

Reimagining Justice: Harnessing Artificial Intelligence for Enhanced Online Dispute Resolution and Judicial Impartiality

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Abstract

This study explores the burgeoning field of Online Dispute Resolution (ODR), highlighting its evolution and the pivotal role of Artificial Intelligence (AI) in reshaping dispute resolution processes. ODR, as an emerging domain, is redefining the traditional mechanisms of resolving legal disputes by integrating AI technologies, which either supplement or supplant conventional methods. This advancement offers streamlined solutions for straightforward disputes, marking a significant shift in both legal theory and practice. However, the integration of AI into ODR presents unique challenges, particularly in terms of capturing the nuanced aspects of human interaction, such as emotional nuances and distinct party characteristics, which are crucial in dispute resolution. These challenges raise concerns about the ability of AI systems to fully grasp and incorporate broader justice concepts, which could influence the fairness and outcome of the dispute resolution process. The study, therefore, delves into these complexities, examining the implications of AI integration in ODR and its potential impact on judicial impartiality and the overall justice system. By understanding and managing these concerns, the potential benefits of AI in ODR can be harnessed effectively.

Keywords: Judicial Impartiality, Artificial Intelligence, Online Dispute Resolution

Introduction

The realm of dispute resolution is undergoing a transformative phase, primarily influenced by the integration of AI into ODR systems. This integration marks a significant shift from traditional dispute resolution mechanisms, fostering an innovative approach that aims to enhance judicial impartiality, reduce bias, and streamline the resolution process. This paper focuses on the critical analysis of the current state and future trajectory of AI in shaping ODR. Emphasizing the technological advancements and their implications in this field, it delves into a comprehensive evaluation of AI's effectiveness in ODR systems and proposes recommendations for future advancements.

The significance of this study lies in its potential to influence the ongoing debates about the methods and content of laws, particularly concerning dispute settlement. By examining the role of AI in the legal system, this research aims to address a prominent drawback of traditional dispute resolution methods: the often slow, inaccessible, and sometimes biased nature of legal proceedings. This study posits that AI, through its ability to process vast amounts of data and identify patterns, can offer more equitable, efficient, and accessible dispute-resolution methods.

Furthermore, the research objectives of this paper are threefold. First, to analyze the current integration of AI in ODR, assessing its impact on judicial impartiality and access to justice. This includes exploring how AI agents are currently used in various dispute resolution scenarios, whether complementing or replacing traditional methods. Second, the paper aims to evaluate the effectiveness of AI in ODR. This involves assessing how AI-based systems address straightforward disagreements and their role in shaping the future of legal theory and dispute resolution. Finally, the study proposes to recommend future advancements in AI for ODR. This includes addressing the challenges and potential normative consequences of relying on AI systems, such as the omission of emotional responses and unique characteristics of the parties involved in a dispute.

In essence, this research endeavors to offer a balanced perspective on the use of AI in ODR. While acknowledging the potential benefits of AI in enhancing judicial processes and making them more accessible and impartial, it also critically examines the challenges and ethical implications of AI integration. The objective is to pave the way for a more informed and nuanced understanding of AI's role in ODR, contributing to a more equitable and effective legal system.

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Methodology

The paper conducts an in-depth exploration of AI in ODR, focusing on various AI-based systems like Smart Settle, Asset Divider, Get Aid, ALIS, and Adjusted Winner to evaluate their efficacy in dispute resolution. The study delves into these systems' functionalities and their impact on resolving disputes. A significant portion of the document comprises a literature review, covering areas such as ethics in alternative dispute resolution, AI's role in legal contexts, and the impact of technology on judicial reform. However, the methodology for this literature review lacks clear detailing, especially regarding the evaluation framework and criteria, which are crucial for understanding the theoretical basis of the study. Additionally, the document appears to employ a comparative analysis, potentially assessing AI's effectiveness in specific dispute scenarios and contrasting these findings with outcomes generated by AI systems. The study also discusses challenges in implementing AI in ODR, like considering emotional responses and broader justice concepts and suggesting a qualitative approach to analyzing AI's limitations and potential in dispute resolution. It highlights the role of human expertise in hybrid AI-ODR models and underscores the importance of transparency in AI-ODR tools. However, it lacks a detailed explanation of the methodology for assessing transparency and ethical implications, a gap that aligns with the reviewer's feedback, emphasizing the need for a more comprehensive elucidation of the study's methodological approach.

Online Dispute Resolution (ODR)

In today's age of innovation, e-commerce, and quick advancement, the arrival of technology has revolutionized dispute settlement. Undeniably, disputes have become a thriving industry in the digital age, making the demand for dispute resolution solutions all the more crucial. To comprehend the role of ODR, a specific definition becomes essential. ODR can be defined as the utilization of information and communication technologies to aid individuals in preventing and resolving disputes. It offers a simpler, faster, and more effective approach compared to traditional ADR methods. While a detailed analysis of various ADR definitions is beyond the scope of this article, ADR generally refers to dispute resolution options that do not involve traditional legal institutions or litigation, encompassing arbitration, mediation, and negotiation. (*Negotiation and Alternative Dispute Resolution*, n.d.) It is worth noting that, in the future, as corresponding technologies and methods continue to advance, ODR might eventually become an integral part of conventional judicial procedures.

Labeling ODR as only "ADR plus online" technology would be an oversimplification given the considerable usage of networked communication. In the present world, it is almost unthinkable to come across a dispute if the people involved have not exchanged a minimum of one text or email. In light of this, it is preferable to adopt a broad definition that covers dispute resolution processes as well as the creation of a special "virtual environment" for settling arguments. ODR goes beyond standard online operations, even though the exact limits of this notion may seem a little hazy. A virtual arena for dispute resolution is not created, for example, by only uploading and scanning an invoice as evidence—this requires an online process. On the other hand, a true virtual environment can include chatroom-based discussions and shared uploaded papers that are available to everyone. Alternatively, a computer program may turn your preferences into numerical information. With this distinction, ODR is set apart from conventional ADR techniques like face-to-face discussions, where the environment, the tone, and the body language all have a huge impact on how things turn out.

Artificial Intelligence (AI)

Because AI is unique, it can develop by using intelligent techniques or carrying out intelligent actions. As a result, it may not come as a surprise that there are several definitions of AI. Depending on each academic's point of view, there are several differences in how AI is defined. Some academics characterize AI in terms of how it functions, its key characteristics, and what it is capable of. Some characterize it in terms of what it is unable to perform. Another definition of AI is that it "tries to solve by computer any problem that a human can solve faster" in comparison to human capacity. This term is criticized for being ambiguous on whether a machine or a person is faster. According to Lodder and Thiessen, AI is "trying to resolve by computer any challenge that a human can resolve better, quicker, more effectively, without getting tired, etc.," even though the original meaning of the phrase may have

implied that humans are faster in the present context. AI, according to Nilsson, is "the activity devoted to making machines intelligent, and intelligence is that quality that enables an entity to function appropriately and with foresight in its environment"(Nilsson, 2009).

The fact that the word "intelligence" is ambiguous in and of itself contributes to the challenge of reaching an agreement on an AI definition. To make things clearer, a practical definition drawn from computer science academics defines a thing as "any device that detects its surroundings and takes actions to maximize its likelihood of achieving its goals." Even yet, it turns out that this definition is too wide. A refrigerator can be said to be working intelligently if it continuously checks the temperature and modifies its cooling element as necessary. In the same way, a highly developed futuristic computer behaves wisely if it offers life-counseling guidance to anxious office workers.

In light of this, it is clear that accuracy is crucial; attempting to specify how technology will behave intelligently aids in illuminating how the equipment may improve human abilities. AI is continually growing, though, by its very nature.(Russell et al., 2010) A precise definition is therefore only likely to be useful for a limited time. AI is viewed as a young and mostly unrestrained technological field. Despite the fact that the future is ambiguous, it is debatably still viable to discuss potential future developments by looking at present trends in AI and ODR.

Background of AI and Law

AI has significantly advanced, impacting various sectors, including law. This began with, which laid the groundwork for AI in legal reasoning. Since then, AI's role in law has expanded, with global conferences and research dedicated to this intersection. AI technologies are transforming ODR, potentially enhancing judicial neutrality and expediting legal processes. AI's capacity to analyze extensive legal data and identify biases is reshaping the pursuit of justice (Aamodt & Plaza, 1994). The integration of AI in the legal sector presents both challenges and opportunities. The evolution from early complex systems to more user-friendly AI applications is highlighted, underscoring the need for equitable AI integration in law (Sourdin, 2018).

The Integration of Artificial Intelligence into Online Dispute Resolution

Numerous technologies that are now essential components of many systems were developed as a result of advancements in AI research. Through the use of intelligent interfaces, these technologies have expedited interactions and greatly enhanced knowledge-based processes. Research in AI is generally focused on fundamental topics including knowledge representation, reasoning techniques, learning and planning, processing of natural languages, manipulation, and motion, vision, evolutionary and social intelligence, emotions, and creativity. As a result, these AI techniques are useful in many different fields, including law, medicine, weather forecasting, commerce, transportation, and gaming.

Specifically, the legal industry exemplifies the integration of AI techniques, presenting opportunities for both disciplines. In the past, the legal sector saw the emergence of early automated systems that were logical but complex and limited to a small group of experts with specialized training. Application development became necessary in order to make these logical tools usable in more situations and available to a larger audience. Researchers now aim to create user-friendly programs that laypeople can utilize effectively (Oskamp et al., 1995). For ODR systems to address the current challenges faced by the legal sector, a promising approach involves merging ideas from AI and legal practices. By integrating concepts from both fields, practical and effective ODR applications can be realized.

How Artificial Intelligence Can Help with ODR

In various industries, including the legal field, computers play a crucial role. However, their potential remains largely untapped as they are currently limited to mundane tasks like data entry, billing, agenda management, and communication. AI is projected to continue to progress, and this will have a big impact on how technology is used across a variety of sectors, including the legal sector. Some Speculation About AI and Legal Reasoning, a key 1970 paper by Bruce Buchanan and Thomas Headrick, served as the foundation for the study of AI and the Law. Since then, the scientific community's interest in this topic has grown, and research in this area has gathered speed. As a result, several global conferences, organizations, and journals have been created. In the section that follows,

we'll examine a number of AI research subfields and how they could help us better understand the legal system, particularly in terms of dispute resolution processes.

System of Experts

Expert Systems are computer programs designed to match or even surpass the performance of human experts in specific domains. To achieve this, these systems must be developed, taught, and optimized by humans and possess a vast knowledge base to operate at such a high level. Training is conducted using data from past cases and relevant insights provided by human specialists. Additionally, these systems can learn and adapt as they operate, usually under the guidance of a professional who makes adjustments based on input, desired output, and confirmed results. Expert systems, which are basically clever computer programs, use data and reasoning techniques to handle complicated issues that traditionally require a great deal of human skill (Jackson, 1990). These systems' ultimate goal is to mimic human knowledge and expertise in a particular sector while also satisfying both requirements. Essentially, the understanding and reasoning techniques used may be viewed as models of the expertise of the top human professionals in the field.

A paradigm change in software development is represented by expert systems. Expert systems are seen as knowledge-based inference engines, as opposed to traditional computer programs that work on data. A large knowledge base and an effective inference engine are two crucial components of expert systems. The knowledge-acquiring module, repository of knowledge, inference tool, and user interface are the four main components that make up an expert system that is completely functioning. An expert system must be able to manage information pertaining to a certain domain, analyze it to produce knowledge, and then use that knowledge to perform actions and make decisions. The objective is for these actions and decisions to reflect those a human expert would make in a similar situation, based on the information presented to the system. In summary, expert systems represent a departure from conventional programming, focusing on knowledge application through inference engines for decision-making in specialized domains.

Expert systems may be found in many different industries, such as accounting, medical, process control, financial services, production, and human resources. This technology is being used more often due to a number of variables. On the one hand, Expert Systems may automate routine operations, freeing up human specialists for more complex work or, eventually, enabling businesses to save expenses. On the other hand, a workforce comprised solely of humans is essentially impractical given the enormous quantity of information that professionals in several industries must manage. In the particular instance of the legal field, this is also accurate. In truth, the well-known sluggishness in court systems is a result of the inability of legal professionals to handle the rise in the number of disputes and the information that each one demands. Expert Systems can be a tool that assists lawyers in this situation by automating easier activities and, as a result, enabling them to work more productively.

It may be very helpful for an expert system in the legal field to be able to provide precise justifications for its decisions and actions, as well as for its analyses and recommendations. To accomplish this goal, legal expert systems frequently permit the weighing of factual facts pertaining to a case. This could lead to further actions, such as comparing a particular example to previously cataloged cases in the information base and displaying the results based on similarity criteria. The results should be viewed as instructive rather than definitive, it is vital to understand this. For example, legal expert systems may be used to help judges handle cases more quickly by providing recommendations centered around a model of the related legal area that takes into consideration standards, relevant facts, and prior relevant instances. However, the creation of such complex expert systems has not yet reached its full potential.

Decision Assist Systems

In the world of ODR, this unquestionably ranks among the most exciting AI applications. The development of this element has been the focus of substantial efforts since the early 1990s. It makes sense since a system's capacity to weigh several variables and choose the best result or plan of action is a blatant sign of its efficacy and efficiency. Systems that design shipping routes, self-driving cars, and actuarial software are a few examples of applications that successfully use this principle. So, it is not a

very new phenomenon that these AI algorithms are being applied to dispute resolution. This explains why AI-based solutions that are supportive of ODR are solid ideas that should be carefully considered.

It is possible to identify a wonderful system that can assess the degree of consensus or discord between two parties even while dealing with variances in their shape and function. Consider, for instance, the seemingly simple case of an amicable divorce settlement, where the calculation of finances may entail valuing assets and distributing them evenly according to their respective monetary valuations. The fundamental character of divorce negotiations, where the worth of assets is not objective but rather subjective and affected by emotions, is ignored by this method. Furthermore, because it is a subjective concept, an asset's intrinsic worth is sometimes amorphous. Due to the comparison of objects with various subjective worth, such as a record collection and a sentimental mantelpiece ornament, disagreements may get more heated (Poblet, n.d.). A system that aids in decision-making can be used to solve this problem. One such procedure is the Family Winner method, which entails identifying the topics that are in disagreement and giving each one a subjective priority rating by both parties. The system provides an ideal distribution solution using algorithms, which the parties can accept or reject. If it is rejected, the method enables the parties to arrange the dispute issues in accordance with their priorities, guaranteeing that every party's top priorities are taken into account. In such a way, the method aids in the resolution of emotionally sensitive disputes in a fair and equitable manner.

Systems similar to the Smart Settle system have been created to offer guidance to third parties regarding the probable satisfaction of the negotiating parties with a particular resolution. In a way similar to this, the parties concerned indicate their preferences for certain outcomes, such as giving a high rating to gaining an important patent right or giving a low score to owning a decaying building. By using these expressions of preference, mediators can find alternative solutions that are likely to be in the best interests of all parties. Notably, the parties can modify their requests at any time throughout the conversations, mimicking the flexible character of conventional negotiation procedures.

Numerous additional AI-based systems in ODR have emerged as a result of extensive work in this field. Examples of such systems include Asset Divider, Get Aid, ALIS, and Adjusted Winner. While these systems leverage automated processes, they still rely significantly on human input. Third-party human experts play a crucial role in guiding the usage of these systems' output and serve as intermediaries between the system and the negotiating parties, owing to the complexity of the values required for their functioning. Nevertheless, the widespread adoption of these systems persists. To assess the effectiveness of these systems, various instances of past disputes, like the Israel-Palestine dispute during the Camp David Accords in the late 1970s and the Suez Canal Treaty, have been analyzed using the Adjusted Winner system. Remarkably, the results produced by Adjusted Winner closely matched the actual outcomes of the disputes. This demonstrates the potential for AI and ODR to continue to meet the demands of the parties in the future.

Systems Assisting Knowledge

AI can indeed offer unconventional methods for obtaining information relevant to specific disputes, but decision support systems still play a crucial role in providing procedural assistance. These systems are comparable to advanced search engines, although this simplification may not fully capture their complexity. Appreciating the intricacy of sophisticated "knowledge representation" is important. To be considered truly "intelligent," a search engine must comprehend the relevant information of a given situation, demonstrate comprehension and meaning, and present pertinent information clearly while knowing what to include or exclude.

For example, a knowledge assistance system can examine and apply relevant legal provisions and consider similar case studies to establish applicable precedents for a specific situation. Accomplishing both tasks enables the system to deliver pertinent information effectively. In some ODR contexts, like industrial disputes relying on "rules" established through complex knowledge or course of dealings, this becomes a challenging endeavor even within the well-indexed domain of law (*AI Is Transforming Google Search. The Rest of the Web Is Next | WIRED*, n.d.) Despite the complexities involved in designing such systems, they hold significant promise by overcoming a major obstacle to

dispute resolution: the need to pinpoint the precise location of pertinent information, whether in the form of rules, evidence, or prior dispute studies.

Systems for Case-based Reasoning

Systems that use case reasoning apply what they know about previous outcomes to solve problems in the present. As a result, AI systems that have acquired information from prior experiences or data inputs can avoid recommending actions that lead to undesirable consequences. For instance, if an AI knows from historical data that a certain course of action has resulted in low satisfaction levels, it will refrain from suggesting that divorcing couples burn all their jointly owned possessions to expedite the settlement process. The accurate preservation of case data and clear explanations behind decisions make such systems highly promising in the field of ODR, particularly in disputes involving legal and quasi-legal systems. Consequently, an AI third party can resolve an identical issue by considering the success or legitimacy of previous instances. Importantly, these AIs do not necessarily require direct learning; they can be trained to quickly identify crucial factors, similar to how the Split-Up AI operates. The system examines 94 different parameters, such as childcare arrangements and income, to generate potential divorce settlements and provide recommendations based on outcomes from comparable past cases.

Despite the apparent simplicity of relying on prior expertise, teaching AI systems to distinguish between relevant and irrelevant facts poses significant challenges. Nonetheless, this technology holds promising potential, particularly for handling low-complexity scenarios in the coming years. For instance, AI employed by online sales platforms like Amazon or eBay could utilize past client feedback to efficiently resolve disputes about undelivered items by offering prompt compensation, bypassing the need for lengthy investigations. An example of this is the PERSUADER system, which handles labor disputes by maintaining a record of its previous cases' outcomes. This approach enables the system to enhance its effectiveness by avoiding exhaustive evaluations of each new case and implementing strategies that have already been proven successful.

Systems Based on Rules

These systems' function based on predefined concepts and rules applied to specific scenarios. Consider a situation where the problem involves the sales of goods with numerous regulations. The exponential growth in complexity as the number of pertinent rules, inputs, and outputs increases makes it difficult to design a system that duplicates an established set of guidelines, such as statute law or terms of commerce. Conflicting rules are inevitable in dispute resolution because each side feels that their desired course of action is the most beneficial one given the current situation. Notwithstanding this complexity, tree of decision systems have shown success in automating simple financial choices that in the past took a lot of time and manual labor. These algorithms have been used, for instance, to decide whether litigants should have access to legal representation or to settle low-value disputes between suppliers and consumers. The Do Not Pay system provides an illustration of this effectiveness, streamlining parking ticket appeals through an automated online process, thereby serving as a valuable template for dispute resolution. Leveraging such tools to settle business disputes could prove advantageous. Square-Trade, employed within the eBay and PayPal systems for over 20 years, separates complex disputes requiring third-party attention from those that can be resolved more expeditiously through automated methods. This approach frees up resources to handle cases involving abstract thinking, such as complaints about the color discrepancy of a purchased item, rather than merely resending an item due to a simple oversight.

Systems of Intelligent Interfaces

These systems aim to bridge the significant communication divide between human users and other AI systems, allowing natural language to be utilized both as inputs and outputs. The concept of natural language processing is highly sought after in various AI domains, not solely confined to ODR. Nevertheless, the ability to overcome the translation challenges discussed below would represent a substantial breakthrough in the ODR field. However, until these advancements are realized, the true impact of intelligent interface systems on ODR remains uncertain.

ODR Alternative AI Systems

Despite being the most prominent examples that come to mind when discussing AI, alternative AI systems are currently in a complex and lengthy development phase (such as the "robot" third party). It's essential to note that the descriptions provided only pertain to the two primary systems, while alternative systems encompass a broader range of structures. A truly substitutive system would be one that integrates many of the above and below-mentioned systems to create a comprehensive virtual third party. These "multi-agent systems" will eventually come into existence, but their development requires time due to the need for competent sub-systems and well-established internal mechanisms to effectively integrate such systems.

Artificial Intelligence and Access to Justice

The advancement of AI in ODR is perceived as a process of liberalization, akin to the growth of various new technologies. It promises to expand simpler, cost-effective, and widely accessible resolution methods, making dispute resolution more efficient. However, the long-term implications of AI on ODR might be criticized for oversimplifying the matter. Some argue that AI could make it harder to attain justice, which contradicts the initial claim (Arsdale, n.d.). Two distinct arguments can be presented in support of this notion. Firstly, proponents argue that the elimination of conventional third-party involvement could lead to favorable outcomes. The use of AI may streamline processes and remove human biases, but it could also diminish the human touch and understanding that traditional third parties bring to dispute resolution. Secondly, there is speculation that AI's nature as a technology may lead to the development of a two-tiered dispute resolution system. This system could involve automated AI-based resolution for straightforward cases, while more complex and nuanced disputes may still require human intervention for fair and just outcomes.

The Advantages of Dehumanizing the Dispute Resolution Procedure

The initial implementation costs of cutting-edge technologies tend to be high. The full potential of the technology is only realized when it becomes more affordable and undergoes further improvements. Consequently, during the early stages, these technologies predominantly benefit the wealthiest organizations. For instance, before they were made broadly accessible, only high-end companies had access to mobile phones when they were originally launched. Similarly, one may argue that AI-ODR approaches could follow a similar trajectory. Initially, AI-based ODR might be accessible mainly to those with substantial resources, resembling how state-appointed mediators became a part of the traditional legal system. However, as technology advances, the benefits it offers over conventional third parties, such as enhanced and faster communication and cost savings, make this scenario more plausible.

AI may also be quite helpful in ODR for helping people identify skilled advisers, which is another important function it can play. The legal aid filing process, for instance, is automated via the GetAid system, freeing up considerable resources that may be used in other ways. There is strong evidence to support the idea that this strategy is appropriate for a range of situations involving dispute resolution. Resources can be used for other purposes as AI systems can undertake labor-intensive jobs. As a result, everyone concerned may experience a quicker and more economical settlement process. Systems like Family Winner have been successful in increasing the marketability of professional divorce settlements by lowering the cost of such services. Additionally, AI is effectively incorporated into the ODR systems used by eBay and PayPal to provide access to justice for buyers and sellers who would not otherwise have the means to participate in dispute resolution processes. Traditional approaches would require a lot more time, effort, and resources to settle these disputes. It may be necessary for plaintiffs to give up their claims or chances to have their rights enforced in certain circumstances (Sanjana, 2006). As a result, it is not surprising that AI has been utilized to resolve over 80% of disputes on eBay, indicating a promising future for AI in dispute resolution. This raises the question of how many disputes could be settled daily if this technology is developed and widely available.

It may be argued that if this sort of technology can settle the most straightforward disputes, complicated cases—which typically struggle to secure enough court time—will receive the attention they deserve. However, there are some disadvantages to this. For instance, utilizing AI to settle disputes

pertaining to small crimes (like speeding) may undoubtedly lighten the load on the courts, but it does not improve the justice of the results. It's possible that a lot of people would be unaware that, by entering a plea of guilty, they might be admitting to having committed a crime. For people who are subject to DBS checks, this would be very troublesome. As a result, it is important to use caution while using AI in ODR. In the example of the Do Not Pay service, which uses an automated ODR service to resolve straightforward citizen-government issues (such as parking tickets), a comparable situation can be said to have evolved in the public domain. These examples still demonstrate that AI in ODR shouldn't be viewed as a complicated technology that will eventually be made simpler for widespread application. Technology can occasionally "trickle up," becoming more difficult for minority use even while it is very simple when used extensively (Kornwits & University, n.d.).

Making Justice More Accessible

Ensuring equitable access to AI systems, regardless of general access to technology, is of paramount importance. Exclusion of certain users should be avoided, as it could lead to detrimental consequences. To achieve this, two potential solutions come to light: firstly, the implementation of an intuitive interface that caters to the needs of the majority of users, making AI more user-friendly; and secondly, utilizing intermediaries to facilitate communication between users and AI systems. It must be understood, though, that the second strategy might not be the best because it negates one of the main benefits of AI, namely the removal of the time and resource constraints that come with using human agents.

It is challenging to handle the fascinating topic of possible gaps between individuals who have access to AI technologies and those who do not. Striking a balance is crucial, as implementing a two-tier system could harm the principle of justice while impeding the progress of promising technologies would also be undesirable. The most favorable approach to tackle this issue might involve relying on the natural progression of technological advancements. Initially, advanced AI technologies may be accessible primarily to those already privileged, such as wealthy organizations and their clients. However, history has shown that, like previous computer technologies, AI is likely to spread and become more widespread across all levels over time. This could lead to the initial observation of disparity leveling out as technology becomes more accessible to all. Nonetheless, a more pressing concern is the potential impact of this transient disparity on the legal/ADR/ODR culture, particularly if it leads to the marginalization of junior lawyers. To mitigate this, firms utilizing AI may need to reaffirm their commitment to providing pro bono services, or government funding could be increased to support the legal aid system and maintain affordable dispute resolution services for all. By addressing these challenges proactively, we can work towards a more equitable and sustainable integration of AI in the legal landscape.

Using Technology to Increase the Judiciary's Impartiality and Decision-Making

Incorporating technology can play a significant role in reducing bias and enhancing judicial impartiality. Digital tools contribute to combating corruption and fostering public trust in the judiciary by establishing reliable channels of communication between courts, users, and the general public. Electronic case management systems can further aid in identifying irregularities, enabling better monitoring of judicial proceedings (Reiling, 2010). Additionally, by implementing random case distribution, technology ensures that judges are not selectively assigned to specific cases, thus promoting fairness. Another potential benefit lies in leveraging social media as a powerful tool to combat judicial corruption, which could otherwise jeopardize the independence and objectivity of the entire court system.

Furthermore, social media has raised questions about the appropriate level of engagement between judges, attorneys, and other individuals, thereby influencing judicial impartiality. The increasing usage of platforms like Facebook has led to concerns about judges being connected as "Facebook friends" with attorneys or parties involved in cases before them. In some instances, judges have faced reprimands in the US due to their social media activities, such as posting comments or conducting research on individuals appearing in their courtrooms. Consequently, judges now need to carefully consider how their social media presence can affect both their actual and perceived impartiality. To

address these issues, many courts have established rules and guidelines on how judges should use social media. It is vital to update these standards regularly to keep pace with the rapid changes in social media and digital communication channels.

Bias and Impartiality Can Be Introduced by Automation Tools

The impartiality and independence of the judiciary's decision-making could be at risk as digital technologies progress beyond mere communication and start being utilized for automation in the judicial decision-making process itself. The level of automation in such systems, designed to assist judges in their decisions, ranges from "decision support" to "human-in-the-loop" and even to full exclusion of human involvement. "Decision support" refers to an information system aiding organizational decision-making, ensuring relevant factors are considered, irrelevant ones are disregarded, and consistent standards are applied, reducing bias risks. On the other hand, the "human-in-the-loop" method still requires human intervention, employing various techniques and occasionally combining them. An example of this is an expert system, which mimics a human expert's actions in a specific field based on pre-programmed rules (*Expert Systems in Law*, n.d.). For instance, in Mexico's legal system, the decision-support system EXPERTIUS assists judges and clerks in determining a plaintiff's eligibility for a pension.

The automation of judicial decision-making procedures has the potential to introduce bias and undermine the impartiality and independence of the judiciary, resulting in negative consequences for individuals and society as a whole. One concern is that these automated tools used by judges may rely on proprietary software developed by private corporations for profit. As a result, such technologies often remain hidden behind trade secrets, escaping the same level of accountability and oversight as other public entities within the legal system, notably judges. The lack of transparency in these closed-source systems, protected by intellectual property regulations, makes it challenging to ascertain how their outputs are generated. This secrecy erodes the judiciary's impartiality and institutional independence. A notable example of such automation is evident in certain US regions where judges can, or even must, use risk-assessment tools like COMPAS (Correctional Offender Management Profiling for Alternative Sanctions). COMPAS employs historical data and machine learning to determine the likelihood of convicted defendants committing repeat offenses, particularly when violence is a concern, thereby influencing bail or sentencing decisions. The machine learning aspect of COMPAS allows it to "learn" from gathered or produced data to make predictions or identify patterns, going beyond traditional statistical approaches. This technology takes into account various personal characteristics and biographical information, including gender, postcode, encounters with law enforcement, and family background, to make its assessments (Grossman & Cormack, n.d.). Similarly, the UK uses a similar tool called HART (Harm Assessment Risk Instrument) to decide whether a person should be kept in remand or released into police custody. Both COMPAS and HART exemplify how technology-driven machine learning can influence decision-making processes by uncovering correlations and insights from a diverse range of data-driven methodologies.

Numerous academics have expressed concerns about the authorization of certain techniques in criminal sentencing by judges, supported by institutions like the Conference of US Chief Justices, the Supreme Court of Wisconsin, and various state legislatures. In a significant case, *State of Wisconsin v. Loomis*, it was ruled that the COMPAS system could be used, provided that the judge was informed about its limitations and didn't entirely rely on the ML software for decision-making. This means that the court must still consider the defendant's justifications and how other factors may impact the level of danger they pose. However, judges remain unaware of the specific workings of COMPAS' proprietary software, yet they might be compelled to incorporate computer-generated risk assessments in their deliberations. Despite the accuracy of the tool, judges lack the ability to examine its procedures or methodologies and are left with no choice but to accept its projections without question.

Due to the exceedingly high prospective recidivism scores generated by COMPAS, there have been documented instances where sentencing judges renounced plea agreements and imposed more severe sentences upon the guilty parties. The concept of judicial independence highlights the importance of judges being capable of independently assessing and comprehending expert testimonies (Carlson, n.d.). Consequently, relying on or deferring decisions to a covert instrument disputes with this

essential requirement. It can be argued that judges' limited access to information about the inner workings of an automated tool significantly impacts their perception of their roles and may also influence the impartiality and bias within the judiciary.

Conclusion and Recommendations

The role that AI now plays in influencing ODR has been critically analyzed in this essay, as well as how that role may change in the future to improve ODR's effectiveness in resolving legal issues. It has been demonstrated that the demand for AI systems to resolve disputes will surely expand as a result of technological advancements and the ongoing rise in international trade linking developed and developing nations.

The administration of justice, the protection of human rights, and the advancement of moral values have all benefited significantly from AI. Specifically, it has been referred to as a "fourth party" negotiator, shaping legal discourse in ODR. Unlike mere tools like phones or calculators, AI in ODR is seen as a distinct form or method of resolution in itself. However, critics have pointed out that progress in ODR AI has been slower than expected, mirroring challenges faced by other AI applications. Nevertheless, there is optimism regarding the potential of AI in ODR. Its most significant advantage is expected to lie in the development of highly supportive systems, capable of alleviating court bottlenecks and surpassing traditional ADR models in terms of effectiveness. This may lead to a two-tiered system for dispute resolution in practice. In conclusion, while AI has shown promise in ODR, there are also challenges to address. The emergence of powerful AI technologies holds the potential to revolutionize the resolution process, but it may also introduce new complexities in the form of a dual approach to dispute settlement.

A huge step towards establishing actual judicial neutrality is being taken with the integration of AI with the courts. The search for justice has been reimagined by AI's capacity to analyze huge legal data, spot hidden biases, and expedite procedures. By wisely using technology, we prepare the way for a time when the courts serve as bulwarks of justice, providing prompt and impartial decisions to safeguard the rights of every person, regardless of background or circumstance. Embracing this novel synergy gives us the ability to create a society where people have unflinching faith in the legal system, eventually resulting in the creation of a better and more just world for all.

However, relying on AI systems without regular and thorough re-evaluation could be potentially harmful. It's possible that AI will wander from its initial goals if we let it create its own rules for resolving disputes. Hence, it becomes imperative to closely monitor the evolution of AI-based ODR practices. Another significant concern to consider is whether AI-based ODR might negatively impact access to justice, a concern on par with the issue of machine translation. Thus, it is vital to ensure that AI-based ODR does not become a barrier, hindering access to justice for those who are less privileged. To be an effective and efficient dispute resolution tool or platform, AI-based ODR must align with access to justice principles.

Recommendations

1. **Ethical and Transparent AI Design:** Develop and adhere to ethical guidelines for AI design and deployment in ODR. This includes creating AI systems that are transparent in their decision-making processes, allowing users to understand how conclusions are reached. Regular audits and open disclosure of algorithms can foster trust and accountability.
2. **Continuous Training and Education:** Implement ongoing training programs for legal professionals and policymakers in AI technologies and their applications in ODR. This helps in keeping abreast of the latest developments and understanding the implications of AI decisions in the legal context.
3. **Diverse Data Sets and Bias Reduction:** Ensure that AI systems are trained on diverse and representative data sets to reduce the risk of biased outcomes. Regularly reviewing and updating these data sets can help in minimizing inherent biases in AI algorithms.
4. **Public Awareness and Access:** Increase public awareness about AI-ODR systems through educational campaigns and accessible information. This can demystify AI's role in legal proceedings and enhance public trust in the system.

5. Stakeholder Involvement and Feedback: Engage a wide range of stakeholders, including legal experts, technologists, and end-users, in the development and evaluation of AI-ODR systems. Regular feedback loops can help in tailoring these systems to meet the diverse needs of users.
6. Privacy and Data Security: Implement stringent data protection measures to safeguard sensitive information used in AI-ODR systems. This includes ensuring compliance with data protection laws and adopting best practices in cybersecurity.
7. Interdisciplinary Research and Collaboration: Encourage interdisciplinary research involving legal experts, AI technologists, ethicists, and social scientists to explore the multifaceted impacts of AI in ODR. Collaborations can lead to more holistic and robust AI-ODR systems.
8. Flexible and Adaptive Systems: Develop AI-ODR systems that are flexible and can be adapted to different legal contexts and jurisdictions. This adaptability ensures that AI-ODR solutions are applicable and effective across various legal frameworks.
9. Monitoring and Evaluation Mechanisms: Establish robust mechanisms for monitoring and evaluating the effectiveness and impact of AI-ODR systems. Regular assessments can help in identifying areas for improvement and ensuring the systems align with legal standards and ethical considerations.
10. International Standards and Cooperation: Work towards establishing international standards and guidelines for the use of AI in ODR. International cooperation can help in harmonizing practices and ensuring consistency in AI-ODR systems across borders.

References

- Aamodt, A., & Plaza, E. (1994). Case-Based Reasoning: Foundational Issues, Methodological Variations, and System Approaches. *AI Communications*, 7(1), 39–59. <https://doi.org/10.3233/AIC-1994-7104>
- AI Is Transforming Google Search. The Rest of the Web Is Next | WIRED.* (n.d.). Retrieved June 21, 2023, from <https://www.wired.com/2016/02/ai-is-changing-the-technology-behind-google-searches/>
- Arsdale, S. V. (n.d.). *User Protections in Online Dispute Resolution*. 21.
- Carlson, A. M. (n.d.). The Need for Transparency in the Age of Predictive Sentencing Algorithms. *IOWA LAW REVIEW*, 103.
- Expert systems in law* (world). (n.d.). Guide Books. <https://doi.org/10.5555/46706>
- Grossman, M. R., & Cormack, G. V. (n.d.). *Technology-Assisted Review in E-Discovery Can Be More Effective and More Efficient Than Exhaustive Manual Review*. 3.
- Jackson, P. (1990). *Introduction to Expert Systems* (2nd ed.). Addison-Wesley Longman Publishing Co., Inc.
- Kornwitz, J., & University, N. (n.d.). *Why “trickle-up” innovation may shape the global economy.* Retrieved July 17, 2023, from <https://phys.org/news/2012-07-trickle-up-global-economy.html>
- Negotiation and Alternative Dispute Resolution.* (n.d.). Harvard Law School. Retrieved June 27, 2023, from <https://hls.harvard.edu/areas-of-interest/negotiation-alternative-dispute-resolution/>
- Nilsson, N. J. (2009). *The Quest for Artificial Intelligence* (1st ed.). Cambridge University Press. <https://doi.org/10.1017/CBO9780511819346>
- Oskamp, A., Tragter, M., & Groendijk, C. (1995). AI and Law: What about the future? *Artificial Intelligence and Law*, 3(3), 209–215. <https://doi.org/10.1007/BF00872531>
- Poblet, M. (n.d.). *Proceedings of the 5th International Workshop on Online Dispute Resolution:*
- Reiling, D. (2010). *Technology for Justice: How Information Technology can support Judicial Reform.* Amsterdam University Press. <https://doi.org/10.5117/9789087280710>
- Russell, S. J., Norvig, P., & Davis, E. (2010). *Artificial Intelligence: A Modern Approach.* Prentice Hall.
- Sanjana. (2006, September 21). Conversation with Colin Rule, Director of Online Dispute Resolution for eBay and PayPal. *ICT for Peacebuilding (#ICT4Peace).* <https://ict4peace.wordpress.com/2006/09/21/conversation-with-colin-rule-director-of-online-dispute-resolution-for-ebay-and-paypal/>