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Kovalchuk O. Ya.
Ph.D. in physical and mathematical sciences,
associate professor, Associate Professor of
the Department of Theory of Law and Constitutionalism,
West Ukrainian National University

THE USE OF AI-LANGUAGE MODELS TO SUPPORT JUDICIAL DECISIONS

Each year, judicial systems amass extensive new datasets. The majority of legal information comprises unstructured text documents, posing challenges for information analysis and resulting in data accumulation. To streamline routine court tasks, such as drafting standard legal documents, and enhance the efficacy of judicial proceedings and decisions, courts are increasingly turning to artificial intelligence (AI) applications, data mining techniques, and machine learning algorithms. Leading nations are adopting cutting-edge information and communication technologies (ICT) to automate application processes, manage cases before and during court proceedings, analyze and monitor judicial trends, identify precedents in similar cases, expedite case processing, address conflicts and inconsistencies in legislation, bolster the protection of citizens' rights, freedoms, and interests, and ensure the coherence and uniformity of judicial practices [1].

AI-driven systems can analyze vast repositories of legal documents, encompassing lawsuits, court judgments, rulings, verdicts, orders, supplementary decisions, and legislation, among others. This capability enables a notable simplification and acceleration of information retrieval processes. Court precedents and legislative texts serve as foundational material for training AI models [2], yielding results that furnish substantial informational backing for judicial decision-making. Natural language processing models (NLM) [3] can be leveraged to scrutinize court judgments, rulings, verdicts, and minutes, pinpointing pivotal facts and arguments pertinent to specific cases. Additionally, AI-powered chatbots prove efficacious in furnishing rudimentary legal advice and delivering legal information assistance to citizens.

However, even in developed countries where information and communication technologies (ICT) are extensively utilized within the judicial system, the analysis of court decision texts remains largely non-automated. Content analysis of court decisions continues to be conducted manually by judges' assistants, while probation service personnel invest significant time in evaluating the risk of re-offense and the threat posed by the accused to society. There is a pressing need for innovative approaches within courts to automate the retrieval and analysis of pertinent information from court decision texts. Predicting and substantiating court decisions through the analysis of relevant document texts is a challenging task that demands novel solutions. It is crucial to explore new, effective methods for analyzing court decision texts and other relevant documents involved in legal proceedings, as well as to devise models for assessing the consistency between case circumstances and facts and the court decisions rendered.

In this study, we suggest utilizing the sentence-by-sentence generation technique of the GPT-4 model to produce natural language and comprehension, along with coding a GPT-4 model from the OpenAI API to extract necessary

knowledge from unstructured text documents in court proceedings. The aim is to extract significant facts crucial for determining court verdicts in similar cases. These investigations introduce a novel methodology for addressing the challenge of analyzing a large volume of court decision texts archived in the Unified Register of Court Decisions of Ukraine. This involves leveraging natural language generation (NLG) with GPT-4 to identify pertinent factors considered by the court in issuing verdicts. The author advocates an approach to extract relevant information from court decision texts through the generation of natural language using GPT-4, thereby establishing a methodology for generating responses word-by-word based on initial context [4]. The process entails utilizing the source text documents within the request itself (Fig. 1).

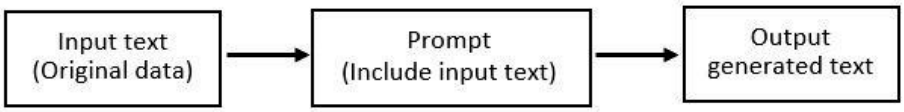

Figure 1. GPT-4 language model for extracting facts from court decisions

Figure 1 illustrates the process initiated with the original input text, which serves as the initial dataset. It progresses through a prompting phase, wherein the input text is utilized to formulate a prompt. Table 1 provides instances of original data alongside newly generated data.

Table 1. Data generation process using NLG

Original data	Prompt “Conclude:	Generated data (facts)
The written decision delivered in a criminal case	1. The categorization of the criminal offense committed. 2. Whether the criminal offense was carried out with accomplices or independently. 3. Whether the crime was committed as a first-time occurrence or repeatedly. 4. Whether the accused has a history of prior convictions. 5. The prescribed punishment measure.”	1. This constitutes an extremely grave offense. 2. The offense was perpetrated independently. 3. The defendant has prior criminal convictions. 4. This offense was committed repeatedly. 5. The defendant has a history of prior convictions. 6. The imposed penalty was a five-year prison sentence.

The method of automatically analyzing the content of court decision texts and generating facts offers notable time and resource savings for court personnel, legal representatives, and prosecution staff. Additionally, it enhances dataset quality by minimizing human errors. AI technology can offer valuable informational assistance in decision-making processes and in assessing the efficacy of judicial practices [5].

The adoption of cutting-edge artificial intelligence language models introduces fresh opportunities for enhancing the efficiency of the judicial system. Robust natural language processing algorithms can sift through extensive collections of legal texts, documents, decision excerpts, and precedents. Their pioneering

techniques enable the swift identification of pivotal information, emphasizing significant details, and streamlining preparations for legal professionals and judges. A significant milestone in the rapid advancement of artificial intelligence is the recent introduction of GPT-4, an advanced language model crafted by OpenAI. This formidable artificial intelligence system holds promise for transforming numerous sectors, including the realm of justice.

The integration of sophisticated artificial intelligence language models offers fresh opportunities to enhance the efficiency of the judicial system. Robust natural language processing algorithms can analyze extensive amounts of legal texts, documents, decision excerpts, and precedents. Their inventive techniques enable swift identification of crucial information, emphasizing significant details, and streamlining preparations for legal professionals and judges. The recent launch of GPT-4, an advanced language model developed by OpenAI, marks a significant milestone in the rapid advancement of artificial intelligence. This potent artificial intelligence system holds the potential to transform various sectors, including the field of justice.

Incorporating GPT-4 into the justice system offers significant advantages, particularly in legal research and document analysis. GPT-4's rapid processing and comprehension of extensive legal texts, case materials, and precedents can aid lawyers and judges in discerning pertinent information and revealing valuable insights that might otherwise go unnoticed. Nevertheless, concerns regarding formalism, bias, accountability, and the potential for misuse or excessive dependence on AI systems must be addressed thoughtfully. It is essential to implement rigorous testing, and oversight mechanisms, and establish clear guidelines for the responsible utilization of GPT-4 within the legal framework.

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