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AI-POWERED ANALYSIS OF COURT DECISIONS: THE UKRAINIAN EXPERIENCE

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АВТОМАТИЗОВАНИЙ АНАЛІЗ СУДОВИХ РІШЕНЬ: УКРАЇНСЬКИЙ ДОСВІД

АНОТАЦІЇ (ABSTRACTS), КЛЮЧОВІ СЛОВА (KEYWORDS)

Issue. Judicial systems accumulate ever-increasing volumes of information each year, requiring thorough analysis. The main part of legal data is in text form, which complicates the process of processing it and leads to the accumulation of redundant information. To simplify routine tasks that do not require high legal qualifications, courts need more active implementation of a language model based on artificial intelligence (AI). Artificial intelligence language models, in particular GPT-4, open up new prospects for optimising court proceedings. The study proposes a new approach to using GPT-4 to generate relevant facts from unstructured texts of court decisions. The **purpose** of this study is to automatically identify the criteria that courts take into account when passing sentences in criminal proceedings. The developed **methodology** uses the example of criminal verdicts to apply the technique of step-by-step generation of relevant facts from unstructured text documents by applying the technology of natural sentence generation. In contrast to labour-intensive manual content analysis, the proposed approach significantly saves the efforts and time of judicial officers, while improving the quality of the data obtained by eliminating the human error factor. **Results.** The application of the GTP-4-based data generation method proposed by the author when working with the Unified State Register of Court Decisions can be a useful tool for assessing the level of professional competence of judges by analysing the decisions they make. In particular, the programme should be able to analyse the consequences of a judge's consideration of similar cases, identify manifestations of bias or prejudice given the same initial data or similar legal relations. In addition, a chronological analysis will allow comparing the judge's decisions and whether they took into account previous changes and cancellations of decisions by higher courts or whether they complied with the binding nature of the Supreme Court's legal opinions in similar cases. **Conclusions.** This innovative method allows generating relevant facts from unstructured text documents of court proceedings by applying the technology of natural sentence generation. The introduction of such artificial intelligence technology will be useful on the basis of using the Unified State Register of Court Decisions of Ukraine to process large arrays of court decisions, analyse trends in court proceedings, and identify typical cases for the formation of legal opinions of the Supreme Court.

Keywords: *judicial system; AI language models; GPT-4; fact generation; analysis of court decisions*

Постановка проблеми. Судочинні системи з кожним роком накопичують все більші обсяги інформації, що потребує ретельного аналізу. Основна частина юридичних даних міститься в текстовій формі, що ускладнює процес їх обробки та призводить до накопичення надлишкових відомостей. Аби спростити рутинні завдання, які не вимагають високої юридичної кваліфікації, суди потребують активнішого впровадження мовної моделі на основі штучного інтелекту (ШІ). Мовні моделі штучного інтелекту, зокрема GPT-4, відкривають нові перспективи для оптимізації судочинства. Дослідження пропонує новий підхід використання GPT-4 для генерування релевантних фактів з неструктурованих текстів судових рішень. **Метою** статті є автоматичне виявлення критеріїв, які суди беруть до уваги при винесенні вироків у кримінальних провадженнях. Розроблена **методологія** на прикладі вироків по кримінальних справах застосовує техніку покрокової генерації релевантних фактів з неструктурованих текстових документів шляхом застосування технології природної генерації речень. На відміну від трудомісткого ручного контент-аналізу, запропонований

підхід значно економить зусилля та час працівників судової системи, одночасно підвищуючи якість отриманих даних завдяки усуненню людського фактору помилок. **Результати.** Застосування запропонованого автором методу генерування даних на основі GPT-4 під час роботи з Єдиним державним реєстром судових рішень може стати корисним інструментом для оцінювання рівня професійної компетентності суддів шляхом аналізу винесених ними рішень. Зокрема, програма повинна мати змогу проаналізувати наслідки розгляду суддею аналогічних справ, виявити прояви необ'єктивності або упередженості за однакових вихідних даних чи подібних правовідносин. Крім того, аналіз в хронологічному порядку дасть змогу порівняти рішення судді та врахування ним попередніх змін і скасування рішень судами вищих інстанцій або дотримання обов'язковості правових висновків Верховного Суду в аналогічних справах. **Висновки.** Цей інноваційний метод дозволяє генерувати релевантні факти з неструктурованих текстових документів судових проваджень шляхом застосування технології природної генерації речень. Впровадження такої технології штучного інтелекту стане корисним на базі використання Єдиного державного реєстру судових рішень України для опрацювання великих масивів судових рішень, аналітики тенденцій судочинства, виявлення типових справ для формування правових висновків Верховного Суду.

Ключові слова: *судова система; мовні моделі ШІ; GPT-4; генерування фактів; аналіз судових рішень*

Introduction

Innovative technologies should help automate certain processes, easing the burden on legal personnel and increasing the overall efficiency of the judicial system in processing huge amounts of data [1]. Advanced language models such as GPT-3, GPT-4 [2], BERT, RoBERTa, ALBERT, LEGALBERT [3], T5, CuAI, XLNet, LawAI4 [4] demonstrate high efficiency in natural language processing tasks in the legal field. These applications are capable of high-quality information retrieval, document summarization, text generation, and classification. The culmination of rapid progress in the field of artificial intelligence was the recent release of GPT-4, an advanced language model developed by OpenAI [5]. This powerful artificial intelligence system has the potential to revolutionize various sectors, including the justice system. GPT-4's language generation capabilities can assist in drafting legal documents such as contracts, statements of claim, court orders, rulings, and decisions in typical court cases, as well as verdicts for committing a criminal offense without a trial, ensuring clarity, consistency, and adherence to legal terminology and conventions. This can streamline court proceedings and reduce the time and resources required for document preparation. GPT-4's multi-modal capabilities can improve the analysis of legal argumentation. In particular, by processing and interpreting various compilations of legally significant terms in the process of constructing a procedural document, including images, videos, and audio recordings, GPT-4 can provide valuable information and uncover previously unnoticed patterns or discrepancies, potentially increasing the accuracy and fairness of court proceedings [6]. The implementation of advanced artificial intelligence language models in the judicial system opens up broad prospects for improving the efficiency and

impartiality of the judicial process [7]. Powerful multi-task models, such as GPT-4, are capable of processing vast volumes of legal texts both in the database of court decisions and in the database of Ukrainian legislation as a whole. Their algorithms allow for quickly identifying key information, focusing on key details, and simplifying preparation for lawyers and judges. The application of these innovative technologies covers a wide range of tasks: from automated creation of draft contracts, statements of claim and court decisions while adhering to legal terminology and proper style, to generating concise, clear summaries of voluminous documents, saving time for specialists. Some models can translate written laws into computer code, facilitating their integration into legal information systems. Some even assess the emotional state of participants based on their statements, helping judges better understand the context and emotions of the parties.

Leading countries are actively implementing these developments to automate procedures for handling applications and managing cases at various stages of legal proceedings. Ukraine should actively join this process. AI language models are effective for trend analysis, identifying inconsistencies in precedents, accelerating the consideration of a large number of cases, and eliminating gaps in legislation. Their use contributes to more effective protection of citizens' rights and unification of judicial practice. These technologies can be applied to analyze large collections of legal documents, simplifying the search for relevant information. The basis for training the models is court precedents and texts of laws – a reliable foundation for substantiated conclusions and forecasts of case outcomes. The obtained knowledge can become significant informational support for judges in decision-making.

However, the implementation of such innovations requires careful consideration of ethical concerns, elimination of bias, ensuring data confidentiality, and adherence to high standards of fair trial. Human oversight and control remain key elements of the legal system. The purpose of this article is to explore the possibilities of using the GPT-4 language model for generating facts in criminal cases that are taken into account when delivering verdicts.

Statement of the Problem

The principle of the rule of law requires a high degree of consistency in court decisions regarding similar cases. To ensure fairness and predictability in the administration of justice, courts should analyse previous precedents, which may include the practice of higher courts and conclusions on the application of relevant legal provisions set out in the rulings of the Supreme Court, and predict likely outcomes in similar cases. However, establishing the connection between the circumstances of a case and the decision rendered has been a complex task in recent decades, the resolution of which could optimize judicial policy. The problem is compounded by the existence of large collections of unstructured documents that record various forms of court decisions in different types of proceedings (administrative, commercial, criminal, civil, and administrative offenses). Additional factors are the specific features of national legislation and the structures of judicial systems in different countries.

Progressive states are transforming the judicial process, with the key element being the digitalization of courts. Ukraine has also actively joined this initiative, implementing innovative ICTs to automate the activities of courts. Within the framework of the Unified Judicial Information and Telecommunication System, the Unified State Register of Court Decisions of Ukraine (USRCD) operates – a unified database containing over 115 million court documents [8]. Currently, the USRCD is running in test mode and has functional limitations, including the inability to export document files. Only unstructured text data is available, where certain critical attributes, such as the qualification of criminal proceedings, the characteristics of the accused, or the repetition of the crime, may be described implicitly, although they are mandatory for issuing verdicts.

When determining the severity of a crime, courts take into account its qualification, specifics, circumstances of commission, characteristics of the accused, mitigating or aggravating circumstances, sanctions of relevant articles of the Criminal Code of Ukraine [9], the risk of re-offending,

and the danger to society, as well as the pre-trial report with information on the socio-psychological characteristics of the accused. Based on these factors, a person who has committed a criminal offense is sentenced to punishment necessary and sufficient for the correction and prevention of new criminal offenses.

Currently, in order to prepare a case for trial, judges and judicial assistants manually analyse the content of court decisions contained in the USRCD, while probation officers spend a lot of time assessing the risks of re-offending and danger to society. With the assistance of USAID, a pilot project has been implemented for the Supreme Court using a chat GPT to recognize texts of court decisions and compare them with the practice from the USRCD database. However, lower courts still require innovative approaches to automate the search and analysis of relevant information in the texts of decisions.

The analysis of court decision texts is important for identifying non-obvious connections between the circumstances of a case and its outcome, which contributes to increasing the consistency of judicial proceedings and predicting consequences in similar cases. However, this task requires the development of new approaches and the selection of optimal methods for solving it. Such research has a regional aspect and a clear subject focus. When extracting knowledge from a collection of court verdicts, it is necessary to consider the specifics of national legislations and specific criteria for comparison, such as the type of proceedings or the subject of similarity of cases. Most previous research on this issue conducts the stage of identifying relevant criteria considered by the court when issuing verdicts manually. This limits the volumes of created datasets used for further analysis and reduces the reliability of the results. In the current research, it is proposed to use the GPT-4 language model to generate the necessary knowledge from unstructured text documents in court proceedings for further identification of patterns and relationships between facts in a case that are significant for issuing court verdicts in similar cases. The goal of our work is to develop a new approach based on the GPT-4 language model for the automatic generation of relevant facts from proceedings.

The State of Research on the Problem

The application of multimodal artificial intelligence technologies in the justice system is a new area of research that has attracted significant attention in recent years [10]. Multimodal artificial

intelligence refers to systems that can process and integrate information from different modalities, such as text, images, audio, and video, providing a more comprehensive and contextual understanding [11]. Current research efforts in this field are mainly focused on using large language models (LLMs) and computer vision models to optimize legal processes, improve decision-making, and enhance access to justice [12]. Authors K. Demertzis et al. proposed a comprehensive approach that integrates the latest developments in AI, including natural language processing technologies, the intelligent ChatGPT chatbot, ontological alignment, and semantic modeling methods, combined with the use of blockchain and data privacy methods for the administration of justice [13].

D.N. Yagamurthy et al. applied artificial intelligence-based natural language generation technologies to transform structured data into human-understandable narrative forms [14]. One of the active areas of research is the use of large language models (LLMs), such as GPT-4, for analyzing, summarizing, and creating legal documents. These powerful models are capable of processing vast volumes of legal texts, including court precedents, laws, and regulations, extracting key information, identifying patterns, and generating coherent legal documents [15]. Researchers are investigating ways to accurately fine-tune such models on specific legal data to ensure accurate and reliable results [16].

At the same time, the integration of multimodal artificial intelligence into the judicial system creates unique challenges that require careful study and a responsible approach to the development of these technologies [17]. G. Rodríguez and J. David analyzed the advantages and disadvantages of using LLMs for rendering court decisions. The researchers argued that using LLMs to develop texts of rulings or render decisions during court hearings is problematic for judges and their assistants, as existing LLMs are not sufficiently reliable sources of information.

The issue of predicting and justifying court decisions based on the analysis of documents relevant to court proceedings remains complex and requires new solutions [18]. It is also necessary to take into account the existence of regional differences in the criteria considered by courts when issuing verdicts in criminal cases. Furthermore, it has been experimentally proven that machine learning models demonstrate higher accuracy when trained on diverse input datasets and continuously updated [19].

Previous research using machine learning

models was conducted on small experimental collections of documents and yielded several unexpected results. The search for new effective approaches to analyzing court decision texts and relevant documents in proceedings, as well as the development of models for assessing the consistency between the circumstances and facts of a case and the court decisions rendered, remain relevant.

Language Models of Artificial Intelligence for Judicial Proceedings

The implementation of advanced language models of artificial intelligence opens new prospects for optimizing the judicial system. Powerful natural language processing algorithms are capable of analyzing vast amounts of legal texts, documents, excerpts of decisions, and precedents. Their innovative methods allow for quickly identifying key information, highlighting important details, and facilitating preparation for lawyers and judges. The most well-known language models of AI that can be used in judicial proceedings today are:

GPT-4 (Generative Pre-trained Transformer 4), BERT (Bidirectional Encoder Representations from Transformers) and its extended, improved, and lightened versions: XLNet, RoBERTa (Robustly optimized BERT pretraining approach) and ALBERT (A Lite BERT), the multi-task model T5 (Text-to-Text Transfer Transformer), the specialized model for the legal field LEGAL-BERT, the model for legal document analysis CuAI, the model for legal search and analysis LawAI and the language model for generating legal documents LexGPT. These models have demonstrated high efficiency in natural language processing tasks in the legal field, such as information retrieval, document summarization, text generation and classification. However, their application requires careful testing, adherence to ethical standards, and proper human control.

The culmination of rapid progress in the field of artificial intelligence was the recent release of GPT-4, the advanced language model developed by OpenAI. This powerful artificial intelligence system has the potential to revolutionize various sectors, including the justice system. GPT-4, or Generative Pre-trained Transformer 4, is a large language model trained on a vast array of text data, allowing it to understand and generate human-like responses with extraordinary fluency and coherence. What distinguishes GPT-4 from other models are its multimodal capabilities, which allow it to process and analyze not only text data but also images and other forms of multimedia content.

The integration of GPT-4 into the justice system can provide significant advantages. One potential application is legal research and document analysis. Thanks to its ability to quickly process and understand a vast amount of legal texts, case materials and precedents, GPT-4 can assist lawyers and judges in identifying relevant information and uncovering important ideas that may have been missed. However, issues such as formalism, bias, accountability and the possibility of misuse or over-reliance on AI systems need to be carefully considered. Rigorous testing, supervision, and clear guidelines for the responsible use of GPT-4 in a legal context are crucial.

The provisions of Article 127 of the Constitution of Ukraine enshrine that judges administer justice, and judicial power is vested in them [20]. Of course, AI is not capable of fully administering justice on its own, based on the above-mentioned constitutional principles of our state, and should not and cannot fully replace a judge, just as it cannot replace a lawyer or prosecutor.

In the Ethical Charter for the use of artificial intelligence in the judicial system and its environment, adopted in 2018 by the European Commission for the Efficiency of Justice of the Council of Europe, it is enshrined that the main purpose of such use should be to increase the efficiency and quality of the administration of justice by processing court decisions and data by algorithms while respecting fundamental rights and freedoms guaranteed by the ECHR and the Council of Europe Convention for the Protection of Individuals about Automatic Processing of Personal Data [21]. Under these circumstances, the introduction of GPT-4 in the justice system is a significant step towards using the capabilities of advanced AI to achieve consistent approaches in resolving typical cases, consistency of judicial practice at regional levels and across the vertical of the judiciary, fairness, efficiency, and transparency of judicial processes. As with any transformative technology, it is crucial to strike a balance between harnessing its potential and mitigating potential risks, ensuring that the principles of fairness and human control remain at the forefront.

On November 21, 2002, the Verkhovna Rada of Ukraine approved the Concept of the National Program for Adaptation of Ukrainian Legislation to the Legislation of the European Union, including the gradual adoption and implementation of normative legal acts of Ukraine developed taking into account the legislation of the European Union [22]. To ensure access to examples of judicial practice and

the possibility of public discussion, this Concept provided for the establishment of a national information network of court decisions. To implement this idea, the Verkhovna Rada of Ukraine adopted the Law of Ukraine "On Access to Court Decisions" No. 3262-IV of 22.12.2005, which entered into force on 01.06.2006 [23]. This Law defines the procedure for access to court decisions to ensure openness of the activities of courts of general jurisdiction, predictability of court decisions, and promotion of uniform application of legislation.

For access to court decisions of courts of general jurisdiction, the State Judicial Administration of Ukraine ensures the maintenance of the USRCD. The USRCD operates within the Unified Judicial Information and Telecommunication System. The USRCD is an automated system for collecting, storing, protecting, accounting, searching, and providing electronic copies of court decisions. The USRCD includes court decisions of the Supreme Court of Ukraine, higher specialized, appellate, and local courts - verdicts, decisions, rulings, orders, rulings, separate rulings (resolutions) of the court, issued (rendered) by courts in criminal, civil, commercial cases, in cases of administrative jurisdiction, in cases of administrative offenses, except court decisions containing information that is a state secret. The USRCD also includes court decisions whose judicial review took place in a closed court session. In such a case, the court decision is made public, excluding information that, by the court's decision to consider the case in a closed court session, is subject to protection from disclosure. The only exception to the general rule is regulated by the provisions of Part Two of Article 2 of the Law of Ukraine "On Access to Court Decisions" of 22.12.2005 No. 3262-IV, which provides that in cases prescribed by law, a court decision on granting permission to conduct an investigative measure or on refusing to grant such permission, issued in a closed court session, is not made public and not published. Court decisions entered into the USRCD are open for free round-the-clock access on the official web portal of the judiciary of Ukraine.

To exercise the right of access to court decisions entered into the Register, the user is provided with the ability to search, view, copy and print court decisions or parts thereof. The Register's database contains reference information. Since September 2009, courts have been sending the register administrator copies of all court decisions exclusively in electronic form using a digital electronic signature (paragraph 12 of the Resolution) [24].

Thus, the USRCD allows not only to track doc-

uments in a particular case but also to search for judicial practice. The official website of the USRC D is located at reyestr.court.gov.ua and at the time of writing, this article already contains over one hundred and seventeen million court decisions, making it the most powerful similar database in Ukraine. The volume of documents in it is constantly increasing, as each judge is obliged to publish in the register not only decisions on the merits of the case but also all accompanying procedural documents (rulings on opening proceedings, on restoring time limits for participants to apply to the court, on postponing sessions, etc.).

Electronic copies of court decisions are documents of indefinite retention. The law prohibits the removal of court decisions from the register. It is also not permitted to make any changes to court decisions, except those necessary, to correct errors made during the entry of the decision into the register. If the procedural law provides for the correction of a court decision, the court's decision to make changes is entered into the register, and the corrected decision remains unchanged.

Based on the current technical capabilities of the USRC D, to find the required court practice, a person can usually use the standard search by word or phrase. In order to refine the query and filter out unnecessary data, the developers of the portal have provided for the possibility of using special parameters with special characters and logical operators, but the consequences of such a search can also be too blurred, essentially reduced to manual selection of similar information from the database for its application in a new case, in fact wasting extra time for both judges' assistants and, subsequently, the judge who carries out additional selection of information, in other words, does not meet the user's expectations.

It should be noted that with the beginning of the functioning of the Electronic Court subsystem, as a component of the Unified Judicial Information and Telecommunication System, court cases should be transferred to electronic form. Thus, from the moment of receipt by the court, any procedural document (materials of the statement of claim, materials of the criminal proceedings) is formed into an electronic court case using a scanner, or is generally sent to the court in electronic form through the Electronic Court system.

Taking into account the availability of an electronic version of any procedural document and the database of court decisions in the USRC D system, there is a prospect of loading the full text of the document into the search program for text recogni-

tion as a whole and its comparison with the relevant practice of document texts in the USRC D database, in particular based on the criterion of comparing not individual words and phrases, but the regular combination of legally significant terms. This method will be able to accelerate and optimize the work of judges' assistants and directly judges in preparing the case for trial, make the search for judicial practice much more relevant and operational, guide on the availability of legal conclusions of the Supreme Court on the consideration of similar cases, guide on the need to clarify certain circumstances of the case during its consideration. Likewise, this selection will form prospects for considering the case for lawyers, legal professionals, prosecutors, investigators, and other participants in the trial.

Analyzing the provisions of the current criminal and criminal procedural legislation of Ukraine, based on the general principles of sentencing and issues to be resolved by the court when passing a verdict, the criteria listed below are a construct of any court verdict: the article of the Criminal Code of Ukraine on criminal liability for the criminal offense committed by the person, the degree of gravity of the criminal offense committed, the identity of the guilty person, circumstances aggravating or mitigating the punishment of the accused, and which ones specifically, an unfinished criminal offense, a criminal offense committed in complicity, the measure of punishment imposed on the accused, the limits established in the sanction of the article (sanction of the part of the article) of the Special Part of the Criminal Code of Ukraine, which provides for liability for the criminal offense committed, grounds for exemption from serving the sentence, obligations imposed on the person in case of their release from serving the sentence on probation, the amount of damage caused, the presence of a state of diminished sanity, the socio-psychological characteristics of the accused, the imposition of a more lenient punishment than provided by law, the imposition of punishment in the presence of mitigating circumstances, the imposition of punishment for a cumulative criminal offense, the imposition of punishment on the cumulative sentences, the rules for combining punishments and crediting the term of pre-trial detention, an unfinished criminal offense, a criminal offense committed in complicity, the calculation of terms of punishment.

At the same time, a number of attributes of these circumstances may be in various combinations with each other and/or may be described in the verdict in an implicit form. In determining the

degree of gravity of the criminal offense committed by the accused, the court takes into account the qualification of criminal offenses (misdemeanor, minor crime, serious crime, especially serious crime), and the characteristics and circumstances of its commission. In discussing the issue of the measure of punishment about the accused, the court takes into account the nature and degree of gravity of the crime committed by him, the characteristics of the accused, the circumstances mitigating and aggravating his punishment, takes into account the sanctions of the relevant articles of the Criminal Code of Ukraine, the risk of committing a repeated criminal offense and the risk of danger to society by the pre-trial report, and chooses a measure of punishment necessary and sufficient to correct the accused and prevent the commission of new criminal offenses.

Judges' assistants conduct content analysis of court decisions manually. Probation service employees spend a lot of time assessing the risk of committing a repeated criminal offense and the risk of danger of the accused to society. With the assistance of USID for the Supreme Court, a pilot project has been developed using the GPT chat for recognizing texts of court decisions and its comparison with the relevant judicial practice from the database of document texts USRC. However, courts at the primary level still require innovative approaches to automate the search and analysis of relevant information in the texts of court decisions. The aim of the work is to use the GPT-4 model's sentence-by-sentence generation technique to generate natural language and understand as well as code a GPT-4 of the OpenAI API to generate the necessary knowledge from unstructured text documents in court proceedings and to identify interesting patterns and relationships in a set of criteria that are important for passing court sentences in similar cases.

The problem of developing optimal approaches

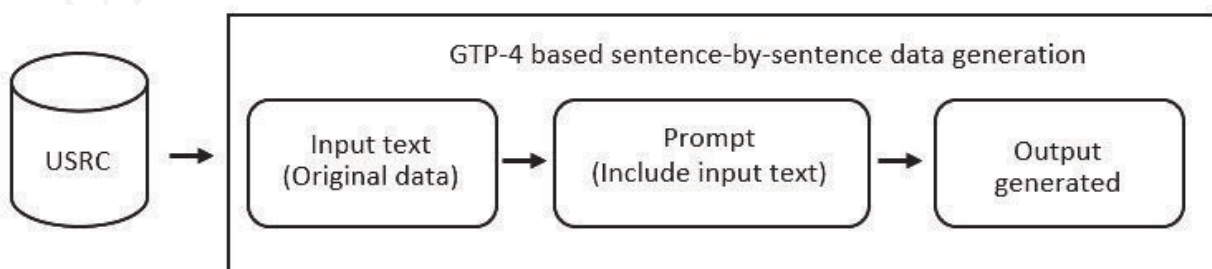
to choosing methods for predicting the results of court proceedings is non-trivial and can simplify the understanding of the essence of the process of passing court decisions. When passing a sentence, the court takes into account many facts of the case. For example, the qualification of the proceedings, legal factors characteristic of a particular case, types of evidence, characteristics of the accused person, the presence of previous convictions, repetition of the crime, etc. Details of the criteria (facts) relating to a particular proceeding are stored in court decisions. However, extracting these facts from legal texts is a labor-intensive, complex and time-consuming process. Therefore, most studies of this type are conducted on small datasets and relate only to regional studies and specific types of proceedings.

In each case, obtaining the criteria (facts, circumstances) that the court takes into account when passing sentences in cases from the texts of sentences was a labor-intensive, costly manual process. This study presents a new methodology for solving the problem of analyzing a large number of texts of court decisions entered into the USRC. We use the AI-based language model GPT-4 to generate from the texts of court verdicts the essential facts considered by the court when passing a sentence in the proceedings.

Results and Discussions

In this research work, we propose an approach to extracting relevant information from the texts of court decisions. We use the natural language generation method with GPT-4. This is a methodology for generating natural responses word-by-word based on the previous context [25]. The process involves using the source text documents in the query itself. The stages of the text generation process using the natural language generation method. A block diagram of the proposed methodology is presented in Figure.

Figure: Using GPT-4 language model to generate the facts from court decisions



Source: compiled by the authors

The workflow commences with the raw source material, the input text, which serves as the initial data corpus. This input undergoes a prompting phase, wherein it is utilized to formulate a prompt. Subsequently, the prompt yields the output text, extracting pertinent information to construct associative rules.

The next examples illustrate instances of the original input data juxtaposed with the newly generated output data.

1. Input original data – the textual content encompassing the judicial determination issued in a criminal legal proceeding

2. Prompt

"Conclude about:

– The article of the Criminal Code of Ukraine on criminal liability for the act committed by the person.

– The degree of severity of the committed criminal offense.

– Circumstances that aggravate or mitigate the punishment of the accused, and which ones specifically.

– An attempted criminal offense.

– A criminal offense committed in complicity.

– The measure of punishment imposed on the accused.

– The limits established in the sanction of the article (the sanction of the part of the article) of the Special Part of the Criminal Code of Ukraine, which provides for liability for the committed criminal offense.

– Grounds for exemption from serving a sentence.

– Obligations imposed on a person in case of their exemption from serving a sentence on probation.

– The amount of damage caused.

– The presence of a state of diminished responsibility.

– Socio-psychological characteristics of the accused.

– Imposition of a more lenient punishment than prescribed by law.

– Punishing the presence of mitigating circumstances.

– Imposition of punishment for a combination of criminal offenses.

– Imposition of punishment on the combination of sentences.

– Rules for combining punishments and crediting the term of pre-trial detention.

– An attempted criminal offense.

– A criminal offense committed in complicity.

– Calculation of the terms of punishment."

3. Based on the court ruling document, GPT-4 makes the following relevant conclusions (output data):

– The article of the Criminal Code of Ukraine on criminal liability for the act committed is Article 146 Part 1 (illegal deprivation of liberty).

– The degree of severity is a criminal offense (not a crime).

– The identity of the guilty party is PERSON_3.

– No aggravating or mitigating circumstances were established by the court.

– It was not an attempted offense, the crime was completed.

– It was not a criminal offense committed in complicity (by multiple perpetrators).

– The measure of punishment imposed was 1 year of restraint of liberty.

– The limits in the sanction of Article 146 Part 1 allow for up to 3 years of restraint of liberty.

– The grounds for exemption were Article 75 (release on probation).

– The obligations imposed were under Article 76 paragraphs 1 and 2 - periodic registration and notification of change of residence/work.

– The amount of damages was not specified as there was no civil action.

– There was no mention of diminished responsibility.

– Limited socio-psychological characteristics were provided - he is married, employed, has a minor child.

– No more lenient punishment was applied than prescribed by law.

– It did not involve mitigating circumstances for punishment.

– It was a single offense, so no combination of punishments.

– It was a single case, so no combination of sentences.

– No rules for combining punishments or crediting pre-trial detention were relevant.

– It was not an attempted offense.

– It was not committed in complicity.

– He was sentenced to 1 year of imprisonment, with a probationary period of 1 year.

The proposed innovative approach uses a GPT-4 sentence-by-sentence generation technique to generate facts from unstructured text documents of court decisions that make up the initial data set. To identify the most important factors determining the decision in the proceedings, researchers usually study the texts of court decisions in the relevant cases by manual reading [26]. To ensure the quality of the process of extracting the necessary facts

from the texts of verdicts, many qualified employees are involved. They manually carefully study the text of each court verdict, isolating important facts, legal norms and other essential information necessary for making a court decision [27]. This process is extremely labor-intensive and time-consuming. Determining from the texts of verdicts those criteria (factual data, circumstances) that the court takes into account when making decisions in certain categories of cases took place through painstaking, expensive and routine labor. Our automated content analysis and data generation approach significantly reduces labor costs and saves time for court staff, law firms and prosecutors, while improving data quality by eliminating typical human errors.

The application of the GTP-4 based data generation method proposed by the authors when working with the USRCD can become a useful tool for assessing the level of professional competence of judges by analyzing the decisions made by them. In particular, the program should be able to analyze the consequences of the judge's consideration of similar cases and identify manifestations of bias or prejudice under the same initial data or similar legal relations. In addition, chronological analysis will make it possible to compare the judge's decisions and his consideration of previous changes and cancellations of decisions by higher courts or compliance with the binding legal conclusions of the Supreme Court in similar cases.

Artificial intelligence can become a reliable assistant in processing a large array of decisions made by a judge, analyzing the quality of judicial practice, and identifying numerous, systematic, conscious, and intentional violations of substantive and procedural law or single gross violations. It is also worth considering the possibility of using AI for analytics and identifying litigation trends, in particular the emergence and spread of new types of disputes, separating from the array of typical cases grounds for transferring them to the Supreme Court as exemplary. This will avoid unequal application of legislation by judges, make different decisions in typical cases, facilitate the prompt consideration of a large number of cases, overcome conflicts and gaps in legislation, effectively protect the rights, freedoms, and interests of citizens, unity, and consistency of judicial practice.

Conclusions

The introduction of such an artificial intelligence model will help meet various needs of the judiciary; in particular, it will replace the time-consuming manual content analysis of judicial officers when

processing a large array of court decisions in the Unified State Register of Court Decisions of Ukraine. In addition, the proposed approach may become a useful tool for assessing the professional competence of judges by analysing the totality of court decisions delivered by them, identifying manifestations of bias on the part of the judge during the consideration of cases, and awareness of current case law. In general, these artificial intelligence technologies will serve to improve the consistency of justice in typical cases and will be able to help develop a unified court practice in the event of new types of disputes and gaps in legislation.

The study proposes a new approach to automated content analysis of court decisions using the GPT-4 language model. This innovative method allows for generating relevant facts from unstructured text documents of court proceedings by applying natural sentence generation technology. Unlike laborious manual content analysis, the proposed approach significantly saves effort and time for court system employees, while simultaneously improving the quality of the obtained data by eliminating the human factor of errors.

The implementation of such technology based on the Unified State Register of Court Decisions of Ukraine will help assess the level of professional competence of judges through the analysis of their decisions and identify manifestations of bias, inconsistency with the practice of higher instances, and violations of legislation. Artificial intelligence will become a reliable tool for processing large arrays of court decisions, analyzing litigation trends, and identifying typical cases for forming legal conclusions of the Supreme Court.

The author concludes that the use of such advanced technologies will help to increase the efficiency, consistency and impartiality of the judicial system, speed up the consideration of cases, eliminate gaps in legislation, effectively protect the rights of citizens and unify judicial practice. At the same time, the introduction of innovations requires careful adherence to ethical considerations, ensuring confidentiality and accountability of artificial intelligence systems.

Competing interests

The author of the article has positive expectations and would be grateful for the start of an active scientific discussion on the problem under study. The author's next research will focus on the integration of information judicial systems in the EU and Ukraine.

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