

From Courtrooms to Algorithms: the Evolution of Dispute Resolution with AI

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Abstract: Technology usage in the Dispute Resolution process across different levels has been encouraged. Technology assists in making the process more accessible, convenient, and efficient for the parties involved. The development of Artificial Intelligence (AI) has seen calls for integrating the usage of technology with the adjudicatory process. The usage of alternative methods for the resolution of disputes, like arbitration, mediation, negotiation, and conciliation, which depart from the traditional courtroom litigation has further increased the scope for integration of AI into the process. The COVID-19 pandemic played an essential role in the shift towards these alternative methods and took the process of dispute resolution online. This has further allowed for the creation of a scenario where AI is introduced into the process. However, it still needs to be deciphered if the usage of AI is conducive or detrimental to the Dispute Resolution Process. The arguments in favour of AI revolve around increased efficiency, more possibility of resolution, and fair decisions. However, the lack of humane touch, human sympathy, and human emotions are sought as major grounds to dissuade the usage of AI. Moreover, being something programmed and developed by humans, the objectivity of the AI is also questioned. The extent and usage of AI in Dispute Resolution is a key contention that has been explored in this paper. It analyses the existing developments in AI, the application of Intelligent Resolution systems to already ongoing conflicts, and the potential for the future.

Keywords: Dispute Resolution. Artificial Intelligence. Mediation. Negotiation. Online Dispute Resolution.

Summary: **1** Introduction to AI as a Tool for Alternative Dispute Resolution – **2** Development of Technology Influenced Negotiation Systems – **3** An Analysis of the Use of Artificial Intelligence for Dispute Resolution – **4** Final Considerations – References

Research Methodology

The secondary research methodology employed for this paper on the integration of AI in dispute resolution encompasses a multi-step approach. It commences with a thorough literature review involving academic databases, peer-reviewed journals, government reports, and authoritative sources. The objective is to grasp the current landscape of AI implementation in dispute resolution, the arguments for and against it, and future prospects. The collected data is then meticulously analysed to identify prevalent themes, trends, and differing perspectives. Ethical and technological dimensions are scrutinized, examining the impact on human

emotions and AI objectivity. Real-world case studies are explored to provide practical insights. A comparative analysis of sources is conducted to highlight consensus and discrepancies. The findings and insights obtained through this methodology will be instrumental in delivering a well-rounded understanding of the role of AI in dispute resolution, addressing arguments and implications in a structured and evidence-based manner in the paper.

1 Introduction to AI as a Tool for Alternative Dispute Resolution

Artificial Intelligence, commonly abbreviated to AI has become the new buzzword in recent times. The popularity of AI has skyrocketed with the advent of ChatGPT, which is a chatbot that was developed by Open AI. It acquired 100 million users between December 2022 and January 2023. The application was used in February 2023 by a Columbian Judge for a judicial decision.¹ Several questions were posed to him to the AI chatbot and he used the responses in conjunction with his ruling to better elucidate the decision.²

Similarly, in India, the Punjab and Haryana High Court became the first court in India to use the Chat GPT AI in judicial decisions. A bench led by Justice Anoop Chitkara took the assistance of the chatbot in deciding the bail application of the accused. The AI provided research assistance to the bench and analyzed that as per earlier decisions, the accused does not deserve bail.³ This shows that the usage of AI is gradually gaining acceptance across the globe by judicial institutions. While there is still some skepticism about the usage of AI in Courts, it represents a positive step forward.

When it comes to decisions by Courts, the skepticism about the usage of AI is somewhat justified since AI does not have the same level of compassion or subjective understanding of the case that a human does. However, when it comes to Alternative Dispute Resolution (ADR), the process is voluntary and offers an alternative to the traditional modes of dispute settlement like litigation. The commonly used methods of ADR are Mediation, Arbitration, and Negotiation. Since

¹ Cindy Gordon, *ChatGPT Is the Fastest Growing App in the History of Web Applications*, Forbes (2023), <https://www.forbes.com/sites/cindygordon/2023/02/02/chatgpt-is-the-fastest-growing-app-in-the-history-of-web-applications/?sh=7cd25af9678c>. (last visited Sep 20, 2023).

² Luke Taylor, *Colombian Judge Says He Used ChatGPT in Ruling*, The Guardian, Feb. 3, 2023, <https://www.theguardian.com/technology/2023/feb/03/colombia-judge-chatgpt-ruling> (last visited Sep 20, 2023).

³ ANI, *In a first, Punjab and Haryana High Court Uses Chat GPT for Deciding upon Bail Plea*, The Times of India, Mar. 28, 2023, <https://timesofindia.indiatimes.com/india/in-a-first-punjab-and-haryana-high-court-uses-chat-gpt-for-deciding-upon-bail-plea/articleshow/99070238.cms?from=mdr> (last visited Sep 20, 2023).

these processes are based on informed and voluntary consent of the parties, the usage of AI to facilitate such a process will also be a voluntary and informed decision. This makes AI suitable for application in ADR.

The use of intelligent systems for Dispute Resolution is not new and there have been several intelligent systems used in the past as well. These were primarily used for the calculation of probabilities and with the advent of technology not widespread, did not find a lot of takers. The advent of the COVID-19 pandemic forced the shifting of the dispute resolution process to online platforms. The process of Online Dispute Resolution (ODR) gained traction and people adapted to it. Despite the Pandemic being almost over, ODR has retained its popularity and is seen as a cost-effective method for dispute resolution. It further allows for increased usage of technology since the process is undertaken entirely online and AI can provide assistance with the resolution process or as some predict take over the resolution process as a whole.

Covid-19, Dispute Resolution and AI

The COVID-19 pandemic resulted in the creation of a significant backlog of legal disputes. The courts are filled with lawsuits and the delays in justice are not taken kindly by the people. In such circumstances, there is wide room for the emergence of alternative technologies that can address the issue effectively and efficiently. This provides a ripe time for the entry of AI into the ODR system. It can be particularly useful in the resolution of disputes which are related to employment, supply chain disruptions, contract breaches, and insurance claims that arose during the Pandemic.

The AI-powered dispute resolution software possesses the ability to handle a large volume of disputes quickly and efficiently. This can work wonders for the reduction of the backlog of cases and result in the timely resolution of disputes. It also lowers the cost of the process as it can automate routine tasks which include document review, analysis, and more. The lowered cost will in turn result in increased accessibility for individuals and organizations. It is particularly beneficial for those who are in dire financial straits as a result of the Pandemic.

However, the road to using AI in dispute-resolution processes is laden with potential challenges. There are some circumstances such as the ones which had been created during the Covid-19 Pandemic which could pose difficulty for the AI systems to understand and interpret. The concerns about bias in AI systems are not unfounded, particularly considering that the data used for training the systems could reflect historical disparities or systemic inequalities that have been exacerbated by the pandemic.

This indicates that while the use of AI in dispute resolution has the potential to offer significant benefits, it is important to analyze and understand the potential challenges and limitations faced by AI systems. This will ensure that their usage is done in a manner that is fair and effective. To understand the usage of AI and its potential impact, it's important to understand the general development of technology-influenced negotiation systems to get a holistic overview of how it has evolved to its current stage.

2 Development of Technology Influenced Negotiation Systems

The resolution of disputes by human beings has been theorized. There has been extensive research undertaken by mathematicians to improve and optimize the resolution of disputes. This led to the development of early negotiation systems. In recent times, AI researchers have also focussed on the same, which paves the way for the usage of AI in the Dispute Resolution Process.

In 1979, the notion that commercial and civil disputes are resolved in the shadow of law was introduced by Mnookin and Kornhauser.⁴ This was logical as even in daily life we see that people seek the help of a court of law or the legislation to resolve disputes where it is difficult to arrive at a resolution through simple discussion. This prompted even the early negotiation support systems to focus on legal domains.

The focus towards formally adopting ADR methods began in the 1970s and also led to the creation of the Artificial Intelligence and Law movement. The idea of a Multidoor Courthouse was put forth by Frank Sander in the year 1976. Under this concept, disputes are assigned to the most suitable method for their resolution.⁵ He predicted that it would be in use for the year 2000. This era saw a lot of research in the field of negotiation, The work 'The Art and Science of Negotiation' by Howard Raiffa examined how game theory, mathematics, and optimization could be used to enhance negotiation amongst disputants.⁶

The Rand Corporation in the early 1980s developed negotiation support systems that used AI for advice related to risk assessment in the claims for damages. The Lift Dispatching System (LDS) developed by them was used by legal

⁴ Robert H. Mnookin & Lewis Kornhauser, *Bargaining in the Shadow of the Law: The Case of Divorce*, 88 *The Yale Law Journal* 950 (1979).

⁵ Gladys Kessler & Linda Finkelstein, *The Evolution of a Multi-Door Courthouse*, 37 *Cath. U. L. Rev* 577 (1988), <https://scholarship.law.edu/cgi/viewcontent.cgi?referer=&httpsredir=1&article=1897&context=lawreview> (last visited Sep 20, 2023).

⁶ Howard Raiffa, *The Art and Science of Negotiation* (1982), https://books.google.co.in/books/about/The_Art_and_Science_of_Negotiation.html?id=y-4T88h3ntAC&redir_esc=y (last visited Sep 20, 2023).

experts in the settling of cases related to product liability.⁷ The LDS had knowledge related to legislation, case law, and the informal principles and strategies that were commonly employed by lawyers and claim adjusters to settle cases.

Another system that was used for negotiation was the NEGOPLAN. It is a rule-based system that is written in PROLOG.⁸ The system was not used for the simulation of the entire negotiation process. One of the parties was given a competitive advantage since the goals and subgoals of the opposite party were hidden by the side that NEGOPLAN supported. Only the issues which were the subject of the bargaining were revealed. The PERSUADER was a system that relied on case-based reasoning and game theory for providing decision support about labor disputes in the USA.⁹ The major characteristics of such systems are that they can improve their performance in efficiency and quality of solutions using machine learning. The usage of the case-based reasoning method also proves to be effective since the system can exploit the previous successful decisions, which cuts down the time taken to resolve the dispute and avoids failures by recognizing past failures.

Internet was developed as a commercial entity in the 1990s and Online Dispute Resolution (ODR) was sought to be developed. Even during its initial stage, the development of ODR was carried out by legal academics. They saw the potential of using it to resolve online disputes. In 2005, eBay and PayPal started to use ODR for E-commerce. This was followed by the development of ODR with a practical utility like Rechtwijzer in the Netherlands and the UK and the Civil Resolution Tribunal in British Columbia, Canada.

The traditional forms of dispute resolution were based on face-to-face communication. Several forms of technology have been used to enhance negotiation. The telephone was hailed as an important technology in dispute resolution as it allows for communication between people who are physically distant and in cases where their meeting is not the best idea, like in cases of domestic violence. The development and widespread nature of the internet meant that access to digital technology has been much easier. It offers more features in addition to telephone calls as it allows the users to interact via text, text voice, and real-time video. This can be useful and adjusted as per the needs and requirements of the case.

The emergence of the COVID-19 virus furthered the importance of the development of ODR systems. It created a scenario where the people were forced into isolation and face-to-face meetings for dispute resolution were no longer

⁷ DONALD A. WATERMAN, JODY PAUL & MARK PETERSON, *Expert Systems for Legal Decision Making*, 3 Expert Systems 212 (1986).

⁸ S. Matwin et al., *Negoplan: an Expert System Shell for Negotiation support*, 4 IEEE Expert 50 (1989).

⁹ Katia P. Sycara, *Machine learning for intelligent support of conflict resolution*, 10 Decision Support Systems 121 (1993).

possible.¹⁰ Despite this, disputes continued to occur, and to ensure that the pendency of disputes was not unmanageable, it was essential to find a way for the continued operation of the justice system. This was particularly important in cases that needed urgent attention like bail applications, domestic violence, and family disputes.

The development of ODR is not limited to merely providing a new and better platform for communication. There is an effort to develop intelligent systems that can assist and improve negotiation outcomes. Some of the technology presently in use for dispute resolution has been discussed.

Use of Technology for Negotiation

The Rechtwijzer System

This system was originally used as an informational website that provided information about common conflicts like consumer, tenant, and debt issues.¹¹ The website aimed to allow people to understand the problem by encouraging “*self-reliance by improving control over the conflict process and understanding of your own and the other party’s positions and motivations in the conflict.*” The aim was to guide parties to solve conflicts on their own and seek legal help wherever needed. It did not only offer general information but also included question-and-answer tools, or “guided pathways,” where users could find information relevant to their situation and seek related support services.

The role played by technology in promoting self-reliance amongst people in the resolution of conflicts was recognized. In 2014, in partnership with the Hague Institute on the Innovation of Law and with Modria, it developed an online self-help tool for divorce was built. It was designed for the couples who were separating. It seeks to assist the citizens in solving their mutual problems through the advice of experts. It charges a nominal amount of 100 Euros for access to the system. It asks the users to enter their personal information, their priorities in the dispute, and specific questions related to the information they enter. This can include contentions for custody of children, splitting of income, and other important preferences. Roger Smith wrote that “Rechtwijzer 2.0 does inherently a different job

¹⁰ Sourdin T, Zeleznikow J (2020) Courts, mediation and COVID-19. To appear in Australian Business Law Review Tania Sourdin & John Zeleznikow, *Courts, Mediation and COVID-19*, papers.ssrn.com (2020), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3595910.

¹¹ Social Value UK, *Principles of Social Value*, Social Value UK, <https://socialvalueuk.org/principles-of-social-value/> (last visited Sep 20, 2023).

from the first version: it was designed to go beyond signposting (like Rechtwijzer 1.0) and provided a means of resolution itself.”¹²

The system follows a four-step procedure:

- A diagnosis phase.
- An intake phase for the party which initiated the usage of the system.
- An intake phase for the responding party.

Once the intake process is completed, the parties are required to work on agreement and issues that occur during their separation. These can include:

- Future channels for communication
- Issues as to the distribution of property and expenses.
- Child Custody, Maintenance, Child Support, and more.

The system aims to be one of integrative negotiation. It is focused upon the balanced protection of the interests of all the parties and not specifically for the rights of each of the parties. The legal processes involved in the settlement are informed to the parties so that there is informed consent the agreements made are valid under the prevalent law and the bargaining process is undertaken in the Shadow of Law.

Once the parties have reached an agreement, it is reviewed by an independent lawyer. The system uses the AI algorithm to find points of agreement in the responses of both parties and proposes a solution. If the estranged couple is not satisfied with the solution, they have the option of requesting a mediator by paying an additional amount or requesting an adjudicator who can make a binding decision under the law. It is to be noted that unless the parties mutually agree on an adjudicator, the whole process is voluntary and non-binding. Once the adjudication is requested, the decision becomes binding.

The system was in operation from 2014 to 2017. The system garnered substantial interest at both the national as well as international levels. The users generally had positive reviews with the couples reporting a good level of satisfaction. It was said to be a generally used tool that focused on the prevention of conflict.¹³ However, the Bar Association of the Netherlands voiced several concerns about the system. They questioned the lawyers on their ability to maintain a duty of care while using the system. The interest at the international level was also high with the team behind the development of the system invited to present the platforms

¹² Roger Smith, *DIGITAL DELIVERY OF LEGAL SERVICES TO PEOPLE ON LOW INCOMES QUARTERLY UPDATE*, (2015), <https://thelegaleducationfoundation.org/wp-content/uploads/2015/09/Digital-Technology-Spring-2015.pdf> (last visited Sep 20, 2023).

¹³ Margreet Vermeulen, *DPG Media Privacy Gate*, Dpgmedia (2023), <https://myprivacy.dpgmedia.nl/consent?siteKey=PUBX2BuuZfEPJ6vF&callbackUrl=https%3a%2f%2fwww.volkskrant.nl%2fprivacy-wall%2faccept%3fredirectUri%3d%252f%252520mensen%252fdoe-het-zelfscheiden-op-internet%257ebb80ac25%252f> (last visited Sep 21, 2023).

at various conferences. It saw interest from British Columbia and the UK. It was implemented by British Columbia where they adopted a version tailored to their local needs through the website, MyLawBC. A version was proposed to be developed for landlords and tenants but not rolled out.

The developments of the project were not enough to lead to a breakeven point on the financial level. The Dutch Government no longer wanted to invest in the innovation by providing subsidies. Therefore, the divorce system was scrapped and Rechtwijzer functioned in its original form where it guided dispute resolution. The team that was involved in Rechtwijzer *uit elkaar* attempted revival. They convinced investors and set up a new company called Justice42 (“Justice for Two”). The platform mirrored Rechtwijzer *uit elkaar* and also incorporated the lessons learned during its operation.

Lessons Learnt and Incorporated into the New Uitelkaar.nl System

The Rechtwijzer aimed to be fully automated and online. Its motive was to limit human interaction. When lawyers were involved in the review of agreements, they only communicated with the clients online. A client contact center was facilitated by the Legal Aid Board. The primary function of the center was to provide general legal information. It did not provide any targeted legal advice. This was because the system attempted to take the entire procedure online. However, the parties involved, which included both the divorcing couple and the lawyers expressed interest in more guidance offline.

Therefore, Uitelkaar.nl incorporated this into its system and created a hybrid system combining both online and offline processes. It created a new role in the system called the “case manager”. The role of the case manager is to join the case right after it has been taken up by the system. It communicates using chat and can also be approached via the phone. It performs the role of taking the couple through the process and answering legal questions. It also double-checks the agreements, verifies the uploaded documents to be correct, and ensures that the case is in a lawyer-ready state. Moreover, a face-to-face meeting with the lawyer once the process has been completed is now a standard provision. This was also useful in understanding the experience of the clients, their satisfaction levels, and working towards further development of the system. It complemented the inputs received from online surveys of the earlier systems.

Moreover, it was also noted that there is a need to include more ‘modules’ both online and offline so that the needs of the people that can be tended to. It was also noted that not everyone did not required all divorce-related services

like alimony calculation, pension advice, or help with tax issues and may only require mediation or support to figure out child custody. However, the changes were not implemented during the Rechtwijzer era. Some of the changes have been implemented in Uitelkaar.nl and there is also an intention to implement more changes in the future with additional investment.

It was also realized that the Rechtwijzer system is not *“one size fits all”*. There is an intention to develop a platform to assist in all divorce cases. However, the expectations were lowered and efforts were made to better understand target groups. It was also realized that running an ODR platform is not an easy task. There is a requirement for a dedicated team for operations management, marketing, and more. The role of lawyers has changed over time from a legal professional who directs the divorce process and influences the decision of the parties to someone who makes people understand the consequences of their decisions and pushes back when decisions are legal, financially, or from a practical standpoint not sound or out of balance, but always respecting the autonomy of the couple.

Analysis of Data

To understand the level of success of the Rechtwijzer system and its successor, it is important to analyze the response of the users to the data. The parties involved were sent out surveys four times during the process:

1. After completion of the intake process.
2. After the culmination of the collaboration phase, the parties agree and interact extensively with the case manager.
3. After the review meeting with the lawyer.
4. Six months after the whole process has been completed.

A total of 5600 surveys were sent out in the period between September 2017 to December 2019. A total of 880 surveys were filled out. A total of 118 questions were asked throughout four surveys. The satisfaction score increased to 7.9 out of 10 from 7.0 in the Rechtwijzer era. The case manager and the reviewer both scored highly with an average score of 8.4 overall and 8.3 overall. The distance for reaching the reviewer was rated the worst with a rating of 7.5. It can further be improved through the addition of more lawyers to the platform.

More lawyers being admitted to the platform could make this better. However, having too many solicitors would stretch out the cases too thin, which would hurt their involvement. The case manager receives the highest possible rating of 8.8 for *“speed of work,”* whereas the reviewer receives a significantly lower rating of 8.1. Additionally, a case manager’s *“availability”* is valued more highly with an 8.7 than it is with an 8.2 for the reviewer. This reflects the fact that the case manager

is accessible all day during business hours while the lawyers are frequently preoccupied with client meetings or court appearances.

The case manager's outcome prompted the decision not to extend the contact center's hours to include evenings and weekends. The reviewers' knowledgeability score is where they do best: 8.7. Other intriguing findings include the fact that 76% of respondents to a poll conducted six months after completion said the agreements struck with the aid of Uitelkaar.nl have worked in practice to a very large extent or a significant extent and will continue to be upheld in the future. And 80% believe that the money spent on Uitelkaar.nl was worthwhile.

Another feature of the surveys was that instead of directly calculating the financial return of the product, they calculated its "social return on investment". This calculated how much every Euro going into the system generated in terms of social value. The return during the period was estimated to be 3 Euros for every Euro Generated. The results which make up the SROI are:

- "65% agree that Uitelkaar.nl contributed to a decrease in the emotional pain of divorce;
- 84% agree that cooperating with the ex-partner on Uitelkaar.nl enabled them to make agreements that worked;
- 71% indicates that Uitelkaar.nl helped to keep good communication with the ex-partner."¹⁴

The research also intended to find out the primary motivation for people to choose Uitelkaar.nl. It said that the most important factor that drives people to use the software is the trust to predict user intention compared to other factors like usefulness and relative advantage over other solutions.¹⁵

British Columbia Civil Resolution Tribunal

This is the most widely used ODR system in the present times. It not only provides advice but also provides the facility of manually drafting agreements. It analyzes the dispute and provides the relevant legal information and customized templates. At the initial stage, it uses a rule-based solution explorer to provide advice for the resolution of a dispute. The advice is based on BATNA and the concept of bargaining in the Shadow of Law. If the dispute is not resolved at the initial stage, the Civil Dispute Resolution tribunal can be used by the applicants. The applicants are required to fill in the application forms and submit them. Once the application is accepted, they enter into a secure and confidential platform for negotiation where they attempt to resolve the dispute without the engagement of a third party.

¹⁴ Laura Kistemaker, *Rechtwijzer and Uitelkaar.nl. Dutch Experiences with ODR for Divorce*, Family Court Review.

¹⁵ Uitelkaar.nl: Ervaringen Van Gescheiden Stellen, uitelkaar.nl (2022), <https://uitelkaar.nl/info-over-scheiden/uitelkaar.nl-ervaringen-van-gescheiden-stellen#:~:text=68%25%20van%20onze%20klanten%20vindt> (last visited Sep 20, 2023).

If no resolution is reached, they can engage a facilitator or mediator for the resolution of the conflict. If the parties reach a mutual agreement, it is turned into enforceable orders. However, if the process does not work out, an independent member of the Civil Resolution Tribunal makes a ruling about the case. As of now, the following cases are taken up by the Civil Resolution Tribunal:

- Housing cases up to 5,000 Canadian Dollars
- Motor Injury cases up to 50,000 Canadian Dollars
- Owners Corporation cases for any amount
- Cases involving Cooperative Associations and Societies for any amount.
- Small Claims Cases up to 5,000 Canadian Dollars

There are plans to introduce more categories to increase the utility of the system.

This is similar to the Rechtwijzer System, where the system first aims to provide an automated solution after considering the contents of the dispute. However, if it does not work out, it provides the opportunity for an informal and formal negotiation process, with the final step being adjudication by a member of a Civil Resolution Tribunal. The scope of cases dealt with under the system is much wider and it has enjoyed considerable success over the years. It has shown how the use of technology can be effective in the dispute resolution process.

It performs a role where it allows the users to generate the necessary legal documents and information for the resolution of the dispute. It assists in drafting the application forms which allows for more comfortable access to the Civil Resolution Tribunal. If the parties settle, it allows for the conversion of the agreements reached into enforceable orders. It has the support of the State as well which has enhanced its usage. The Government of British Columbia has decreed it as the only forum that can be used by the residents for the resolution of disputes listed above.

Online Dispute Resolution Systems

There are several different types of Online Dispute Resolution Systems and each of them performs a specific role. Some of these systems are Document Management Systems, E e-negotiation systems, Systems customized for a particular dispute, General virtual mediation rooms, and arbitration systems.¹⁶ They include the multifaceted approaches to ODR which include the usage of Game Theory, Artificial Intelligence, and Social Psychology. It has been noted that there is

¹⁶ Arno Lodder & John Zeleznikow, *Artificial Intelligence and Online Dispute Resolution*, (2004), <https://core.ac.uk/download/pdf/15470488.pdf> (last visited Sep 21, 2023).

no universally applicable technique, and the viability of a technique can vary based on the context.¹⁷

The systems are built differently and vary based on the place of the dispute, jurisdiction of the dispute, legal systems, social norms, and other factors that influence the process of dispute resolution. The Online systems in themselves can be hybrid where a part of the dispute is resolved online, and the rest is carried out in face-to-face meetings. An ODR is useful even in cases where it cannot fully resolve the dispute as it might be able to resolve some of the issues which results in saving time and money. It might also result in breakthroughs for other issues and reduce the number of arguments for the pending issues.

3 An analysis of the use of Artificial Intelligence for Dispute Resolution

A significant role can be played by AI in the resolution of disputes. This can be carried out through automation of tasks, increase in efficiency, and consistent and accurate analysis of the data which results in the process becoming more cost-effective and accessible. The automation of tasks by AI is a major advantage as it can perform tasks that would need substantial human effort. An example of this is the analysis of large volumes of data like texts and images. An AI can complete the process at a pace much faster than a human. Moreover, it is capable of identifying the relationships and patterns which are difficult to spot for a human. This can help in the reduction of time needed and costs associated with the dispute. This enables the process to be more efficient for all the parties which are involved.

Applicability to Dispute Resolution

AI in ODR can be used as a Decision Support System (DSS) or an expert system. This means it will be able to perform simple activities which will vary from the compilation of data to more complex analysis, which could include suggestions regarding the best strategy or the fairest outcome possible.¹⁸ It can also be used as an expert system which would work at a standard similar to humans and even exceed it in certain cases. The system will be able to learn by itself and its knowledge will progressively grow as it handles more cases.

¹⁷ N.R. Jennings et al., *Automated Negotiation: Prospects, Methods and Challenges*, 10 *Group Decision and Negotiation* 199 (2001).

¹⁸ Davide Carneiro et al., *Online Dispute resolution: an Artificial Intelligence Perspective*, 41 *Artificial Intelligence Review* 211 (2012).

The DSS would be used for assisting humans in resolving disputes while the expert system would replace the humans in the ODR process and give advice on its own. The use of DSS software is predicted to become more common since the usage of such systems can be used to analyze agreements and contracts within a few minutes, a task that would require a long time if done by a human.

The nature of assistance provided by AI will vary. For example. In some cases, the programs will be assisting with the neutral party in deciding the dispute. Some can act as neutral systems themselves. Some systems can be used by one of the parties to make a stronger case for itself. For example, eBrevia is software that has the capability of analyzing a contract within minutes and extracting relevant data.¹⁹ However, the software by itself does not provide any significant advice to anyone unless there is a human who uses the analysis.

Other software can suggest solutions and only needs input from humans to arrive at a solution. Smart Settle is a software that can handle a wide variety of issues which include rental issues to mergers and acquisitions. The working of the software involves a process where the parties rate their preference in a specific order with the constructive outcome of each preference. The program pits the preferences of the parties against each other and suggests solutions accordingly. The solutions are provided through the analyses of thousands of previously resolved cases in its database.²⁰

The usage of AI can be revolutionary in ADR processes like mediation where the primary role of the neutral party is to ensure that the proceedings of the dispute are confidential and there is no bias in their decision-making ability. An AI program will provide a platform where people can conveniently share personal information and sensitive information regarding the dispute which they may be apprehensive about sharing with a human.²¹ Moreover, a machine can provide greater certainty concerning ensuring objectivity and no bias. This will prove beneficial in several disputes, particularly matrimonial disputes.

¹⁹ Diana Shepherd, 'How Artificial Intelligence Could Impact the Future of Family Law' (*Family Lawyer Magazine*, 12 September 2019) <<https://familylawyermagazine.com/articles/artificial-intelligence-and-the-future-of-family-law/>> accessed 11 May 2020.

²⁰ Hibah Alessa, *The Role of Artificial Intelligence in Online Dispute Resolution: a Brief and Critical Overview*, 31 *Information & Communications Technology Law* 1 (2022).

²¹ Mitchell Hamline & David Larson, *Mitchell Hamline School of Law Artificial Intelligence: Robots, Avatars and the Demise of the Human Mediator Publication Information* 25 *Ohio State Journal on Dispute Resolution* 105 (2010), (2010), <https://open.mitchellhamline.edu/cgi/viewcontent.cgi?article=1352&context=facsch> (last visited Sep 21, 2023).

Application of Existing Technology to International Conflicts

The usage of technology combined with game theory has been important in supporting the resolution of international conflicts. For example, MEDIATOR is a tool that has been used for proposing solutions to international disputes. The method used by it is case retrieval and adaptation.²² The program understands the issue at hand, looks into its database to identify relevant data sets from the past, takes into account the feedback of the disputing parties, and uses it to propose a feasible solution.

An automated agent which was presented by Kraus and others can efficiently negotiate with human players in the simulation of an international bilateral crisis.²³ The negotiation is carried out by an agent in a situation where several variables such as time constraints, deadlines, and the possibility of the parties opting out of negotiation. The experiment was carried out using a conflict that occurred between Canada and Spain over fisheries in the North Atlantic Ocean. The automated negotiator was played in a simulation where it interacted with humans. The model used the game theory coupled with heuristics. It was found in the experiment that in at least one of the two roles, the agent was able to perform its duties significantly better than a human player. It was also able to deal with the variables and provide solutions accordingly indicating good potential for further development for actual use in the dispute.²⁴

Computer modeling has also been used for the resolution of international disputes. The Adjusted Winner algorithm has been used by Denoon and Brams to advise over the disputes of the South China Sea as well as the Panama Canal Treaty and Camp David Accords. The final status issues between Israel and Palestine were analyzed using Adjusted Winner by Brams and Togman.²⁵ They were of the view that the agreement which is reached by using the procedure of Adjusted Winner was fairly close to the actual agreement that had been reached. This saw a new usage of technology in the decision-making process where instead of using the technology for the resolution of the dispute, it was used to measure the fairness of the agreement reached in the accord.

²² Janet L. Kolodner & Robert L. Simpson, *The MEDIATOR: Analysis of an Early case-based Problem Solver*, 13 *Cognitive Science* 507 (1989), <https://www.sciencedirect.com/science/article/abs/pii/0364021389900220> (last visited Sep 20, 2023).

²³ S. Sarit Kraus et al., *Resolving Crises through Automated Bilateral Negotiations*, 172 *Artificial Intelligence* 1 (2008).

²⁴ *Ibid.*

²⁵ Steven Brams & Jeffrey M. Togman, *Camp David: Was the Agreement Fair?*, *NYU Scholars* 306 (1998), <https://nyuscholars.nyu.edu/en/publications/camp-david-was-the-agreement-fair-2> (last visited Sep 20, 2023).

An important observation from such a use is how AI had been used for the managing of a dispute instead of resolving it. This can ensure that minimal conflict occurs which could lead to the resolution process becoming much easier. The application of the same for the resolution of family law disputes has also been projected by researchers which has been further discussed and analysed.

Application of AI to Family Law Disputes

The concept that the management of a dispute can greatly assist in its resolution is particularly useful for family law disputes. The parties in such a dispute know each other and there is a possibility in the future that the dispute may no longer exist due to changed circumstances. The resolution of the Israel Palestine Dispute using the asset divider system was contrasted by Zeleznikow with family mediation.²⁶

One of the main arguments put forth for using technology-based software for the process was that there are several thousand family mediations every year in most major jurisdictions around the globe such as Canada, Australia, the United Kingdom, and more. International disputes such as the Israel-Palestine dispute can have diverse facets which make it difficult for the AI to reach a concrete solution as it does not have many similar cases to refer to. However, in family law mediations, the sheer volume of cases implies that large amounts of crucial information can be obtained from previously solved cases. This assists in obtaining the requisite information to provide a resolution to the parties involved in the dispute.²⁷

Moreover, the number of parties that are involved in a family law dispute is minimal and does not include a lot of personal interests in most cases. The third-party involvement is minimal which makes it easier to work towards a solution. The parties are personally involved in the dispute and represent themselves in ODR processes in most cases. This means the information for the AI to work with is directly obtained and since the parties themselves give the information, potential biases can be identified.

If the AI can address the concerns of both parties without prejudicing the interests of either of the parties, the possibility of an amicable resolution increases. Moreover, there may be cases where the dispute is simply a result of different perspectives and misunderstandings between the parties. In such cases, AI can be greatly beneficial as it can identify such concerns and address them accordingly. It

²⁶ John Zeleznikow, *Comparing the Israel–Palestinian Dispute to Australian Family Mediation*, 23 Group Decision and Negotiation 1301 (2011).

²⁷ Emilia Bellucci, Deborah Macfarlane & John Zeleznikow, *How Information Technology Can Support Family Law and Mediation*, Lecture Notes in Business Information Processing (2010).

can also predict if some of the important variables will greatly change shortly which can be used as a tool for convincing the parties to make amends or proceed in a manner through which the dispute is resolved.

Application of AI to ODR: The Whole Picture

The use of AI will also result in the process of decision making more consistent. If programmed objectively, AI will not be influenced by prejudices and biases which are a normal part of human nature. As a result, its judgment will not be affected. This would result in the decisions being made based on a consistent set of rules and criteria. This would make the process fair and impartial.

Despite its advantages, there are certain limitations to the usage of AI as a tool for resolution of disputes. For example, there is a possibility that AI will struggle to understand the actual context of a dispute. This will determine the best outcome for a difficult process. Further, there is a possibility that the ability of the AI to adapt to the changing circumstances is limited and the new information or evidence which arises during the process of resolution is not fully processed by AI.

Moreover, there is a possibility that the AI interface is not entirely secure and may be vulnerable to attacks from hackers. There is a possibility that confidential and sensitive information is leaked during a data breach which can greatly jeopardize the benefits of AI. Therefore, great emphasis has to be laid upon the protection of information that is disclosed to the AI during the dispute resolution process. It has to be ensured that strict standards of data privacy and confidentiality are maintained.

Ethical Considerations

A system for the resolution of disputes which is fully dependent on humans, holds them accountable for any errors in judgment or any oversight that may occur during the process. The usage of AI for the same raises questions about accountability and transparency. The process of affixing liability becomes difficult if an erroneous judgment is given by the AI. Moreover, the transparency of the decision-making process can be impacted negatively as the complex algorithms that are used for the programming of the AI software are complex and not easily understandable. This can lead to a lack of transparency.

There is also a need for legal professionals to be informed about the ethical considerations of AI when engaging an AI-based mediator. The data fed into the AI can be manipulated in a manner where it is freely giving decisions with bias. This would raise a question regarding the fair treatment of the parties by AI. The parties when using AI for assistance may have relatively less autonomy to make their own

decisions for reaching a resolution plan which is acceptable to them. The AI-based mediator may not truly respect the autonomies of the party.

It can be observed that while AI-based mediations have their own sets of advantages like transparency and promise of unbiased participation, there remains a possibility that the AI suffers from shortcomings like humans performing similar roles do. However, with an adequate number of safeguards and regular checks, AI has the potential to surpass humans in its capabilities in certain areas of the dispute-resolution process. For the usage of AI to materialize on a large scale, a concrete system of checks and balances must be developed where the participants are assured that the AI is neutral and works from a position of fairness and justice. This will help in ensuring that large-scale adoption of AI as a tool for ODR is undertaken.

4 Final Considerations

The regulation of AI and ADR is done using the rules that apply to general areas such as privacy and advertising practices. Moreover, the rules about disclosures in conflict situations that apply to ADR are also applicable to AI. AI is already a significant part of several ODR and ADR processes. It performs various functions ranging from simple tasks such as enabling video conferencing or scheduling to calculation of probabilities in an international conflict situation. The role of AI and the future of ODR has been critically analyzed in this paper. The popularity of AI software like Chat GPT, Google Bard, Kira, and more would greatly increase the integration of AI in the legal dispute resolution process.

The normalization of the usage of AI for everyday tasks certainly assists in making people more open to the use of AI in the process of dispute resolution. Moreover, with the increasing number of transactions taking place at a global scale, the possibility of disputes arising greatly increases. In such cases, AI can prove to be useful as it will be able to handle the complex nature of transactions and provide an efficient and cost-effective solution compared to if the process was carried out entirely by humans.

AI has the potential to play a significant role in the application of justice and the preservation of the rights of people. It can provide people with a forum to know about their legal rights and provide them with an initial consultation on the options available to them to resolve a dispute. Moreover, AI unlike the other digital technologies that are used for aiding resolution like telephones, video conferencing applications, document sharing services, and more, can be used for shaping the nature of the legal discourse. It can assist in the process of dispute resolution and some cases, entirely take up the role of the negotiator or the adjudicator. There is

a possibility that AI in itself becomes the forum and replaces the humans present in the dispute resolution process fully or partially.

However, it has been struggling with slower-than-expected development. The emergence of a new technology usually results in optimism about its capabilities and its potential to be a magical solution to present-day problems. However, even with AI, the development has not been a linear process and the pace of development has been slower than expected. However, by developing an understanding of the shortcomings and benefits of AI, there is still a huge possibility that AI will prove to be a revolution in the dispute-resolution process in the long run.

AI has the potential to wade through bureaucratic hurdles and red tape, which often limit access to litigation. It can replace the traditional justice system with a more cost-effective, efficient, and accessible process. The initial process of creation and access may be high which would limit its use to the organizations and individuals who can afford it. However, with time the development would lower the overall costs and become an easily accessible viable alternative.

Despite this, there is a chance that developing excessive reliance on AI systems can prove to be detrimental in case they are not periodically re-examined. The AI once developed has the potential to grow itself and adapt to the changing needs. However, the evolution of software developed by humans may not be in line with what they need at that particular period in time. As a result, constant evolution is necessary to ensure that it does not drift away from performing the role it was created for and performs its tasks as per expectations. While AI is projected as a messiah that will promote access to justice, it should be ensured that the costs are not overbearing for the general populace as it could exacerbate the problem of impeded access to justice. Therefore, the costs must be kept low and affordable while still ensuring that the negative impacts associated with using AI as a mechanism for dispute resolution are mitigated.

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Informação bibliográfica deste texto, conforme a NBR 6023:2018 da Associação Brasileira de Normas Técnicas (ABNT):

FATIMA, Naazish. From Courtrooms to Algorithms: the Evolution of Dispute Resolution with AI. *Revista Brasileira de Alternative Dispute Resolution – RBADR*, Belo Horizonte, ano 05, n. 10, p. 269-288, jul./dez. 2023. DOI: 10.52028/rbadr.v5i10.ART13.IN.
