Economics, Associate Professor of the Department of Security and Law Enforcement, Faculty of Law, West Ukrainian National University (Ukraine). Email: a.kolesnikov@wunu.edu.ua Orcid id: https://orcid.org/0000-0003-3064-4133

Andriy Dariiovych Dzyurbel
Senior lecturer of the Department of Criminal Law and Procedure, West Ukrainian National University (Ukraine). Email: tayfun.77@ukr.net Orcid id: https://orcid.org/0009-0000-1778-8699

Olha Borysivna Bodnar-Petrovska
Ph.D. in Law, Research Scientist of the law School, Mykolas Romeris University (Lithuania). Email: Olegapetrovska@gmail.com Orcid id: https://orcid.org/0009-0009-3498-1410

Oleg Gariyovych Predmestnikov
Doctor in Law, Professor, Head of the Department of Law, Melitopol State Pedagogical University named after Bogdan Khmelnitsky (Ukraine). Email: predmestnikov@ukr.net Orcid id: https://orcid.org/0000-0001-8196-647X

RESUMO

Objetivo: O objetivo do artigo é investigar os fundamentos informacionais e legais para o uso de modelos de linguagem de inteligência artificial para a análise de decisões judiciais. Nesse contexto, são analisadas a legislação internacional sobre o uso de IA e as tendências atuais na digitalização dos processos judiciais. São estudadas as possibilidades de utilização de ferramentas inovadoras de inteligência artificial para extração e análise automatizadas de decisões judiciais.

Metodologia: Para alcançar os objetivos da pesquisa, é utilizada uma abordagem multidisciplinar, combinando uma análise crítica comparativa da legislação existente

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sobre o uso de inteligência artificial na prática judicial e uma análise empírica de decisões judiciais com base em modelos de linguagem de inteligência artificial.

Resultados: Foi desenvolvido um modelo informacional que utiliza ferramentas inovadoras de inteligência artificial para fornecer um suporte informacional confiável para a tomada de decisões judiciais fundamentadas.

Contribuições: É proposta uma abordagem autoral para a automação da análise de decisões judiciais com base na síntese de parsing e modelos de linguagem de inteligência artificial. O modelo desenvolvido para criação automatizada de uma coleção de textos e extração de informações relevantes de decisões judiciais pode melhorar significativamente a eficiência na tomada de decisões e pode ser facilmente implementado no sistema unificado de informações sobre processos judiciais na Ucrânia e na UE.

Palavras-chave: Suporte informacional e jurídico; Sistema judicial; Inteligência artificial; Modelos de linguagem; Decisões judiciais; Tribunal.

ABSTRACT

Objectives: The article aims to investigate the information and legal foundations for the use of artificial intelligence language models for the analysis of court decisions. In this context, international legislation on the use of AI and current trends in the digitalization of judicial proceedings are analyzed. The possibilities of using innovative artificial intelligence tools for automated extraction and analysis of court decisions are studied.

Methodology: To achieve the research goals, a multidisciplinary approach is used, combining a comparative critical analysis of existing legislation on the use of artificial intelligence in judicial practice and an empirical analysis of court decisions based on artificial intelligence language models.

Results: An information model has been developed that uses innovative artificial intelligence tools to provide reliable information support for making substantiated court decisions.

Contributions: An author's approach to automating the analysis of court decisions based on the synthesis of parsing and artificial intelligence language models is proposed. The developed model for the automated creation of a text collection and extraction of relevant information from court decisions can significantly improve decision-making efficiency and can be easily implemented in the unified information system of judicial proceedings in Ukraine and the EU.

Keywords: Information and legal support; Judicial system; Artificial intelligence; Language models; Court decisions, Court.

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INTRODUCTION

Modern information technologies (IT), such as artificial intelligence (AI), machine learning (ML), data mining, blockchain, Internet of Things, augmented and virtual reality, big data, and cybersecurity, are rapidly and radically changing our world, opening up enormous potential for the development of a transparent, secure and reliable digital society. AI, capable of radically transforming many areas, including judicial proceedings, attracts the most attention (LOZANO-MURCIA et al., 2024). It can automate routine tasks, increase efficiency, and open up new opportunities (BEREZKA et al., 2022). However, the proliferation of AI raises important ethical and legal issues regarding the impact on rights, privacy, security, and potential bias (TZIMAS et al., 2021, p. 11).

Despite the lack of legislation on the use of AI-based systems, its algorithms are actively being implemented in the judicial system. One of the promising areas is the use of AI language models for processing and analyzing textual data, such as legal documentation, case files, and court transcripts (MAKRIDAKIS et al., 2023, p. 539). They have attracted significant attention due to their impressive natural language processing (NLP) and content generation capabilities. Along with big data, ML, and text mining technologies, they are used to discover valuable knowledge and interesting relationships between data in large collections of legal text documents (PARK et al., 2021; KOVALCHUK et al., 2022, pp. 503/504). These language models are trained on vast amounts of textual information, allowing them to identify patterns, obtain important information, and extract relevant data from unstructured sources. The use of AI language models in judicial proceedings increases the efficiency of information processing and improves the search for necessary information. Applying natural language processing methods, such models can understand complex legal terminology, ensuring rapid identification and extraction of required facts from large volumes of text. This simplifies research processes, aids evidence gathering, and helps make more informed decisions. With the rapid growth of information that courts must analyze to make effective and fair decisions, the implementation of innovative text data processing tools has become a prerequisite for effective information and analytical support for court activities (KOVALCHUK et al., 2023).

Despite this progress in natural language processing, the field of legal informatics is slowly adopting these methods. The issue of using the latest AI tools in

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the activities of courts requires a detailed and comprehensive study. However, this issue concerns various areas and requires comprehensive multidisciplinary research involving scholars and practitioners in IT and jurisprudence. This article aims to analyze current legislation in the field of implementing AI technologies in strategic areas, particularly in the judicial system, to ensure information security and citizens' rights. An information model based on the use of AI tools for the analysis of court decisions and the generation of relevant facts and circumstances in proceedings is also presented. This model can be used for reliable information support of the judicial system in Ukraine and implemented in the unified information system of judicial proceedings in the EU.

This article proposes an innovative approach to the analysis of court decision texts based on the synthesis of parsing and AI language models. The presented information model can be used in the activities of courts for automated search of relevant information in court decision texts, establishing the correspondence of documents to a specific proceeding, analyzing precedents and decisions in similar cases, assessing the risk of recidivism and public danger of the accused, establishing significant facts and circumstances in the case for making a verdict, etc.

To achieve the research goals, a multidisciplinary approach was used involving various methods and techniques (KOVALCHUK et al., 2023). A narrative literature review was conducted to summarize existing knowledge and highlight key trends in the use of modern text analysis technologies. A doctrinal approach, based on the study and interpretation of legal acts, legal doctrine, case law, and other sources of law, was used to study the legal aspects of applying AI methods in the analysis of court decisions. Parsing was performed for the automatic extraction of court decisions from the Unified State Register of Court Decisions of Ukraine for further analysis. An empirical approach was applied, based on the analysis of real court decisions, case files, and other materials. Natural language processing based on AI was used to analyze textual data to extract named entities, facts, and circumstances in the proceedings to provide information support for making effective court decisions. The synthesis method was used to combine parsing and AI language models into a single information model.

Significant advances in text analysis technologies have led to increased interest from the scientific community and legal environment in the possibilities of using such

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technologies for processing documentation directly related to court decision-making, such as court orders, decisions, verdicts, rulings, as well as case files. The authors O.A. Alcántara Francia et al. conducted a review of the latest literature on experiments with various machine learning, deep learning, and natural language processing methods applied for predicting judicial and administrative decisions. They found that 64% of the works presented research results on the analysis of documents written in English, 8% in Portuguese, and 28% in other languages (including German, Spanish, Turkish, and Chinese). Court decisions from various fields of law were analyzed: constitutional, criminal, administrative, family, intellectual property, tax, and others (ALCÁNTARA FRANCIA et al., 2022). Researchers A. Ammar et al. conducted a comprehensive analysis for predicting decisions of Arab courts based on a dataset of 10,813 real commercial court cases. The analysis utilized the advanced capabilities of the latest large language models (AMMAR et al., 2024). B. Mathis applied machine learning algorithms to identify named entities in text queries to open court case data. The results showed that the named entity recognition model can effectively process large and diverse label sets while generating high-quality data (MATHIS, 2022, p. 1307). E. Dias Canedo et al. proposed an architectural solution for a case law search system (jurisprudence) of the Brazilian Administrative Council for Economic Defense. The aim was to expand knowledge in the field of economic competition protection. The researchers found that about 87% of case law search systems use machine learning methods for classification. At the same time, these systems do not actively involve artificial intelligence technologies (DIAS CANEDO et al., 2021). The authors P. Krasadakis et al. conducted a comprehensive review of the scientific literature on the application of natural language processing methods for analyzing legal texts. Current NLP tasks related to the consolidation of legal norms were presented, highlighting problematic aspects for low-resource languages. The scholars outlined the main challenges facing this field and the methods developed to overcome them (KRASADAKIS et al., 2024). J.J. Nay evaluated AI's understanding of legal standards. The author argues that they can be used as "hints" in uncertain situations. The results of the study, conducted based on decisions of American courts, showed that large language models are beginning to demonstrate an understanding of one of the key legal standards for AI – fiduciary duties (NAY, 2023).

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In the comprehensive field of legal research, the analysis of court decisions plays a fundamental role for the effective functioning of the justice system. The ability to predict court conclusions helps judges in the decision-making process and provides lawyers with invaluable knowledge to improve their litigation strategy. Most similar studies applying AI language models and machine learning have been based on small sets of test documents and have presented unexpected results. An urgent task is to search for innovative approaches to analyzing court decisions and relevant documents in judicial proceedings, as well as to develop applied models for evaluating the correspondence between significant circumstances, facts, and decisions made in similar cases.

Despite its key importance, the field of court decision analysis remains understudied. Moreover, when analyzing legal texts, it is necessary to consider the specifics of legislation and the peculiarities of the language of a particular country. Separate approaches are required for developing language models for low-resource languages, including Ukrainian. This research presents empirical studies based on court decisions from the Unified State Register of Court Decisions (YEDRSR) of Ukraine; AI-based language models are used for text generation. The proposed information model can be used in the activities of courts for automated search of relevant information in court decision texts, establishing the correspondence of documents to a specific proceeding, analyzing precedents and decisions in similar cases, assessing the risk of recidivism and public danger of the accused, establishing significant facts and circumstances in the case for making court decisions, etc.

LEGAL ASPECTS OF AI USE

On April 21, 2021, the European Commission (2021) published a draft law to harmonize rules in the field of AI, known as the “Artificial Intelligence Act”. Even though this legislative initiative contained several shortcomings even in defining the meaning of the concept of “artificial intelligence”, it was a timely measure to ensure the safety and reliability of the legal field for the operation of AI systems in the European Union (EBERS et al., 2021, p. 590).

On March 13, 2024, the European Parliament (2024) adopted a new law on AI. This law aims to protect fundamental human rights, democracy, the rule of law, and the environment from potentially risky AI systems. At the same time, it is intended to

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stimulate innovation in AI and strengthen Europe's leadership in this field. Some applications of AI that threaten citizens' rights are completely prohibited. This includes biometric categorization systems based on confidential characteristics, mass data collection for creating facial recognition databases, emotion recognition systems in offices and schools, social scoring systems, predictive policing based on profiling, and AI for manipulating human behavior. The use of biometric person recognition systems by law enforcement is generally prohibited, with some narrow exceptions. Such exceptions require strict permission and control, for example, time and space limited use, with a special court permit. This may apply to searching for missing persons or preventing terrorist attacks. The new law corresponds to proposals from EU citizens to increase competitiveness in strategic sectors, ensure societal security, promote innovation, and preserve human control over AI and its responsible use.

On April 1, 2024, the UN (2024) presented a draft Global Digital Compact, which will be implemented in member countries, regions, and globally, taking into account distinct national characteristics, capabilities, and levels of development, as well as with due respect for the state policies and priorities of each country. The implementation of the compact aims to:

– Overcome unequal access to digital technologies and accelerate the achievement of the global Sustainable Development Goals.

– Expand opportunities for more people and organizations to participate in the digital economy.

– Promote the creation of an inclusive, open, safe and reliable digital environment for all.

– Develop a fair and balanced system of international data flow regulation.

– Ensure controlled and responsible implementation of new technologies, including artificial intelligence, for the benefit of humanity.

INFORMATION AND LEGAL FOUNDATIONS FOR FORMING INFORMATION SUPPORT FOR JUDICIAL DECISION-MAKING IN UKRAINE

On November 21, 2002, the Verkhovna Rada of Ukraine adopted the law “On the Concept of the National Program for Adaptation of Ukrainian Legislation to European Union Legislation” (2002). Among other provisions, this Concept envisioned the creation of a national information network of court decisions to provide access to

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samples of judicial practice and the possibility of public discussion. For this purpose, the YEDRCD was created – an official electronic resource containing court decisions of all instances on the territory of Ukraine. Its legal basis is the Law of Ukraine "On Access to Court Decisions" (2005) and resolutions of the Cabinet of Ministers "On Approval of the Procedure for Maintaining the Unified State Register of Court Decisions" (2006). The purpose of the YEDRCD is to ensure the openness of courts' activities and free access to court decisions for citizens and legal entities. The Register contains court decisions from 2006, including criminal, civil, commercial, and administrative cases, and decisions of the Constitutional Court of Ukraine. The YEDRCD enables searching by case number, date of adoption, court, type of proceeding, and other parameters. The State Judicial Administration of Ukraine carries out the filling and administration of the Register (TEREMETSKYI et al., 2023, p. 133). Access to the Register and viewing of decisions is free and round-the-clock for all users. All court decisions are published on the official website reyestr.court.gov.ua, except those containing state secrets or personal information. The Unified Register (2024) significantly increases the transparency and openness of the Ukrainian judicial system, promoting public access to justice.

However, for now, the YEDRCD is operating in a test mode and provides access to documents only in the background mode. Participants in the judicial process have to spend a lot of time copying and manually processing each document stored in the YEDRCD separately. Comparing the content of different documents is also a routine lengthy process that requires manual processing and is accompanied by so-called "human" errors.

For analyzing texts of court decisions, it is traditional to obtain named entities (e.g. names or proper nouns) and significant factual data. When making a decision, the court takes into account a wide range of legal and factual circumstances to deliver a lawful, reasonable, and fair verdict. According to the Law of Ukraine "On Access to Court Decisions" (2005), the following circumstances (facts) are considered when rendering a court decision in criminal proceedings:

– The gravity of the crime and the nature of the criminal offense – the court examines the degree of public danger of the committed crime, its consequences, motives, and circumstances.

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– The identity of the accused: age, education, marital status, health condition, behavior in the family, military service, presence of convictions, and other characteristics that may affect the sentence.

– Circumstances aggravating or mitigating punishment: sincere repentance, committing a crime for the first time, presence of minors or severe consequences, committing a crime by a group of persons, while intoxicated, a cruel method of committing, etc.

– Compensation for material damages and moral harm to the victim.

– Evidence recognized as admissible and reliable: testimony of witnesses, material evidence, expert conclusions, etc (ABLAMSKYI et al., 2023, p. 197)].

– Interests of the victim – taking into account the victim's opinion on punishment.

– Circumstances precluding criminal liability.

– Compliance with previous judicial practice (principle of legal certainty).

The Criminal Procedural Code of Ukraine (2001) regulates the procedure for criminal proceedings, including requirements for evidence, considering the victim's opinion, etc. The Law of Ukraine “On the Judiciary and Status of Judges” defines the principles of judicial independence and impartiality. Resolutions of the Plenary Session of the Supreme Court of Ukraine (2002) contain explanations regarding the practice of applying legislation when considering certain categories of cases.

The current legislation of Ukraine obliges the court to comprehensively, fully, and impartially examine all the circumstances of the criminal proceedings, and weigh all available evidence to make a lawful and fair decision (ABLAMSKYI et al., 2021, p. 51). The court must carefully analyze all the details of the proceedings to render a fair and lawful verdict. Failure to comply with these requirements may be grounds for overturning the verdict on appeal.

Revista Jurídica unicuritiba
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INFORMATION MODEL FOR ANALYSIS OF COURT DECISION TEXTS USING AI TOOLS

To automate and improve the efficiency of analyzing texts of court decisions from the YEDRCD of Ukraine, an author's approach is proposed based on using parsing and AI language models for analyzing court decisions and generating relevant information for proceedings (Fig. 1).

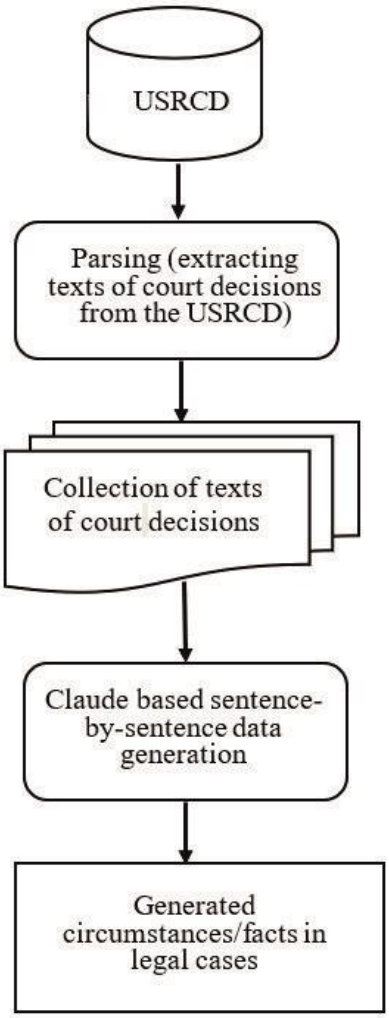

Figure 1. Schematic of the proposed approach to analyzing texts of court decisions
Source: compiled by the authors

In the model presented in Fig. 1, it is proposed to use parsing for the automatic extraction of texts of court decisions from the YEDRCD of Ukraine and the formation of a document collection and storage in text format for further processing. The AI language model claude.ai is used to generate facts and circumstances relevant to the proceedings.

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Parsing

Parsing is the process of syntactic analysis of input data (usually text) to determine its grammatical structure according to a given formal grammar (SLIVNIK et al., 2023). Parsing is an important component in one of the fields of AI – natural language processing (NLP). In the context of natural language processing, parsing is an important step for understanding the structure of sentences and phrases in natural language. The results of parsing are used for further natural language processing. For example, semantic analysis, named entity recognition, sentiment analysis, and natural language generation are based on the results of syntactic parsing. Parsing is an important tool in natural language processing and artificial intelligence, providing a basic structural foundation for further analysis and processing of textual data using machine learning methods and other AI technologies. Its use is effective for extracting texts from the Unified State Register of Court Decisions of Ukraine for further analysis using additional NLP methods.

Natural Language Generation

Natural language processing is a field of AI focused on developing systems for understanding and generating human language (CHANG, 2023). NLP includes a range of tasks such as speech recognition, machine translation, sentiment analysis, information extraction, and much more. In NLP, parsers are often used to analyze the syntactic structure of sentences, but additional components are also employed for semantic analysis and understanding of context and meaning. NLP is based on statistical models, rules, ontologies, and other resources for interpreting natural language.

The texts of court decisions stored in the USRCD of Ukraine are mostly written in Ukrainian, which is considered a low-resource language. These are languages for which there is an insufficient amount of language data and linguistic resources needed for applying natural language processing methods (KRASADAKIS et al., 2024). Low-resource language (LRL) processing refers to the development of NLP methods and tools for languages with limited language resources and data (AL-WESABI et al., 2023). In these languages, well-annotated datasets and pre-training methods are often lacking, making traditional approaches less effective.

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To extract relevant information from court decision texts, establish document correspondence to specific proceedings, analyze precedents and decisions in similar cases, assess the risk of recidivism and public danger of the accused, and establish significant facts and circumstances of the case for rendering a verdict, Claude-3 by Anthropic was used. This is a large AI language model trained on a vast array of textual data and has the following capabilities (HANNON et al., 2024):

- Understand and generate natural language.
- Perform semantic analysis and establish logical connections.
- Detect context, subtext, and non-obvious meanings.
- Generalize and produce new ideas based on prior knowledge.
- Conduct analytics and detect hidden patterns in data.
- Provide explanations and answer questions from various knowledge domains.

This AI model was chosen because Claude-3 possesses powerful capabilities for analyzing and generating Ukrainian content, able to understand the grammatical and semantic peculiarities of this language at a high level.

RESULTS AND DISCUSSION

The search for necessary judicial decisions in the Unified State Register of Court Decisions of Ukraine and their preservation in text file format currently requires manual processing of each document separately. This is a routine and time-consuming process that demands significant human resources. Qualified personnel from courts, law enforcement agencies, legal representation, and probation services spend a considerable amount of time searching for relevant information in the texts of court decisions for analysis of precedents, decisions in similar cases, facts, and circumstances to establish the risk of recidivism and the societal danger posed by the defendant, and so forth.

The information model presented in this study envisages the use of a parser for the automatic extraction of all text from court decisions in the YEDRCD of Ukraine simultaneously. The possibility of selecting only decisions that meet certain criteria is provided. All textual documents are stored in a formed collection of texts. The YEDRCD currently contains over 16,000,000 court decisions and is constantly updated. The parser proposed in our research can be reused to create a new collection of texts or

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update an existing one with new documents. The proposed authorial approach can be used for forming a collection of court decisions or other legal textual documents from any official registries, as the developed parser can be easily adapted to other data repositories. Its usage is efficient for extracting texts from the Unified State Register of Court Decisions of Ukraine for further analysis using additional natural language processing methods.

Court decision texts are often multi-page documents. Analyzing their content is complicated by the lack of a standardized form, structure, and mandatory requisites. Additionally, some data in such documents is formulated implicitly. The routine and time-consuming process of searching for and analyzing necessary information in large text collections leads to so-called human errors.

This article presents an innovative approach to extracting relevant information from court decision texts in proceedings using Natural Language Generation (NLG) technology. This technology allows for generating human-readable responses word by word based on the preceding context. The process involves using the original text documents in the query (Natural Language Generation, 2024). The stages of the text generation process using NLG are illustrated in Fig. 2.

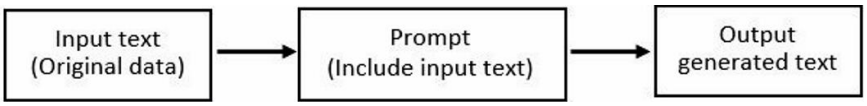

Figure 2. Natural Language Generation by Claude-3
Source: compiled by the authors

The input text is used to create a prompt. The prompt then generates the output text, identifying relevant information. Table 1 provides examples of the original input data and the newly generated output data.

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Table 1. An example of a generation of new data using NLG

Input original data	Prompt	Output generated data
The court decision in the proceedings	1. Generate answers to the following questions: 2. What is the severity of the crime and the nature of the criminal offense? 3. Characterize the accused person: education, marital status, health status, behavior within the family, military service, criminal record, recidivism. 4. Are there any aggravating or mitigating circumstances: sincere remorse, committing the crime for the first time, presence of minor children or serious consequences, commission of the crime by a group of individuals, under the influence of alcohol, use of violent means, etc.? 5. Have material damages and compensation for moral harm to the victim been reimbursed? 6. Are the evidence recognized as admissible and reliable? 7. Has the opinion of the victim regarding the punishment been taken into account? 8. Are there any circumstances that exclude criminal liability? 9. What verdict did the court pass?	1. This is a crime of moderate severity; attempted secret theft of someone else's property (theft), committed repeatedly and individually. 2. Education is secondary; unmarried; no criminal record; has a permanent place of residence; characterized positively; under the care of a psychiatrist due to mental and behavioral disorders caused by methadone use; has a minor child in custody; engages in socially beneficial work. 3. Circumstances mitigating the punishment: sincere repentance, active assistance in solving the crime and compensating for the damage caused. Aggravating circumstances have not been established. 4. The stolen property was returned to the victim immediately after the crime was committed. 5. The evidence is admissible and reliable, as the accused fully confessed his guilt. 6. The victim asked the court to determine the punishment at its discretion, without objecting to the accused. 7. Circumstances excluding criminal liability have not been established. 8. The court found the accused guilty of committing a criminal offense under Part 2 of Article 15, Part 2 of Article 185 of the Criminal Code of Ukraine, and imposed a sentence of 1 year of imprisonment with a probationary period of 1 year

Source: compiled by the authors

This example demonstrates the effectiveness of using the Claude-3 language model for extracting relevant entities, facts, and circumstances in legal proceedings. The obtained information can be used to assess the risk of the accused committing repeat offenses, the level of danger they pose to society, determine the optimal term of punishment, assess the possibility of early release, analyze precedents, make optimal judicial decisions, and so on. The proposed prompt can be used multiple times for different court cases. If needed, its text can be easily and quickly modified or adapted.

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This approach allows judiciary personnel to automate content analysis of court decisions and free up time for tasks requiring qualified legal work.

The information model presented in the study can be used to automate routine activities of judiciary system employees and provide reliable information support for making rational judicial decisions. It can be implemented into the unified information system of the judiciary of Ukraine and easily adapted into the information system of the judiciary of the EU. Our proposed approach meets all the requirements of the European Parliament's legislation on AI (EBERS et al., 2021, p. 601) and the UN (2024) Global Digital Compact project.

CONCLUSIONS

The article proposes a multidisciplinary approach to addressing the pressing issues of digitizing the judicial system of Ukraine in the context of Eurointegration. The EU and the UN take measures to regulate the field of artificial intelligence, ensuring security, human rights protection, and responsible use of these technologies through the adoption of new legislation. Specifically, certain AI applications that threaten citizens' rights are prohibited in the EU, while other uses are allowed under strict control, and the UN has presented the Global Digital Compact project to promote equal access and a safe environment in the digital sphere.

The analysis of trends in using innovative IT for analyzing court decisions indicates that the use of modern AI tools for informational support of judiciaries in many countries is in its early stages and requires the development of innovative approaches. Such research should consider the specifics of legislation and linguistic features of each country. The Ukrainian language belongs to languages with a low level of resource provision, thus requiring separate approaches to the development of language models.

To ensure openness and transparency of the judicial system of Ukraine, the Unified State Register of Court Decisions has been created; however, it currently operates only in a test mode, complicating the effective work with existing documents. For courts to make lawful and well-founded decisions, they must comprehensively analyze numerous factors and circumstances of each case by the current legislation of Ukraine. Therefore, there is an urgent need for the development of innovative

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information tools for the automated processing of court decision texts to enhance the efficiency of the judicial system's activities.

The authors present an information model utilizing parsing, one of the modern natural language processing technologies, and artificial intelligence language models for analyzing texts of court decisions in proceedings. The proposed approach is innovative and promising for enhancing the efficiency of the Ukrainian judicial system. Automating the process of extracting necessary entities, facts, and circumstances from judicial documents using AI tools can significantly streamline the work of lawyers, judges, probation officers, and others.

The developed model can be used to extract relevant information from court decision texts, determine the degree of correspondence of facts, circumstances, and documents to a specific case, analyze precedents and decisions in similar cases, assess the risk of recidivism and the societal danger posed by the accused. This allows for significantly improving the substantiation of judicial decisions, issuing fairer verdicts, and evaluating the appropriateness of applying preventive measures and conditional early release.

The empirical results presented demonstrate the high effectiveness of large AI language models in extracting and generating relevant information from texts of court decisions in the Ukrainian language. Wide implementation of such tools into the judicial information system will provide reliable information support for issuing lawful and well-founded judicial verdicts. The proposed approach aligns with the new legislative initiatives of the EU and the UN regarding the responsible and controlled implementation of artificial intelligence technologies in the judiciary. The developed model can be easily implemented into the unified information systems of the judiciary of Ukraine and the EU.

However, implementing such innovations requires careful consideration of ethical considerations, bias mitigation, ensuring data confidentiality, and adherence to high standards of fair justice. This will be the subject of our further research.

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Aprovado em: 16/04/2024
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ISSN: 2316-753X

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